

20UCT102 - DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION

K1 - LEVEL QUESTIONS

UNIT – 1

1. Hexadecimal equivalent of binary number 1000 is -----.
a) F **b) 8** c) 10 d) 1000
2. A Karnaugh map (K-map) is an abstract form of _____ diagram organized as a matrix of squares.
a) Venn Diagram b) Cycle Diagram c) Block diagram d) Triangular Diagram
3. ASCII stands for
a) American Standard Code for Information Interchange
b American Scientific Code for International Interchange
c) American Standard Code for Intelligence Interchange
d) American Scientific Code for Information Interchange
4. What is the decimal value of the hexadecimal number 777?
a) 191 **b) 1911** c) 19 d) 19111
5. The minterm designation of the term ABCD is
a) 14 **b) 15** c) 11 d) none of these
6. NAND gate means
a) Inversion followed by AND gates
b) AND gate followed by an inverter
c) AND gate followed by an OR gate
d) None of these.
7. A decimal number 6 in excess-3 code is written as
a) 0110 b) 0011 c) 1101 **d) 1001**
8. The base of the hexadecimal number system is
a) 6 b) 8 **c) 16** d) 10
9. The numbers of bits in one nibble are -----.
a) 2 **b) 4** c) 8 d) 16
10. Which of the following binary number is equivalent to decimal number 24

a) 1101111 **b) 11000** c) 111111 d) 110011

UNIT – 2

1. ----- gate has only a single unit and always a single output signal.

a) NAND **b) NOT** c) AND d) OR

2. Boolean algebra can be used to

a) Simplify any algebraic expressions **b) Minimize the number of switches in a circuits** c) Solve the mathematical problems d) Perform arithmetic calculations.

3. An XOR gate gives a high output

a) If it has odd number of 1's in the input b) If it has odd number of 0's in the input
(c) If it has even number of 0's in the input d) If it has even number of 1's in the input

4. The minterm designation of the term ABCD is

a) m8 b) m10 c) m14 **d) m15**

5. In Boolean algebra, the OR operation is performed by which properties

a) Associative properties
b) Commutative properties
c) Distributive properties
d) All of the Mentioned

6. According to Boolean law: $A + 1 = ?$

a) 1 b) A c) 0 d) A'

7. DeMorgan's theorem states that

a) $(AB)' = A' + B'$
b) $(A + B)' = A' * B$
c) $A' + B' = A' B'$
d) None of the Mentioned

8. Simplify $Y = AB' + (A' + B)C$

a) $AB' + C$ b) $AB + AC$ c) $A' B + AC'$ d) $AB + A$

9. The expression for Absorption law is given by

a) $A + AB = A$
b) $A + AB = B$

- c) $AB+AA' = A$
 d) None of the Mentioned
10. Which of following are known as universal gates?
 a) **NAND & NOR**
 b) AND & OR
 c) XOR & OR
 d) None of the Mentioned
11. How many two-input AND and OR gates are required to realize $Y = CD+EF+G$?
 a) **2, 2** b) 2, 3 c) 3, 3 d) None of the Mentioned
12. The prime implicant which has at least one element that is not present in any other implicant is known as
 a) **Essential Prime Implicant**
 b) Implicant
 c) Complement
 d) None of the Mentioned
13. A variable on its own or in its complemented form is known as a
 a) Product Term **b) Literal** c) Sum Term d) None of the Mentioned
14. The logical sum of two or more logical product terms is called
 a) **SOP** b) POS c) OR operation d) NAND operation
15. A Karnaugh map (K-map) is an abstract form of diagram organized as a matrix of squares.
 a) **Venn Diagram** b) Cycle Diagram c) Block diagram d) Triangular Diagram
16. There are _____ cells in a 4-variable K-map.
 a) 12 **b) 16** c) 18 d) None of the Mentioned

UNIT – 3

- 1) If A and B are the inputs of a half adder, the sum is given by
 a) A AND B
 b) A OR B
 c) **A XOR B**
 d) A EXOR B

- 2) Half-adders have a major limitation in that they cannot
- a) Accept a carry bit from a present stage
 - b) Accept a carry bit from a next stage
 - c) Accept a carry bit from a previous stage**
 - d) None of the Mentioned
- 3) How many AND, OR and EXOR gates are required for the configuration of full adder
- a) 1, 2, 2
 - b) 2, 1, 2**
 - c) 3, 1, 2
 - d) 4, 0, 1
- 4) The difference between half adder and full adder is
- a) Half adder has two inputs while full adder has four inputs
 - b) Half adder has one output while full adder has two outputs
 - c) Half adder has two inputs while full adder has three inputs**
 - d) All of the Mentioned
- 5) What are the two types of basic adder circuits?
- a) Sum and carry
 - b) Half-adder and full-adder**
 - c) Asynchronous and synchronous
 - d) One and two's-complement
- 6) The selector inputs to an arithmetic/logic unit (ALU) determine the:
- a) Selection of the IC
 - b) Arithmetic or logic function**
 - c) Data word selection
 - d) Clock frequency to be used
- 7) 2's complement of 11001011 is
- a) 01010111
 - b) 11010100
 - c) 00110101**
 - d) 11100010

- 8) On addition of 28 and 18 using 2's complement, we get
- a) 00101110
 - b) 0101110**
 - c) 00101111
 - d) 1001111
- 9) Half subtractor is used to perform subtraction of
- a) 2 bits**
 - b) 3 bits
 - c) 4 bits
 - d) 5 bits
- 10) The full subtractor can be implemented using
- a) Two XOR and an OR gates
 - b) Two half subtractors and an OR gate**
 - c) Two multiplexers and an AND gate
 - d) None of the Mentioned
- 11) Let the input of a subtractor is A and B then what the output will be if $A = B$?
- a) 0**
 - b) 1
 - c) A
 - d) B
- 12) On subtracting $(001100)_2$ from $(101001)_2$ using 2's complement, we get
- a) 1101100
 - b) 011101**
 - c) 11010101
 - d) 11010111
- 13) On subtracting +28 from +29 using 2's complement, we get
- a) 11111010
 - b) 111111001
 - c) 010101011
 - d) 1**

14) What do you call the intermediate terms in binary multiplication

- a) Multipliers
- b) Mid terms
- c) Partial Products**
- d) Multiplicands

15) The multiplication of $110 * 111$ is performed. What is a general term used for 111

- a) Dividend
- b) Quotient
- c) Multiplicand
- d) Multiplier**

16) Which one is a basic comparator?

- a) XOR**
- b) XNOR
- c) AND
- d) NAND

17) In a comparator, if we get input as $A > B$ then the output will be

- a) 1**
- b) 0
- c) A
- d) B

18) One that is not the outcome of magnitude comparator is

- a) $a > b$
- b) $a - b$**
- c) $a < b$
- d) $a = b$

19) Perform binary addition of $1101 + 0010$ is

- a) 1110
- b) 1111**
- c) 0111
- d) 1,1101

20) In which operation carry is obtained

- a) Subtraction
- b) Addition**
- c) Multiplication
- d) Both addition and subtraction

UNIT IV

K1 Questions

1. In memory-mapped I/O _____

- a) The I/O devices and the memory share the same address space**
- b) The I/O devices have a separate address space
- c) The memory and I/O devices have an associated address space
- d) A part of the memory is specifically set aside for the I/O operation

2. The usual BUS structure used to connect the I/O devices is _____

- a) Star BUS structure
- b) Multiple BUS structure
- c) Single BUS structure**
- d) Node to Node BUS structure

3. The advantage of I/O mapped devices to memory mapped is _____

- a) The former offers faster transfer of data
- b) The devices connected using I/O mapping have a bigger buffer space
- c) The devices have to deal with fewer address lines**
- d) No advantage as such

4. The system is notified of a read or write operation by _____

- a) Appending an extra bit of the address
- b) Enabling the read or write bits of the devices
- c) Raising an appropriate interrupt signal**

d) **Sending a special signal along the BUS**

5. To overcome the lag in the operating speeds of the I/O device and the processor we use _____

- a) BUffer spaces
- b) **Status flags**
- c) Interrupt signals
- d) Exceptions

6. The method of accessing the I/O devices by repeatedly checking the status flags is _____

- a) **Program-controlled I/O**
- b) Memory-mapped I/O
- c) I/O mapped
- d) None of the mentioned

7. The method of synchronising the processor with the I/O device in which the device sends a signal when it is ready is

- a) Exceptions
- b) Signal handling
- c) **Interrupts**
- d) DMA

8. The method which offers higher speeds of I/O transfers is _____

- a) Interrupts
- b) Memory mapping
- c) Program-controlled I/O
- d) **DMA**

9. The process wherein the processor constantly checks the status flags is called as

- a) **Polling**
- b) Inspection

- c) Reviewing
 - d) Echoing
10. The DMA differs from the interrupt mode by
- a) The involvement of the processor for the operation
 - b) The method of accessing the I/O devices
 - c) The amount of data transfer possible
 - d) **None of the mentioned**
11. The DMA transfers are performed by a control circuit called as
- a) Device interface
 - b) **DMA controller**
 - c) Data controller
 - d) Overlooker
12. In DMA transfers, the required signals and addresses are given by the
- a) Processor
 - b) Device drivers
 - c) **DMA controllers**
 - d) The program itself
13. After the completion of the DMA transfer, the processor is notified by
- a) Acknowledge signal
 - b) **Interrupt signal**
 - c) WMFC signal
 - d) None of the mentioned
14. The DMA controller has _____ registers
- a) 4
 - b) 2
 - c) **3**
 - d) 1
15. When the R/W bit of the status register of the DMA controller is set to 1.

- a) **Read operation is performed**
- b) Write operation is performed
- c) Read & Write operation is performed
- d) None of the mentioned

16. The controller is connected to the ____

- a) Processor BUS
- b) **System BUS**
- c) External BUS
- d) None of the mentioned

17. The technique whereby the DMA controller steals the access cycles of the processor to operate is called

- a) Fast conning
- b) Memory Con
- c) **Cycle stealing**
- d) Memory stealing

18. The technique where the controller is given complete access to main memory is

- a) Cycle stealing
- b) Memory stealing
- c) Memory Con
- d) **Burst mode**

19. The controller uses _____ to help with the transfers when handling network interfaces.

- a) **Input Buffer storage**
- b) Signal enhancers
- c) Bridge circuits
- d) All of the mentioned

20. To overcome the conflict over the possession of the BUS we use _____

- a) Optimizers
- b) **BUS arbitrators**
- c) Multiple BUS structure

d) None of the mentioned

UNIT V

K1 Questions

1. Device that has backup storage are called _____.
 - a) Main memory
 - b) Auxiliary memory**
 - c) Catch memory
 - d) ROM
2. A very high-speed memory is called _____.
 - a) Cache**
 - b) Virtual memory
 - c) RAM
 - d) Main memory
3. Size of the _____ memory mainly depends on the size of the address bus.
 - a) Main**
 - b) Virtual
 - c) Secondary
 - d) Cache
4. The number successful accesses to memory stated as a fraction is called as _____.
 - a) Hit rate**
 - b) Miss rate
 - c) Success rate
 - d) Access rate
5. In memory interleaving, the lower order bits of the address is used to
 - a) Get the data
 - b) Get the address of the module**
 - c) Get the address of the data within the module
 - d) None of the mentioned
6. A memory unit accessed by content is called _____.
 - a) Content addressable memory**
 - b) Associative memory
 - c) Main memory
 - d) catch memory

7. Disks that are permanently attached and cannot be removed by the user is called _____

- a) Floppy disk
- b) **Hard disk**
- c) Magnetic disk
- d) Magnetic tape

8. Abbreviation of LRU

- a) Light Recently Used
- b) Line Replacement Unit
- c) **Least Recently Used**
- d) d) Lowest Replaceable Unit

9. A hard disk drive with removable disk is called _____

- a) **Floppy disk**
- b) Hard disk
- c) Magnetic disk
- d) magnetic tape

10. An address in main memory is called _____

- a) Address space
- b) Virtual address
- c) **Physical address**
- d) Memory space

11. An address used by a programmer is called _____

- a) Physical address
- b) **Virtual address**
- c) Logical address
- d) None of the above

12. The physical memory is broke into group of equal size is called _____

- a) Page frame
- b) Pages
- c) **Blocks**
- d) Sectors

13. The set of address locations is called _____
- a) Address space
 - b) **Memory space**
 - c) Virtual space
 - d) Above a & c
14. The associatively mapped virtual memory makes use of _____
- a) **TLB**
 - b) Page table
 - c) Frame table
 - d) None of the mentioned
15. _____ refers to a group of address space of the same size
- a) **Page**
 - b) Page frame
 - c) Table
 - d) Frame
16. The content of each entry in segment table is called _____
- a) Segment register
 - b) **Descriptor**
 - c) Page frame
 - d)) page entry
17. Abbreviate TLB
- a) **Translate lookaside buffer**
 - b) Translate Lookaside buffer
 - c) Translator length buffer
 - d) Translation Lookaside buffer
18. The main aim of virtual memory organisation is _____
- a) To provide effective memory access
 - b) To provide better memory transfer
 - c) To improve the execution of the program
 - d) **All of the mentioned**
19. _____ translates the logical address into a physical address.
- a) **MMU**
 - b) Translator
 - c) Compiler
 - d) Linker

20. The effectiveness of the cache memory is based on the property of _____

- a) **Locality of reference**
- b) Memory Localization
- c) Memory size
- d) None of the above

20UCT102 - DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION

K2 LEVEL QUESTIONS

UNIT – 1

1. What is an excess-3 code?
2. What is a NOR gate meant by?
3. What is a reflective code?
4. Where the Hollerith code is used?
5. What will be the output , if an input A is given to an inverter?
6. What is a NAND gate meant by?
7. What is Gray code?
8. Define nibble.
9. Expand BCD.
10. Which number system uses both alphabets as well as numerals?
11. What are the two states in a digital Circuit?

UNIT – 2

1. What is an essential prime-implicant?
 2. What is a logic circuit?
 3. State DeMorgan's first theorem.
 4. State DeMorgan's second theorem.
 5. What do you mean by don't care combinations?
 6. Add 1011010 and 10110
 7. What is the use of Karnaugh map?
 8. What is an excess-3 code?
 9. What is the resulting output of XOR gate when the inputs are A and B?
 10. Draw the logic circuit of OR Gate.
- .

UNIT – 3

1. What are the arithmetic and logic circuits available?
2. Describe Half Adder.
3. Define BCD Adder
4. What is the function of Half subtractor?
5. Show the function of Binary Divider.
6. Summarize about parallel binary subtractors.
7. Define Binary Multiplier.
8. What is the full form of BCD?
9. How many inputs and how many outputs in full subtractor?
10. What is the function of Comparator?

UNIT IV

K2 Questions

1. What are the functions of I/O interface?
2. How does the processor handle an interrupt request?
3. What are the three types of channel usually found in large computers?
4. Why does a DMA have priority over the CPU when both request a memory transfer?
5. What is the advantage of using interrupt initiated data transfer?
6. Why do you need DMA?
7. What is the difference between subroutine and interrupt service routine?
8. What is the need for interrupt masks?
9. How does bus arbitration typically works?
10. How does a processor handle an interrupt?
11. Distinguish synchronous bus and asynchronous bus.
12. Why I/O devices cannot be directly be connected to the system bus?
13. What are the major functions of I/O system?
14. What is an I/O interface?
15. Explain Direct Memory Access.

UNIT V

K2 Questions

1. Define main memory.
2. State multi programming.
3. List out types of operating modes.
4. What is meant by memory address map?
5. Define floppy disk.
6. Expand CAM
7. What is hit ratio?
8. Define virtual memory
9. What is physical address?
10. State Translation Lookaside buffer.

20UCT102 - DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION

UNIT- I

K3 Level Questions

1. Convert the following Gray Numbers Code to their equivalent Binary Numbers.
(i) 111011 (ii) 101110101
2. Write a short note on Binary and Hexadecimal number systems with example.
3. Convert the following Binary Numbers to equivalent Octal Numbers
i) 10101111 (ii) 1101.0110111
4. Examine Floating point Representation of a decimal number in a computer with a suitable example.
5. Convert $(63718)_{10}$ into equivalent (i) Binary and (ii) Hexadecimal Number.
6. Explain Double-Precision Numbers with suitable example.
7. A seven bit Hamming code is received as 1101101. Locate the error position and find the correct code.
8. Write a short note on Alphanumeric Codes.
9. Explain how Hamming code is used to detect and correct the error.
10. Convert hexadecimal number 117.6C into its equivalent binary number. Convert the binary number 10110110.10101 into its equivalent hexadecimal number.
11. Convert decimal number 41 into its equivalent binary number. Convert 1011.1011 into equivalent decimal number.
12. Convert decimal number 63718 into its equivalent (a) binary number (b) octal.
13. Convert $(AA1)_{16}$ into its equivalent decimal and octal numbers.
14. Write a brief note on Integrated Circuits or Chip.
15. Convert 1E8.7 hex into equivalent (a) binary, (b) decimal numbers.

UNIT – 2

K3 Level Questions

1. Implement the following Boolean expression using NAND gates only $Y = ABC + DEF$
2. Prove the following identities using Boolean algebra.

(i) $\overline{ABC} + \overline{AB}C + A\overline{BC} + AB\overline{C} = \overline{C}$

(ii) $AB + ABC + \overline{A}B + A\overline{B}C = B + AC$

3. Implement the following Boolean expression using NOR gates only $Y = A + \overline{B}C + AC$
4. State and Prove Demorgan's Theorems mathematically and using truth tables.
5. Explain basic logic gates with logic diagram and truth table.
6. Implement the following Boolean expression using NAND gates only.

(i) $Y = A + \overline{B}C + AC$

(ii) $Y = \overline{(A + \overline{B}) \cdot (\overline{A} + C)}$

7. Simplify the following logic equations using Boolean algebra.

(i) $Z = (\overline{ABC} + \overline{AB}C + ABC + AB\overline{C})(A + B)$

(ii) $Y = A + \overline{ABC} + \overline{B} + C$

8. Implement the following Boolean expression using minimum number of gates.

(a) $Y = ABC + \overline{ABC}$

(b) $Y = A + \overline{B}C$

9. State and prove De-Morgan's First Theorem.
10. From the truth table given below, express the function in sum of minterms and product of maxterms. Obtain the switching function $f(A,B,C)$ in canonical SOP and POS form and prove that they both minimize to the same value.

Decimal value	A	B	C	f
0	0	0	0	1
1	0	0	1	1
2	0	1	0	0
3	0	1	1	0
4	1	0	0	1
5	1	0	1	1
6	1	1	0	0
7	1	1	1	0

11. Describe Exclusive NOR gate with logic diagram and truth table.

12. Find the minimal expression for the Boolean function $f(w,x,y,z) = \sum (0,1,2,3,4,8,9,10,15)$

UNIT – 3

K3 Level Questions

1. Draw and explain four-bit BCD adder.
2. Explain 2's complement adder.
3. Write neatly about the Half adder with a neat diagram.
4. Draw and explain about the Full adder.
5. What is parallel binary adder? Realise binary adder using half adders and full adders to perform the addition of 1011 and 1101.
6. Draw and explain half-subtractor. Find out its difference and borrow bit outputs.
7. Illustrate about the 2's complement subtractor.
8. Summarize on Binary Multiplier.
9. Write a short outline on Binary Divider.
10. Describe Full Subtractor.

UNIT IV

K3 LEVEL QUESTIONS

1. Explain the types of ports available.
2. Explain the various methods used for handling the situation when multiple interrupts.
3. Discuss the DMA driven data transfer technique.
4. Discuss the operation of any two input devices.
5. Explain the importance of I/O interface? Compare the features of SCSI and PCI interfaces.
6. Explain the use of vectored interrupts in processes. Why is priority handling desired in interrupt controllers?
7. Explain the different priority scheme work?
8. Explain the factors considered in designing an I/O subsystem?
9. Explain the differences between memory mapped I/O and I/O mapped I/O.
10. List out the necessary operations needed to start an I/O operation using DMA?

UNIT V

K3 LEVEL QUESTIONS

1. Write a short note on a memory hierarchy.
2. Describe RAM and ROM chips
3. What is direct mapping? Discuss with example
4. Discuss associative memory.
5. Write a note on memory protection.
6. What is memory address mapping? Discuss.
7. Write a note on associative memory with neat diagram.
8. Discuss page replacement
9. Compare address space and memory space in virtual memory
10. Elaborate magnetic disk with neat diagram

20UCT102 - DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION

UNIT - I

K4 & K5 LEVEL QUESTIONS

1. (i) Perform the following binary additions

(a) $100101 + 100101$

(b) $1011.01 + 1001.11$

(ii) Perform the following binary multiplications

(a) 1.01×10.1

(b) $101.01 \times 11.$

2. (i) Perform the following subtraction using 1's complement arithmetic

(a) $11001 - 10110$

(b) $1011 - 0101$

(ii) Perform the following subtraction using 2's complement arithmetic

(a) $0.01111 - 0.01001$

(b) $11101.001 - 00100.111$

3. Write short notes on i) BCD ii) Excess-3 code iii) Gray code

4. (i) Convert hexadecimal number 117.6C into its equivalent binary number

(ii) A seven bit Hamming code is received as 1101101. Locate the error position and find the correct code.

(iii) Convert gray code number 1101110 into its equivalent binary number.

(iv) Subtract using 2's complement arithmetic $11011 - 11001$.

5. Write short notes on:

i) Alphanumeric codes

ii) Weighted codes

iii) Excess-3 code

iv) BCD

UNIT - II

1. Is NOR gate an universal gate? Support your answer.

2. Implement the following Boolean expressions using basic gates.

i) $Y = A.B + C.D + E.F$

ii) $Y = (A+B).(C+D).(E+F)$

iii) $Y = (A+B).C + AB = AB + BC + CA$

3. Obtain the minimal SOP expression for the switching function given below, using a four-variable Karnaugh map. $f(A,B,C,D) = \sum (5,6,7,8,9) + \phi(10,11,12,13,14,15)$

4. Show that using Boolean algebra and DeMorgan's theorems:

i) $\overline{BD} + \overline{ABD} + \overline{ABC}\overline{D} + A\overline{C}\overline{D} = \overline{D}$

ii) $\overline{AB + BC + CA} = \overline{AB} + \overline{BC} + \overline{AC}$

5. Obtain the minimal POS expression for the switching function given below, using a four-variable Karnaugh map. $f(A,B,C,D) = \pi(3,4,6,7,11,12,13,14,15)$

6. State and Prove Demorgan's Theorems mathematically and using truth tables.

7. Obtain the minimal SOP expression for the switching function given below, using a four-variable Karnaugh map. $f(A,B,C,D) = \sum (2,5,6,9,10,12,13,14) + \phi(3,7,11,15)$

8. Obtain the minimal POS expression for the switching function given below, using a four-variable Karnaugh map. $f(A,B,C,D) = \pi(0,1,2,3,4,7,8,11,12,14,15)$

9. Obtain the minimal SOP expression for the switching function given below, using a four-variable Karnaugh map. $f(A,B,C,D) = \sum (2,5,6,9,10,12,13,14) + \phi(3,7,11,15)$

10. Express $f(A,B,C,D)=AB+ABC+CD$ as sum of minterms and product of maxterms.

11. Prove the identities using Boolean algebra:

$$\text{i) } AB + CD = (A+C)(A+D)(B+C)(B+D)$$

$$\text{ii) } (A+\overline{BC}+C)\overline{C}=A\overline{B}\overline{C}+A\overline{B}C+\overline{A}B\overline{C}$$

12. Prove the identities using Boolean algebra:

$$\text{i) } AB + CD = (A+C)(A+D)(B+C)(B+D)$$

$$\text{ii) } \overline{A}\overline{B}\overline{C} + \overline{A}B\overline{C} + A\overline{B}\overline{C} + AB\overline{C} = \overline{C}$$

$$\text{iii) } A(\overline{A} + C).(\overline{A}B) + \overline{C}$$

UNIT - III

1. Draw and explain full-adder. Find out its sum and carry bit outputs, also show how it can be realized using NAND gate only.

2. Explain binary Multiplication. How will you realise a two, 2-bit binary multiplier?

3. Draw and explain half-adder. Find out its sum and carry bit outputs, also show how it can be realized neither using NOR gate only.

4. Discuss in brief about the BCD Adder and also show its Block diagram.

5. Write in detail about Comparator.

UNIT - IV

K4 & K5 LEVEL QUESTIONS

1. Explain the function to be performed by a typical I/O interface with a typical input output interface.

2. Explain in detail about interrupt handling.

3. Explain in detail about standard I/O interfaces.

4. Describe the functions of SCSI with a neat diagram.

5. Discuss on the following: Bus arbitration , printer process communication , USB

UNIT - V

K4 & K5 LEVEL QUESTIONS

1. Explain briefly about memory management hardware with example.
2. What are the three types of mapping procedure in cache? Briefly explain with example.
3. Illustrate
 - i) Address mapping using pages
 - ii) Associative memory page table.
4. Elaborate magnetic disk and magnetic tape with neat diagram
5. What is associative memory? Explain in detail about write and read operation with neat diagram.

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT2A2 - DISCRETE MATHEMATICS

Multiple Choice Questions

UNIT - I

1. A _____ is an ordered collection of objects.

- a) Relation
- b) Function
- c) Set
- d) Proposition

Answer : c

2. The set O of odd positive integers less than 10 can be expressed by _____

- a) {1, 2, 3}
- b) {1, 3, 5, 7, 9}
- c) {1, 2, 5, 9}
- d) {1, 5, 7, 9, 11}

Answer : b

3. Power set of empty set has exactly _____ subset.

- a) One
- b) Two
- c) Zero
- d) Three

Answer :a

4. What is the Cartesian product of $A = \{1, 2\}$ and $B = \{a, b\}$?

- a) $\{(1, a), (1, b), (2, a), (b, b)\}$
- b) $\{(1, 1), (2, 2), (a, a), (b, b)\}$
- c) $\{(1, a), (2, a), (1, b), (2, b)\}$
- d) $\{(1, 1), (a, a), (2, a), (1, b)\}$

Answer :c

5. The Cartesian Product $B \times A$ is equal to the Cartesian product $A \times B$. Is it True or False?

- a) True
- b) False

Answer :b

6. What is the cardinality of the set of odd positive integers less than 10?

- a) 10
- b) 5
- c) 3
- d) 20

Answer :b

7. Which of the following two sets are equal?

- a) $A = \{1, 2\}$ and $B = \{1\}$
- b) $A = \{1, 2\}$ and $B = \{1, 2, 3\}$
- c) $A = \{1, 2, 3\}$ and $B = \{2, 1, 3\}$
- d) $A = \{1, 2, 4\}$ and $B = \{1, 2, 3\}$

Answer :c

8. The set of positive integers is _____

- a) Infinite
- b) Finite
- c) Subset
- d) Empty

Answer :a

9. What is the Cardinality of the Power set of the set $\{0, 1, 2\}$.

- a) 8
- b) 6
- c) 7
- d) 9

Answer :a

10. The members of the set $S = \{x \mid x \text{ is the square of an integer and } x < 100\}$ is

-
- a) $\{0, 2, 4, 5, 9, 58, 49, 56, 99, 12\}$

- b) $\{0, 1, 4, 9, 16, 25, 36, 49, 64, 81\}$
- c) $\{1, 4, 9, 16, 25, 36, 64, 81, 85, 99\}$
- d) $\{0, 1, 4, 9, 16, 25, 36, 49, 64, 121\}$

Answer :b

11. The union of the sets $\{1, 2, 5\}$ and $\{1, 2, 6\}$ is the set _____
- a) $\{1, 2, 6, 1\}$
 - b) $\{1, 2, 5, 6\}$
 - c) $\{1, 2, 1, 2\}$
 - d) $\{1, 5, 6, 3\}$

Answer :b

12. The intersection of the sets $\{1, 2, 5\}$ and $\{1, 2, 6\}$ is the set _____
- a) $\{1, 2\}$
 - b) $\{5, 6\}$
 - c) $\{2, 5\}$
 - d) $\{1, 6\}$

Answer :a

13. Two sets are called disjoint if there _____ is the empty set.
- a) Union
 - b) Difference
 - c) Intersection
 - d) Complement

Answer :c

14. Which of the following two sets are disjoint?
- a) $\{1, 3, 5\}$ and $\{1, 3, 6\}$
 - b) $\{1, 2, 3\}$ and $\{1, 2, 3\}$
 - c) $\{1, 3, 5\}$ and $\{2, 3, 4\}$
 - d) $\{1, 3, 5\}$ and $\{2, 4, 6\}$

Answer :d

15. The difference of $\{1, 2, 3\}$ and $\{1, 2, 5\}$ is the set _____
- a) $\{1\}$
 - b) $\{5\}$

- c) {3}
- d) {2}

Answer :c

16. The complement of the set A is _____
- a) $A - B$
 - b) $U - A$
 - c) $A - U$
 - d) $B - A$

Answer :b

17. The bit string for the set {2, 4, 6, 8, 10} (with universal set of natural numbers less than or equal to 10) is _____
- a) 0101010101
 - b) 1010101010
 - c) 1010010101
 - d) 0010010101

Answer :a

18. Let $A_i = \{i, i+1, i+2, \dots\}$. Then set $\{n, n+1, n+2, n+3, \dots\}$ is the _____ of the set A_i .
- a) Union
 - b) Intersection
 - c) Set Difference
 - d) Disjoint

Answer :b

19. The bit strings for the sets are 1111100000 and 1010101010. The union of these sets is _____
- a) 1010100000
 - b) 1010101101
 - c) 1111111100
 - d) 1111101010

Answer :d

20. The set difference of the set A with null set is _____
- a) A

- b) null
- c) U
- d) B

Answer :a

UNIT – II

1. A compound proposition that is always _____ is called a tautology.

- a) True
- b) False

Answer :a

2. A compound proposition that is always _____ is called a contradiction.

- a) True
- b) False

Answer :b

3. If A is any statement, then which of the following is a tautology?

- a) $A \wedge F$
- b) $A \vee F$
- c) $A \vee \neg A$
- d) $A \wedge T$

Answer :c

4. If A is any statement, then which of the following is not a contradiction?

- a) $A \vee \neg A$
- b) $A \vee F$
- c) $A \wedge F$
- d) None of mentioned.

Answer :b

5. A compound proposition that is neither a tautology nor a contradiction is called a _____

- a) Contingency
- b) Equivalence
- c) Condition
- d) Inference

Answer :a

6. $\neg (A \vee q) \wedge (A \wedge q)$ is a _____

- a) Tautology
- b) Contradiction
- c) Contingency
- d) None of the mentioned

Answer :b

7. $(A \vee \neg A) \vee (q \vee T)$ is a _____

- a) Tautology
- b) Contradiction
- c) Contingency
- d) None of the mentioned

Answer :a

8. $A \wedge \neg (A \vee (A \wedge T))$ is always _____

- a) True
- b) False

Answer :b

9. $(A \vee F) \vee (A \vee T)$ is always _____

- a) True
- b) False

Answer :a

10. $A \rightarrow (A \vee q)$ is a _____

- a) Tautology
- b) Contradiction
- c) Contingency
- d) None of the mentioned

Answer :a

11. Which of the following statements is the negation of the statements “4 is odd or -9 is positive”?

- a) 4 is even or -9 is not negative
- b) 4 is odd or -9 is not negative
- c) 4 is even and -9 is negative
- d) 4 is odd and -9 is not negative

Answer :c

12. Which of the following represents: $\sim A$ (negation of A) if A stands for “I like badminton but hate maths”?

- a) I hate badminton and maths
- b) I do not like badminton or maths
- c) I dislike badminton but love maths
- d) I hate badminton or like maths

Answer :d

13. The compound statement $A \vee \sim(A \wedge B)$ is always

- a) True
- b) False

Answer :a

14. Which of the following are De-Morgan's law

- 1) $P \wedge (Q \vee R) \equiv (P \wedge Q) \vee (P \wedge R)$
- 2) $\sim(P \wedge R) \equiv \sim P \vee \sim R$, $\sim(P \vee R) \equiv \sim P \wedge \sim R$
- 3) $P \vee \sim P \equiv \text{True}$, $P \wedge \sim P \equiv \text{False}$
- 4) None of the mentioned

Answer :b

15. What is the dual of $(A \wedge B) \vee (C \wedge D)$?

- a) $(A \vee B) \vee (C \vee D)$
- b) $(A \vee B) \wedge (C \vee D)$
- c) $(A \vee B) \vee (C \wedge D)$
- d) $(A \wedge B) \vee (C \vee D)$

Answer :b

16. $\sim A \vee \sim B$ is logically equivalent to

- a) $\sim A \rightarrow \sim B$
- b) $\sim A \wedge \sim B$
- c) $A \rightarrow \sim B$
- d) $B \vee A$

Answer :c

17. Negation of statement $(A \wedge B) \rightarrow (B \wedge C)$

- a) $(A \wedge B) \rightarrow (\sim B \wedge \sim C)$
- b) $\sim(A \wedge B) \vee (B \vee C)$
- c) $\sim(A \rightarrow B) \rightarrow (\sim B \wedge C)$
- d) None of the mentioned

Answer :a

18. Which of the following satisfies commutative law?

- a) $\wedge$
- b) $\vee$
- c) $\leftrightarrow$
- d) All of the mentioned

Answer :d

19. If the truth value of $A \vee B$ is true, then truth value of $\sim A \wedge B$ can be

- a) True if A is false
- b) False if A is false
- c) False if B is true and A is false
- d) None of the mentioned

Answer :a

20. If P is always against the testimony of Q, then the compound statement $P \rightarrow (P \vee \sim Q)$ is a

- a) Tautology
- b) Contradiction
- c) Contingency
- d) None

Answer :a

UNIT – III

1. A function is said to be _____ if and only if $f(a) = f(b)$ implies that $a = b$ for all a and b in the domain of f.

- a) One-to-many
- b) One-to-one
- c) Many-to-many
- d) Many-to-one

Answer :b

2. The function $f(x)=x+1$ from the set of integers to itself is onto. Is it True or False?

- a) True
- b) False

Answer :a

3. The value of $\lfloor 1/2 \rfloor \cdot \lceil 5/2 \rceil$ is _____

- a) 1
- b) 2

- c) 3
- d) 0.5

Answer :a

4. Which of the following function $f: Z \times Z \rightarrow Z$ is not onto?

- a) $f(a, b) = a + b$
- b) $f(a, b) = a$
- c) $f(a, b) = |b|$
- d) $f(a, b) = a - b$

Answer :c

5. The domain of the function that assign to each pair of integers the maximum of these two integers is _____

- a) N
- b) Z
- c) Z^+
- d) $Z^+ \times Z^+$

Answer :d

6. Let f and g be the function from the set of integers to itself, defined by $f(x) = 2x + 1$ and $g(x) = 3x + 4$. Then the composition of f and g is _____

- a) $6x + 9$
- b) $6x + 7$
- c) $6x + 6$
- d) $6x + 8$

Answer :a

7. _____ bytes are required to encode 2000 bits of data.

- a) 1
- b) 2
- c) 3
- d) 8

Answer :b

8. The inverse of function $f(x) = x^3 + 2$ is _____

- a) $f^{-1}(y) = (y - 2)^{1/2}$
- b) $f^{-1}(y) = (y - 2)^{1/3}$
- c) $f^{-1}(y) = (y)^{1/3}$
- d) $f^{-1}(y) = (y - 2)$

Answer :b

9. The function $f(x) = x^3$ is bijection from $\mathbb{R}$ to $\mathbb{R}$. Is it True or False?

- a) True
- b) False

Answer :a

10. The $g^{-1}(\{0\})$ for the function $g(x) = [x]$ is _____

- a) $\{x \mid 0 \leq x < 1\}$
- b) $\{x \mid 0 < x \leq 1\}$
- c) $\{x \mid 0 < x < 1\}$
- d) $\{x \mid 0 \leq x \leq 1\}$

Answer :d

11. Domain of a function is :

- a) the maximal set of numbers for which a function is defined
- b) the maximal set of numbers which a function can take values
- c) it is set of natural numbers for which a function is defined
- d) none of the mentioned

Answer :a

12. What is domain of function $f(x) = x^{1/2}$?

- a) $(2, \infty)$
- b) $(-\infty, 1)$
- c) $[0, \infty)$
- d) None of the mentioned

Answer :c

13. Range of a function is :

- a) the maximal set of numbers for which a function is defined
- b) the maximal set of numbers which a function can take values
- c) it is set of natural numbers for which a function is defined
- d) none of the mentioned

Answer :b

14. What is domain of function $f(x) = x^{-1}$ for it to be defined everywhere on domain?

- a) $(2, \infty)$
- b) $(-\infty, \infty) - \{0\}$
- c) $[0, \infty)$
- d) None of the mentioned

Answer :b

15. State whether the given statement is true or false
The range of function $f(x) = \sin(x)$ is $(-\infty, \infty)$.

- a) True
- b) False

Answer :b

16. State whether the given statement is true or false
Codomain is the subset of range.

- a) True
- b) False

Answer :b

17. What is range of function $f(x) = x^{-1}$ which is defined everywhere on its domain?

- a) $(-\infty, \infty)$
- b) $(-\infty, \infty) - \{0\}$
- c) $[0, \infty)$
- d) None of the mentioned

Answer :a

18. If $f(x) = 2^x$ then range of the function is :

- a) $(-\infty, \infty)$
- b) $(-\infty, \infty) - \{0\}$
- c) $(0, \infty)$
- d) None of the mentioned

Answer :c

19. If $f(x) = x^2 + 4$ then range of $f(x)$ is given by

- a) $[4, \infty)$
- b) $(-\infty, \infty) - \{0\}$
- c) $(0, \infty)$
- d) None of the mentioned

Answer :a

20. State True or False.

Let $f(x) = \sin^2(x) + \log(x)$ then domain of $f(x)$ is $(-\infty, \infty)$.

- a) True
- b) False

Answer :b

UNIT – IV & V

1. The number of possible undirected graphs which may have self loops but no multiple edges and have n vertices is _____

- a) $2^{((n*(n-1))/2)}$
- b) $2^{((n*(n+1))/2)}$
- c) $2^{((n-1)*(n-1))/2}$
- d) $2^{((n*n)/2)}$

Answer :d

2. Given a plane graph, G having 2 connected component, having 6 vertices, 7 edges and 4 regions. What will be the number of connected components?

- a) 1
- b) 2
- c) 3
- d) 4

Answer :b

3. Number of vertices with odd degrees in a graph having a eulerian walk is _____

- a) 0
- b) Can't be predicted
- c) 2
- d) either 0 or 2

Answer :d

4. How many of the following statements are correct?

- i) All cyclic graphs are complete graphs.
 - ii) All complete graphs are cyclic graphs.
 - iii) All paths are bipartite.
 - iv) All cyclic graphs are bipartite.
 - v) There are cyclic graphs which are complete.
- a) 1
 - b) 2
 - c) 3
 - d) 4

Answer :b

5. All paths and cyclic graphs are bipartite graphs.

- a) True
- b) False

Answer :b

6. What is the number of vertices of degree 2 in a path graph having n vertices, here $n > 2$.

- a) $n-2$
- b) n
- c) 2
- d) 0

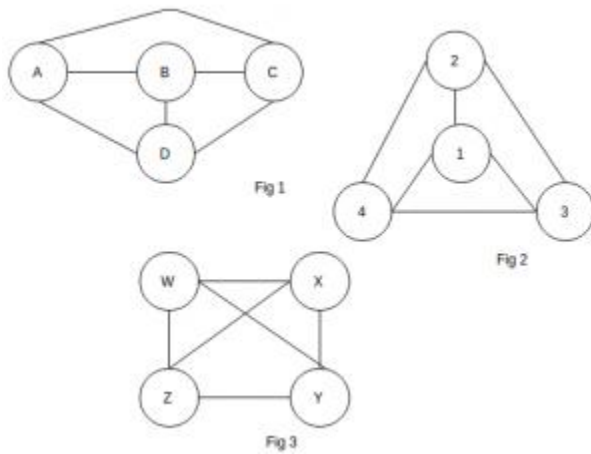
Answer :a

7. All trees with n vertices consists of $n-1$ edges.

- a) True
- b) False

Answer :a

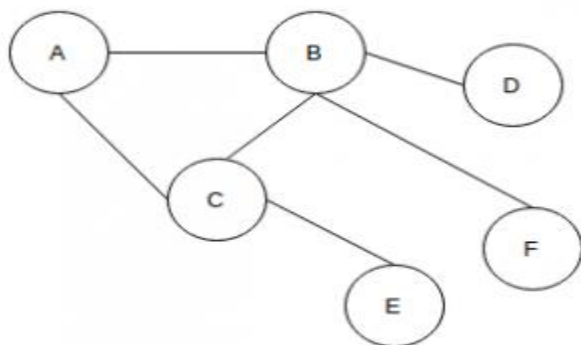
8. Which of the following graphs are isomorphic to each other?



- a) fig 1 and fig 2
- b) fig 2 and fig 3
- c) fig 1 and fig 3
- d) fig 1, fig 2 and fig 3

Answer :d

9. In the given graph which edge should be removed to make it a Bipartite Graph?



- a) A-C
- b) B-E
- c) C-D
- d) D-E

Answer :a

10. What would the time complexity to check if an undirected graph with V vertices and E edges is Bipartite or not given its adjacency matrix?

- a) $O(E \cdot E)$
- b) $O(V \cdot V)$
- c) $O(E)$
- d) $O(V)$

Answer :b

11. Seat of an employee is 4th place in 2nd row, so it corresponds to ordered pair

- a) (4, 2)
- b) (2, 4)
- c) (3, 5)
- d) (6, 4)er

Answer : b

12. If $^{\circ}\text{C}$ is degrees Celsius and $^{\circ}\text{F}$ is degrees Fahrenheit then $^{\circ}\text{F}$ is equal to

- a) $(5/9 \times ^{\circ}\text{C}) + 32$
- b) $(5/9 \times ^{\circ}\text{C}) - 32$
- c) $(9/5 \times ^{\circ}\text{C}) + 32$
- d) $(9/5 \times ^{\circ}\text{C}) - 32$

Answer : d

13. Point of intersection of two coordinate axes is called

- a) quadrants
- b) origin
- c) vertical plane
- d) horizontal plane

Answer : b

14. X-coordinate of a point is called

- a) coordinate
- b) origin
- c) abscissa
- d) ordinate

Answer : d

15. Horizontal line XOX' on Cartesian plane is called

- a) x-axis
- b) y-axis
- c) order pair
- d) none of above

Answer : a

16. Y-coordinate of a point is called

- a) abscissa
- b) ordinate
- c) origin
- d) coordinate

Answer : d

17. Cartesian plane is divided in to

- a) 4 quadrants
- b) 5 quadrants
- c) 3 quadrants
- d) 2 quadrants

Answer : a

18. Value of mile in terms of kilometers is

- a) 1 mile = 2 km
- b) 1 mile = 1.6 km
- c) 1 mile = 2.8 km
- d) 1 mile = 3.6 km

Answer : c

19. Vertical line XOX' on Cartesian plane is called

- a) order pair
- b) x-axis
- c) y-axis
- d) none of above

Answer : a

20. Cartesian plane is also known as _____.

- a) vertical plane
- b) horizontal plane
- c) collinear plane
- d) coordinate plane

Answer : c

21. The set O of odd positive integers less than 10 can be expressed by _____

- a) {1, 2, 3}
- b) {1, 3, 5, 7, 9}
- c) {1, 2, 5, 9}
- d) {1, 5, 7, 9, 11}

Answer :b

22. The line graph $L(G)$ of a simple graph G is defined as follows: · There is exactly one vertex $v(e)$ in $L(G)$ for each edge e in G . · For any two edges e and e' in G , $L(G)$ has an edge between $v(e)$ and $v(e')$, if and only if e and e' are incident with the same vertex in G . Which of the following statements is/are TRUE?

(P) The line graph of a cycle is a cycle.

(Q) The line graph of a clique is a clique.

(R) The line graph of a planar graph is planar.

(S) The line graph of a tree is a tree.

- a) P only
- b) P and R only

- c) R only
- d) P, Q and S only

Answer :a

23. Let G be a simple undirected planar graph on 10 vertices with 15 edges. If G is a connected graph, then the number of bounded faces in any embedding of G on the plane is equal to

- a) 3
- b) 4
- c) 5
- d) 6

Answer : c

24. Let G be a complete undirected graph on 6 vertices. If vertices of G are labeled, then the number of distinct cycles of length 4 in G is equal to

- a) 15
- b) 30
- c) 45
- d) 360

Answer : C

25. Let $G = (V, E)$ be a graph. Define $\xi(G) = \sum d \cdot id \times d$, where id is the number of vertices of degree d in G . If S and T are two different trees with $\xi(S) = \xi(T)$, then

- a) $|S| = 2|T|$
- b) $|S| = |T| - 1$
- c) $|S| = |T|$
- D $|S| = |T| + 1$

Answer : c

26. The degree sequence of a simple graph is the sequence of the degrees of the nodes in the graph in decreasing order. Which of the following sequences can not be the degree sequence of any graph?

- (I) 7, 6, 5, 4, 4, 3, 2, 1

(II) 6, 6, 6, 6, 3, 3, 2, 2

(III) 7, 6, 6, 4, 4, 3, 2, 2

(IV) 8, 7, 7, 6, 4, 2, 1, 1

- a) I and II
- b) III and IV
- c) IV only
- d) II and IV

Answer : d

27. What is the chromatic number of an n -vertex simple connected graph which does not contain any odd length cycle? Assume $n \geq 2$.

- a) 2
- b) 3
- c) n
- d) $n-1$

Answer : a

28. How many perfect matchings are there in a complete graph of 6 vertices ?

- a) 15
- b) 24
- c) 30
- d) 60

Answer : a

29. A graph $G = (V, E)$ satisfies $|E| \leq 3|V| - 6$. The min-degree of G is defined as $\delta(G)$. Therefore, min-degree of G cannot be

- a) 3
- b) 4
- c) 5
- d) 6

Answer :

30. The minimum number of colours required to colour the vertices of a cycle with n nodes in such a way that no two adjacent nodes have the same colour is

- a) 2
- b) 3
- c) 4
- d) $n - 2\lfloor n/2 \rfloor + 2$

Answer : d

31. Maximum number of edges in a n - node undirected graph without self loops is

- a) n^2
- b) $n(n - 1)/2$
- c) $n - 1$
- d) $(n + 1)(n)/2$

Answer : b

32. Let G be a connected planar graph with 10 vertices. If the number of edges on each face is three, then the number of edges in G is _____.

- a) 24
- b) 20
- c) 32
- d) 64

Answer : a

33. A graph is self-complementary if it is isomorphic to its complement. For all self-complementary graphs on n vertices, n is

- a) A multiple of 4
- b) Even
- c) Odd
- d) Congruent to 0 mod 4, or 1 mod 4

Answer : d

34. In a connected graph, a bridge is an edge whose removal disconnects a graph. Which one of the following statements is True?

- a) A tree has no bridge
- b) A bridge cannot be part of a simple cycle
- c) Every edge of a clique with size ≥ 3 is a bridge (A clique is any complete subgraph of a graph)
- d) A graph with bridges cannot have a cycle

Answer : b

35. What is the number of vertices in an undirected connected graph with 27 edges, 6 vertices of degree 2, 3 vertices of degree 4 and remaining of degree 3?

- a) 10
- b) 11
- c) 18
- d) 19

Answer : d

36. The minimum number of colours that is sufficient to vertex-colour any planar graph is _____ [This Question was originally a Fill-in-the-blanks Question]

- a) 1
- b) 2
- c) 3
- d) 4

Answer : d

37. If all the edge weights of an undirected graph are positive, then any subset of edges that connects all the vertices and has minimum total weight is a

- a) Hamiltonian cycle
- b) Grid
- c) hypercube
- d) Tree

Answer : d

38. Let G be an arbitrary graph with n nodes and k components. If a vertex is removed from G , the number of components in the resultant graph must necessarily lie down between

- a) k and n
- b) $k-1$ and $k+1$
- c) $k-1$ and $n-1$
- d) $k+1$ and $n-k$

Answer : c

39. A graph in which all nodes are of equal degree, is known as

- a) Multigraph
- b) Non regular graph
- c) Regular graph
- d) Complete graph

Answer : a

40. In a graph G there is one and only one path between every pair of vertices then G is a

- a) Path
- b) Walk
- c) Tree
- d) Circuit

Answer : c

DISCRETE MATHEMATICS
18UCT2A2 - DISCRETE MATHEMATICS

K2 - Level Questions

UNIT-1

1. Define set.
2. Compare unit set and null set.
3. Classify the types of set Description.
4. Show the Venn diagram for union.
5. Define roster method.
6. What are the Fundamental properties of set.
7. State De-Morgan's law.
8. State laws of set operation.
9. Define Distributive law of set.
10. Solve: In group 20 persons, 10 are interested in music, 7 are in photography, 4 persons like swimming and in those people 4 are interested in music and photography, 3 are in music and swimming and 1 interested in music, photography and swimming. How many are interested in photography but not in music and swimming.

UNIT-II

1. Check whether the following is contradiction or tautology.

1) $(P \wedge Q) \wedge (\sim P \vee \sim Q)$

2) $P \vee \sim(P \wedge Q)$

2. Check whether the condition is valid or invalid argument.

$$R \leftrightarrow R$$

$$P \rightarrow S$$

$$P \rightarrow Q$$

$$\sim(P \wedge Q) \wedge (P \vee Q)$$

3. Draw the truth table for inverse statement.
4. Compare NAND gate and NOR gate.

5. Name some logical operators.
6. Define premises.
7. Show that all the premises are true, then the conclusion is-----
8. Draw the truth table for $(P \wedge Q) \vee (Q \vee \sim P)$
9. Check valid or invalid.

$$\begin{array}{r}
 P \rightarrow Q \\
 \hline
 Q \rightarrow P \\
 \hline
 P \vee Q
 \end{array}$$

10. Draw the truth table

- 1) $\sim(P \wedge Q) \leftrightarrow \sim P \vee \sim Q$
- 2) $(\sim P \vee \sim Q) \wedge (\sim Q \vee P) = P \vee Q$

UNIT – III

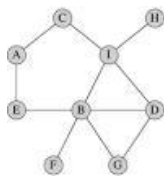
1. Define functions.
2. State the law of composition of function.
3. What is meant by relation?
4. State the properties of relation.
5. Check the relation $> =$ defined on set positive integers is a partial order relation.
6. Compare Binary relation and relation.
7. Difference between equivalence relation and partial order relation.
8. Name some types of functions.
9. Write the equation of symmetric relation.
10. Define void relation.

UNIT – IV

1. Compare disconnected graph, strongly and sub graph.
2. What is meant by directed graph?
3. Name some of types of vertex.
4. Write the types of graph.
5. What are the operations can done on graph?
6. Compare and contrast isomorphic and homomorphism graphs.
7. Distinguish between path and walk.
8. Relate in degree and out degree of graph.
9. How graph is used in computer memory?
10. Show the representation of directed graph in computer memory.

UNIT – V

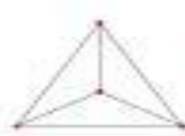
1. Define adjacency matrix.
2. Compare with incidence matrix and adjacency matrix.
3. State multi-graph.
4. How will you represent
5. Draw a Hamiltonian graph.
6. Check whether the graph is isomorphic or not.



7. Check whether the graph (a) and (b) are/is planar graph or not.

(a)

(b)



8. Define un-weighted graph
9. What is meant by non-planar graph?

10. State planar graph.

18UCT2A2 - DISCRETE MATHEMATICS

K3 Level Questions

UNIT - I

1. Simplify the following, Let $A=\{1,2,3,5,6\}$ $B=\{1,2,4,7,8\}$ $U=\{1,2,3,4,5,6,7,8\}$
i) $A \cup B$ ii) $A \cap B$ iii) $A - B$ iv) $B - A$ v) A^c
2. Draw a Venn Diagram for Commutative law and also prove with roster method
 $A=\{1,2,3\}$ $B=\{4,1,5,6,7\}$
3. Analyse and Prove the Idempotent law.
4. Simplify the Complement of set for following set $A=\{1,2,3,5\}$ $U=\{1,2,3,4,5,6\}$
5. Let $A=\{1,2,5,6,7,8\}$ $B_1=\{1,2,5\}$ $B_2=\{5,6,7\}$ and find the following
i) $B_1 \cap B_2^c$ ii) $B_1 \cap B_2$ iii) $B_2 \cap B_1^c$ iv) $A \cap B_1^c \cap B_2^c$
6. Solve the Set by using Commutative Law $A= \{a, b, c, d, e\}$, $B= \{f, g, h, i, d\}$
 $C=\{a, b, d, b, f, g, i, j, k, l\}$
7. Discuss about Distributive law with suitable example.
8. List out the categories of Equivalent of set and Explain about De-Morgan law with given set $A=\{1,2,3\}$ $B=\{4,5,6\}$ $U=\{1,2,3,4,5,6\}$
9. Compare the Miniset and Universal Set with Venn diagrams.
10. Simplify i) $n(A) = n[(A \cap B) \cup (A \cap B)] = n[(A - B) \cup (A \cap B)] = n(A - B) + n(A \cap B)$
ii) $n(A \cup B) = n(A - B) + n(A \cap B) + n(B - A)$

UNIT - II

1. Examine the validity of an argument with truth table
$$\begin{array}{l} \sim P \vee \sim R \\ P \Rightarrow \sim Q \\ \hline P \Rightarrow R \\ \hline (\sim R \vee \sim Q) \end{array}$$
2. Evaluate the truth table for $(\sim P \vee Q) \Leftrightarrow (\sim Q \vee \sim P) \Leftrightarrow \sim(\sim P \Leftrightarrow \sim Q)$
3. Analyse the question and prove the condition is valid or invalid
$$\begin{array}{l} R \Leftrightarrow R \\ P \Rightarrow S \\ \hline P \Rightarrow Q \\ \hline \sim(P \wedge Q) \wedge (P \vee Q) \end{array}$$
4. Check whether valid or invalid Argument

$$\begin{array}{c}
 P \Leftrightarrow Q \\
 \sim Q \\
 P \Rightarrow R \\
 \hline
 (P \wedge Q) \wedge \sim Q
 \end{array}$$

5. Write the steps to examine validity of arguments with your own examples.
6. Distinguish the term tautology and contradiction with examples.
7. Write about the Contra positive statements with suitable truth table.
8. Prove the following statements are tautology or not
 - i) $(P \vee Q) \vee S \Leftrightarrow (P \vee S) \vee Q$
 - ii) $(P \Leftrightarrow S) \Leftrightarrow (S \Leftrightarrow P)$
9. Simplify the following equation i) $\sim(P \wedge Q) = (\sim P \wedge \sim Q)$ ii) $\sim(P \vee Q) \Leftrightarrow (P \wedge Q)$
10. Find the validity of an arguments $(P \vee Q)$ and $(Q \vee P \wedge S)$ gives $(P \vee Q \vee S)$

UNIT- III

1. Show that the relation $\leq$ defined on a set positive integers is a partial order relation.
2. Let $A = \{1, 2, 3, 4, 5\}$ if any set of numbers relation R on a set is defined by $>$ then prove that the relation R is an Equivalence relation?
3. Let relation R on a set of real numbers A is defined as aRb if and only if $1+ab < 0$. Show that this relation is reflexive and symmetric but not transitive.
4. If R and S from the relation A to B . prove that,
 - i. $(R \cap S)^{-1} = R^{-1} \cap S^{-1}$
 - ii. $(R \cup S)^{-1} = R^{-1} \cup S^{-1}$
 - iii. $R^{-1} \subseteq S^{-1}$ where R is a $\subseteq$ of S .
5. Let $A = \{1, 2, 3, 4, 5\}$, $B = \{a, b, c, d, e\}$, $C = \{s, t, u, v\}$
 $R_1 = \{(1, a) (1, d) (2, e) (3, b) (5, a) (3, d)\}$ which is formed by $A \times B$.
 $R_2 = \{(a, s) (c, v) (b, u) (e, v) (d, t)\}$. which is formed by $B \times C$. Find $R_1 \cap R_2$.
6. State and prove the relation is equivalence relation with your own example set.
7. Composition of function: let $A = \{1, 2, 3, 4, 5, 6, 7\}$, $B = \{a, b, c, d\}$, $C = \{m, n, o, p, q\}$
 $f(x) = \{(1, a) (1, b) (3, c) (5, d)\}$, $g(x) = \{(a, m) (b, n) (c, q) (c, p) (d, o)\}$ and find the **gof** value.
8. $A = \{2, 3, 5\}$, $B = \{6, 7, 8\}$, $C = \{2, 3\}$, $D = \{8, 10\}$ are non empty set of a relation R from set $A \rightarrow B$ is defined as $R = \{(2, 6) (2, 8) (3, 10)\}$ and the relation S from $C \rightarrow D$ if defined as $S = \{(2, 8) (3, 10)\}$. find $R \cup S$, $R \cap S$, R^{-1} , $R - S$, then $S - R$.
9. Justify that the relation $\geq$ defined on a set whole numbers is a partial order relation.

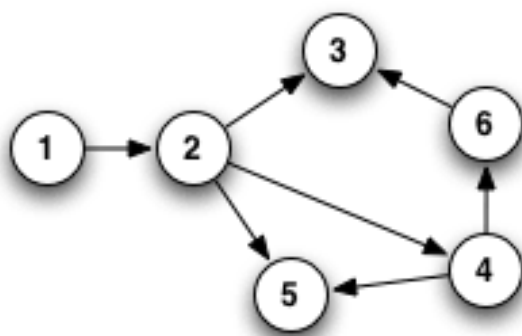
10. Prove the invertible function for the equation : $f(x) = 3x^2 - 2$.

UNIT- IV

1. List the types of degree of vertex with own examples.
2. Discuss about the types of graphs with suitable example
3. Describe about operation on graph with suitable examples
4. Compare strongly connected graph and weakly connected graphs with example
5. Write about the concept of path, open and closed walk.
6. Examine sub graph with example.
7. Build a graph with $V = \{v_1, v_2, v_3, v_4, v_5, v_6, v_7\}$
 $E = \{(v_1, v_2)(v_2, v_5)(v_2, v_4)(v_3, v_5)(v_1, v_6)(v_5, v_6)(v_6, v_7)\}$
8. Categorize graphs with examples
9. Analyse forward and backward edges and length of the path
10. Classify the types of disconnected graphs.

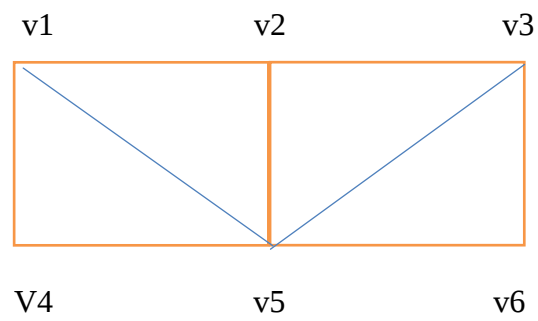
UNIT- V

1. Compare shortest path in a weighted graph and unweighted graph.
2. Simplify the shortest path from vertex V1 to V6 and its length in the graph



3. Classify the Hamiltonian graph with suitable example.
4. Justify the eulerian Circuit with suitable example.
5. Examine shortest path problems of BFS and BTS.
6. Simplify the planner graph with example.
7. Classify the non-planner graph with example.

8. Show that the graph is Hamiltonian.



9. Compare with Eulerian and Hamiltonian graph.

10. Simplify the representation of directed graph with your own graph.

DEPARTMENT OF COMPUTER TECHNOLOGY

18UCT2A2 - DISCRETE MATHEMATICS

K4 & K5 Level Questions

Unit – I

1. In a pollution study of 1500 Indian rivers, the following data were reported. 520 were polluted by sulphur compounds, 335 were polluted by phosphates, 425 were polluted by crude oil, 100 were polluted by crude oil and sulphur compounds, 180 were polluted by sulphur compounds and phosphates, 150 were polluted by both phosphates and crude oil and 28 were polluted by sulphur compounds, phosphates and crude oil.
 - i) How many of the rivers were polluted by at least one of the three impurities?
 - ii) How many rivers were not polluted by exactly one of the three impurities?
2. State and Prove Associative and Distributive law of sets.
3. State and Prove $(A - B) \cap (A \cap B) = \phi$ with example.
4. If $A = \{a, b, c, d, e\}$ $B = \{f, g, h, a\}$, $C = \{a, b, c, d, e, f, g\}$ then verify that
$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$$
5. Define set and explain its types with suitable example.

Unit – II

1. Draw a truth table for the following logical operations
 - i) Conjunction ii) Dis-Junction iii) Negation iv) NAND v) NOR vi) XOR
2. Explain about Converse, Inverse, Contra positive with examples.
3. Draw truth Table for followings
 - i) $P \vee \sim P$ ii) $(P \vee Q) \Rightarrow Q$ iii) $\sim p \Rightarrow \sim Q$ iv) $(P \Leftrightarrow Q) = (Q \Leftrightarrow \sim P)$
4. Examine the validity of the following arguments.

$$\begin{array}{l} \text{i) } PVQ \\ P \Rightarrow \sim Q \\ P \Rightarrow R \end{array}$$

.. R

5. Write the methods to find the validity of arguments with suitable examples.

Unit – III

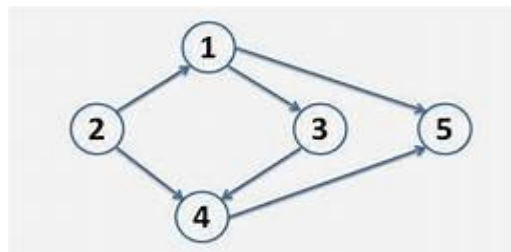
1. Describe about Relation and its types with example.
2. Write about functions and its types with suitable example.
3. Compare Partial order relation and Equivalence relation with proof.
4. Let $A = \{1,2,3,4\}$ $B = \{a,b,c\}$ $C = \{x,y,z\}$ and $f(X) = \{(1,a) (1,b) (3,c)\}$ and $g(y) = \{(a,x) (b,y) (b,z) (c,z)\}$ find composition of function gof.
5. Let $A = \{1,2,3\}$ $B = \{a,b,c,d\}$ $C = \{x,y,z,w\}$ and $f(X) = \{(1,a) (1,b) (3,c)(3,d)\}$ and $g(y) = \{(a,x) (b,x) (b,z) (d,w)\}$ find composition of relation R1OR2.

Unit – IV

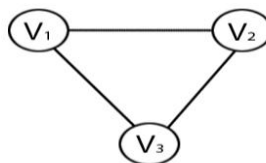
1. Explain about types of Graphs with suitable examples.
2. Explain about Isomorphic Graph with suitable graph.
3. Draw a Homeomorphism Graph with Necessary Steps.
4. Discuss about Basic terminology of a graph with suitable examples.
5. Write about i) Path ii) Cycle iii) Loop iv) Sub Graph v) Un weighted graph

Unit – V

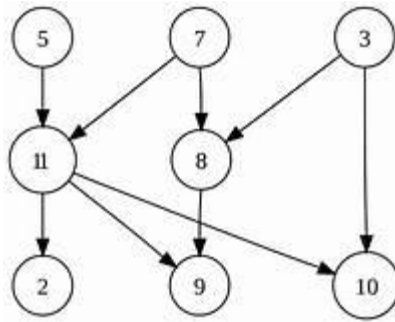
1. Find Adjacency matrix for the following directed graph.



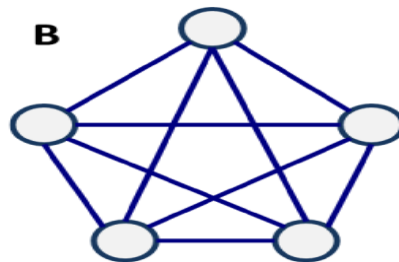
2. Find Adjacency matrix for the following un directed graph



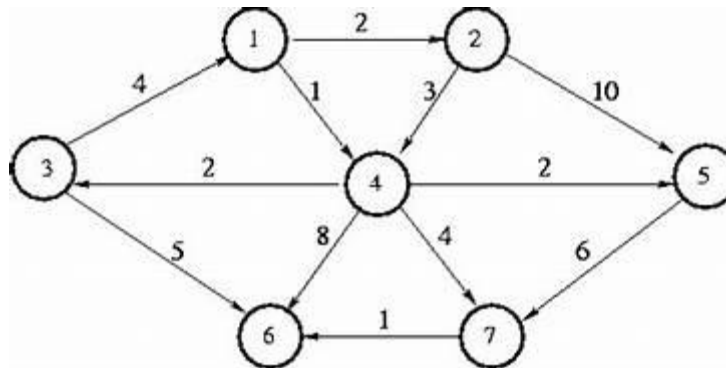
3. Find Adjacency and Incidence matrix for the following directed graph



4. Draw a planner graph for the following graph and vertex can be denoted as by own.



5. Find shortest path for the given graph.



DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT307 – JAVA PROGRAMMING

UNIT – I

1. Which of these values can a Boolean variable contain?

- a) **True & False** b) 0 & 1 c) Any integer value d) Both a & b

2. Which of the following function returns the smallest whole number greater than or equal to x?

- a) **ceil(x)** b) floor(x) c) round(x) d) abs(x)

3. API stands for

- a) Advance programming interface b) Applet programming interface
c) **Application programming interface** d) Application programming inheritance

4. Which is a valid keyword in java?

- a) **interface** b) string
c) Float d) unsigned

5. javah stands for_____

- a) java compiler b) java interpreter
c) java disassembler d) **java header file**

6. The package which contains the set of classes for implementing GUI is called?

- a) Java.applet c) **java.awt**
b) Java.io d) java.net

7. Java is a language.

- a) weakly typed b) **strongly typed**
c) moderate typed d) None of these

8. Java is designed for environment of the Internet.

- a) Development b) Deduction
c) **Distributed** d) Web Design

9. What is the order of variables in Enum?

- a) **Ascending order**
b) Descending order

- c) Random order
- d) depends on the order() method

10. What is the range of short data type in Java?

- a) -128 to 127
- b) -32768 to 32767**
- c) -2147483648 to 2147483647
- d) None of the mentioned

11. An expression involving byte, int, and literal numbers is promoted to which of these?

- a) int**
- b) long
- c) byte
- d) float

12. Which data type value is returned by all transcendental math functions?

- a) int
- b) float
- c) double**
- d) long

13. Which of the following can be operands of arithmetic operators?

- a) Numeric
- b) Boolean
- c) Characters
- d) Both Numeric & Characters**

14. Modulus operator, %, can be applied to which of these?

- a) Integers
- b) Floating – point numbers
- c) Both Integers and floating – point numbers**
- d) None of the mentioned

15. Decrement operator, --, decreases the value of variable by what number?

- a) 1**
- b) 2
- c) 3
- d) 4

16. Which of these is not a bitwise operator?

- a) & b) &= c) |= **d) <=**

17. Which operator is used to invert all the digits in a binary representation of a number?

- a) ~** b) <<< c) >>> d) ^

18. What is the output of relational operators?

- a) Integer

b) Boolean

- c) Characters

- d) Double

19. Which of these operators can skip evaluating right hand operand?

- a) ! b) | c) & **d) &&**

20. Which of these have highest precedence?

- a) ()** b) ++ c) * d) >>

21. Which of these selection statements test only for equality?

- a) if **b) switch** c) if & switch d) none of the mentioned

22. Which of these are selection statements in Java?

- a) if()** b) for() c) continue d) break

23. Which of the following loops will execute the body of loop even when condition controlling the loop is initially false?

a) do -while

- b) while

- c) for

- d) none of the mentioned

24. Which of these is long data type literal?

a) 0x99ffffL

- b) ABCDEFG

- c) 0x99fffa

- d) 99671246

25. Which of these can be returned by the operator &?

- a) Integer

- b) Boolean

- c) Character

d) Integer or Boolean

26. Literals in java must be appended by which of these?

a) L

b) l

c) D

d) L and I

27. Literal can be of which of these data types?

a) integer

b) float

c) boolean

d) all of the mentioned

28. Which of these cannot be used for a variable name in Java?

a) identifier

b) keyword

c) identifier & keyword

d) none of the mentioned

UNIT - II

1. ----- variables are used when we want to have a variable common to all instances of a class?

a) local

b) user-defined

c) static

d) integer

2. Which of these keywords is used to define packages in java?

a) pkg

b) Pkg

c) package

d) Package

3. ----- Class can be used to create a generic dynamic array that can hold objects of any type?

a) Final

b) String

c) String buffer

d) Vector

4. A class cannot be sub-classed is called as ----- class?

a) Public

b) final

c) Super

d) Sub class

5. Which of the following is a correct interface?

a) interface A { void print() { } }

b) abstract interface A { print(); }

c) abstract interface A { abstract void print(); { } }

d) interface A { void print(); }

6. Which of these keywords is used to define interfaces in Java?

a) interface

b) Interface

c) intf

d) Intf

7. Which of the following is not OOPS concept in Java?

a) Inheritance

b) Encapsulation

c) Polymorphism

d) Compilation

8. Which of the following is a type of polymorphism in Java?

a) Compile time polymorphism

b) Execution time polymorphism

c) Multiple polymorphism

d) Multilevel polymorphism

9. Which of these packages contain classes and interfaces used for input & output operations of a program?

a) java.util

b) java.lang

c) java.io

d) all of the mentioned

10. Which of these classes is not a member class of java.io package?

a) String

b) StringReader

c) Writer

d) File

11. Which of these interface is not a member of java.io package?

a) DataInput

b) ObjectInput

c) ObjectFilter

d) FileFilter

12. What is the return type of a method that does not return any value?

a) int

b) float

c) void

d) double

13. What is the process of defining more than one method in a class differentiated by method signature?

a) Function overriding

b) Function overloading

c) Function doubling

d) None of the mentioned

14. When does method overloading is determined?

a) At run time

b) At compile time

c) At coding time

d) At execution time

15. Which of the following is a method having same name as that of it's class?

a) finalize

b) delete

c) class

d) constructor

16. Which method can be defined only once in a program?

a) main method

b) finalize method

c) static method

d) private method

17. Which of this keyword must be used to inherit a class?

a) super

b) this

c) extent

d) extends

18. A class member declared protected becomes a member of subclass of which type?

a) public member

b) private member

c) protected member

d) static member

19. Which of these class is superclass of every class in Java?

a) String class

b) Object class

c) Abstract class

d) ArrayList class

20. Which of these method of Object class is used to obtain class of an object at run time?

a) get()

b) void getClass()

c) Class getClass()

d) None of the mentioned

21. Which of these keywords can be used to prevent inheritance of a class?

a) super

b) constant

c) class

d) final

22. Which of these classes encapsulate runtime state of an object?

a) Class

b) System

c) Runtime

d) Cache

23. What is not type of inheritance?

a) Single inheritance

b) Double inheritance

c) Hierarchical inheritance

d) Multiple inheritance

24. Using which of the following, multiple inheritance in Java can be implemented?

a) Interfaces

b) Multithreading

c) Protected methods

d) Private methods

25. All classes in Java are inherited from which class?

- a) java.lang.class
- b) java.class.inherited
- c) java.class.object

d) java.lang.Object

26. In order to restrict a variable of a class from inheriting to subclass, how variable should be declared?

a) Protected

b) Private

c) Public

d) Static

UNIT - III

1. Exception generated in try block is caught in..... block.

- a) **catch** b) throw c) throws d) finally

2. Which exception is thrown when divide by zero statement executes?

- a) NumberFormatException b) **ArithmeticException**
c) NullPointerException d) None of these

3. What is the name of the method used to start a thread execution?

- a) init(); **b) start();** c) run(); d) resume();

4. Which of these keywords is not a part of exception handling?

- a) try b) finally **c) throw** d) catch

5. Which of the following keywords is used for throwing exception manually?

- a) finally b) try **c) throw** d) catch

6. Which part of code gets executed whether exception is caught or not?

- a) finally** b) try c) catch d) throw

7. Which of the following will directly stop the execution of a Thread?

- a) wait()** b) notify() c) notifyall() d) exits synchronized code

8. What is multithreaded programming?

a) It's a process in which two different processes run simultaneously

b) It's a process in which two or more parts of same process run simultaneously

c) It's a process in which many different process are able to access same information

d) It's a process in which a single process can access information from many sources

9. Which of these are types of multitasking?

a) Process based

b) Thread based

c) Process and Thread based

d) None of the mentioned

10. Thread priority in Java is?

a) Integer

b) Float

c) double

d) long

11. What will happen if two thread of the same priority are called to be processed simultaneously?

a) Anyone will be executed first lexographically

b) Both of them will be executed simultaneously

c) None of them will be executed

d) It is dependent on the operating system

12. Which of these statements is incorrect?

a) By multithreading CPU idle time is minimized, and we can take maximum use of it

b) By multitasking CPU idle time is minimized, and we can take maximum use of it

c) Two thread in Java can have the same priority

d) A thread can exist only in two states, running and blocked

13. Which of these are types of multitasking?

a) Process based

b) Thread based

c) Process and Thread based

d) None of the mentioned

14. What is true about threads?
- a) Threads consumes CPU in best possible manner
 - b) Threads enables multi processing.
 - c) Multi threading reduces idle time of CPU
 - d) All**
15. A thread can acquire a lock by using which reserved keyword?
- a) volatile
 - b) synchronized**
 - c) locked
 - d) none
16. How many threads can a process contain?
- a) 1
 - b) 2
 - c) Multiple**
 - d) None
17. What is sometimes also called a lightweight process?
- a) Thread**
 - b) Process
 - c) JVM
 - d) All
18. What are valid points about thread
- a) Thread are subdivision of Process.
 - b) One or more Threads runs in the context of process.
 - c) Threads can execute any part of process. And same part of process can be executed by multiple Threads.
 - d) All**
19. Which is thread safe?
- a) StringBuffer**
 - b) StringBuilder
 - c) All
 - d) None

20. How can we create Thread?
- a) By Extending Thread class
 - b) Implementing Runnable interface
 - c) By using Executor framework - which can internally form threads
 - d) All**
21. Which of these is not a Thread state?
- a) New
 - b) Runnable
 - c) sleep**
 - d) terminated
22. Multiple threads within same process may be allocated to separate
- a) Applications
 - b) Programs
 - c)Processors**
 - d)Processes
23. Multithreading refers to ability of an operating system to support multiple
- a) Executions**
 - b) Updations
 - c) Processing
 - d) Surfing
24. User threads are supported above kernel and managed without
- a) Kernel support**
 - b) Memory
 - c) Registers
 - d) Operating system
25. Synchronized instance methods acquire lock on?
- a) object**
 - b) class
 - c) All
 - d) None

26. What state does Thread enter in when it has been created and started?
- a. New
 - b. Runnable
 - c. **Running**
 - d. Waiting
27. Which method can be used to find whether Thread hasn't entered dead state?
- a) **isAlive()**
 - b) isRunning()
 - c) isNotDead
 - d) All

UNIT – IV

1. What invokes immediately after the start () method and also any time the applet needs to repaint itself in the browser?
- a) stop() b) init() **c) paint()** d) destroy()
2. What is used to run an Applet?
- a) An html file b) An AppletViewer tool (for testing purpose)
- c) Both A & B** d) None of the above
3. In java applet, we can display numerical values by first converting them into string and then using the method.
- a) paint () **b) drawString()**
- c) draw () d) convert()
4. What does AWT stands for?
- a) All Window Tools b) All Writing Tools
- c) Abstract Window Toolkit** d) Abstract Writing Toolkit
5. Which of these methods can be used to output a string in an applet?
- a) display() b) print() **c) drawString()** d) transient()
6. Which of these functions is called to display the output of an applet?
- a) display() **b) paint()** c) displayApplet() d) PrintApplet()

7. When the method of the Applet class is called, it displays the result of the Applet code on the screen.

a) paint()

b) repaint()

c) update()

d) reupdate()

8. Before we try to write applets, we must make sure that Java is installed properly and also ensure that either the java is installed properly and also ensure that either the java or a java-enabled browser is available.

a) viewer()

b) appletviewer()

c) appletrunner()

d) browserviewer()

9. Arrange the steps involved in developing and testing the applet in correct order.

i) creating an executable applet (.classfile)

ii) preparing <APPLET> tag

iii) creating HTML file

iv) building an applet code (.java file)

v) testing the applet code

a) 1-i, 2-ii, 3-iii, 4-iv, 5-v

b) 1-ii, 2-iii, 3-iv, 4-v, 5-i

c) 1-iv, 2-i, 3-ii, 4-iii, 5-v

d) 1-iii, 2-iv, 3-v, 4-i, 5-ii

10. State whether the following statements about the Applets are True or False.

i) Applets can communicate with other services on the network.

ii) Applets cannot run any program from the local computer.

a) True, False

b) False, True

c) True, True

d) False, False

11. Applet class is a subclass of the panel class, which is again a subclass of the class.

- a) object
- b) component
- c) awt

d) container

12. The method called the first time an applet is loaded into the memory of a computer.

- a) init()**
- b) start()
- c) stop()
- d) destroy()

13. The method is called every time the applet receives focus as a result of scrolling in the active window.

- a) init()
- b) start()**
- c) stop()
- d) destroy()

14. Which of the following applet tags is legal to embed an applet class named Test into a webpage?

a) `<applet class=Test width=200 height=100>`
`</applet>`

b) `<applet>`
`code=Test.class width=200 height=100>`
`</applet>`

c) `<applet`
`code=Test.class width=200 height=100>`
`</applet>`

d) `<applet`
`param=Test.class width=200 height=100>`
`</applet>`

15. If you want to assign a value of 88 to the variable year, then which of the following lines can be used within an <applet> tag.

a) number = getParameter(88)

b) <number=99>

c) <param = radius value=88>

d) <param name=number value=88>

16. The class is an abstract class that represents the display area of the applet.

a) display

b) graphics

c) text

d) area

17. The graphics class provides methods to draw a number of graphical figure including

i) Text ii) Lines iii) Images iv) Ellipse

a) i, ii and iii only

b) ii, iii and iv only

c) i, iii and iv only

d) All i, ii, iii and iv

18. The method is called to clear the screen and calls the paint() method.

a) update()

b) paint()

c) repaint()

d) re-update()

19. The method is automatically called the first time the applet is displayed on the screen and every time the applet receives focus.

a)update()

c)paint()

C)repaint()

D) reupdate()

20. The method is defined by the AWT which causes the AWT runtime system to execute a call to your applet's update() method.

a)update()

b) paint()

c) repaint()

d) reupdate()

21. Text field can be created by which of the following methods.

i) TextField()

ii) TextFieldString()

iii) TextField(int)

iv) TextField(string, int)

a) i, ii and iii only

b) ii, iii and iv only

c) i, ii and iv only

d) All i, ii, iii and iv

22. In java applet, we can display numerical values by first converting them into string and then using the method.

A) paint()

B) drawstring()

C) draw()

D) convert()

23. We can change the text to be displayed by an applet by supplying new text to be displayed by an applet by supplying new text to the applet through a tag.

A) <EDIT>

B) <CHANGE>

C) <REPLACE>

D) <PARAM>

24. Which of the following is/are the possible values for alignment attribute of Applet tag.

i) Top

ii) Left

iii) Middle

iv) Baseline

A) i, ii and iii only

B) ii, iii and iv only

C) i, iii and iv only

D) All i, ii, iii and iv

25. The attribute of applet tag specifies the amount of horizontal blank space the browser should leave surrounding the applet.

a) SPACE=pixels

b) HSPACE=piexls

- c) HWIDTH=piexls
- d) HBLANK=pixels

26. attribute of applet tag specify the width of the space on the HTML page that will reserved for the applet.

- a) WIDTH=pixels**
- b) HSPACE=piexls
- c) HWIDTH=piexls
- d) HBLANK=pixel

UNIT – V

1. Which of these exceptions is thrown in cases when the file specified for writing it not found?
 - a) IOException
 - b) FileNotFoundException
 - c) FileNotFoundException**
 - d) FileInputException
2. Which of these classes can return more than one character to be returned to input stream?
 - a) BufferedReader
 - b) Bufferedwriter
 - c) PushbackReader**
 - d) CharArrayReader
3. Which of these methods are used to read in from file?
 - a) get()
 - b) read()**
 - c) scan()
 - d) readFileInput()
4. Which of these values is returned by read() method is end of file (EOF) is encountered?
 - a) 0
 - b) 1
 - c) -1**
 - d) Null
5. Which of these exception is thrown by close() and read() methods?
 - a) IOException**
 - b) FileNotFoundException
 - c) FileInputOutputException
 - d) FileInputException
6. Which of these methods is used to write() into a file?
 - a) put()
 - b) putFile()
 - c) write()**
 - d) writeFile()
7. Which of these class contains the methods used to write in a file?
 - a) FileStream
 - b) FileInputStream**
 - c) BufferedOutputStream
 - d) FileBufferStream
8. Which of these stream contains the classes which can work on character stream?
 - a) InputStream
 - b) OutputStream
 - c) Character Stream**
 - d) All of the mentioned
9. Which of these class is used to read characters in a file?
 - a) FileReader**
 - b) FileWriter
 - c) FileInputStream
 - d) InputStreamReader

10. Which of these method of FileReader class is used to read characters from a file?

- a) **read()** b) scanf() c) get() d) getInteger()

11. The package contains a large number of stream classes that provide capabilities for processing all types of data.

a) java.awt

b) java.io

c) java.util

d) java.net

12. State whether the following statements about the stream in Java.

i) The two basic streams used are the input and the output streams.

ii) Filters are used to read data from one stream and write it to another stream.

a) True, True

b) True, False

c) False, True

d) False, False

13. The InputStream class defines methods for performing input functions such as

i) reading bytes

ii) closing streams

iii) skipping ahead in a stream

iv) flushing streams

a) ii, iii and iv only

b) i, ii and iii only

c) i, iii and iv only

d) All i, ii, iii and iv

14. The OutputStreams includes methods that are designed to perform the following tasks.

i) closing streams

ii) flushing streams

iii) reading bytes

iv) writing bytes

a) ii, iii and iv only

b) i, ii and iii only

c) i, ii and iv only

d) All i, ii, iii and iv

15. Which of the following method(s) not included in InputStream class.

a) available()

b) reset()

c) flush()

d) close()

16. The method, force writes whenever the data accumulates in the output stream.

a) write()

b) skip()

c) close()

d) flush()

17. The class DataInputStream extends and implements the interface DataInput.

a) FileInputStream

b) SequenceInputStream

c) FilterInputStream

d) InputStream

18. The method, force writes whenever the data accumulates in the output stream.

a) write()

b) flush()

c) read()

d) reset()

19. The DataInputStream and DataOutputStream classes are streams that allow the reading and writing of java primitive data types.

a) file

b) sequence

c) object

d) filter

20. The class provides the capacity to read primitive data types from an input stream.

a) pushbackInputStream

b) DataInputStream

c) BufferedInputStream

d) PipeInputStream

21. Which of the following is/are the methods of the DataOutputStream class.

i) void writeChar(intV)

ii) void writeLong(longV)

iii) void writeInt(intV)

iv) int size()

a) ii, iii and iv only

b) i, ii and iii only

c) i, ii and iv only

d) All i, ii, iii and iv

22. DataInput is

a) an abstract class defined in java.io

b) a class we can use to read primitive data types

c) an interface that defines methods to open files

d) an interface that defines methods to read primitives data types

23. Which exception is thrown by the read() method of InputStream class.

a) Exception

b) IOException

c) ReadException

d) File Not Found Exception

24. The method of the BufferedReader class is used for reading lines of text from the console, the file or other input streams.

a) read()

b) read(byte[]b)

c) readLine()

d) readByte()

25. class is used to increase the efficiency of input operations.

a) DataInputStream

b) FileInputStream

c) BufferedInputStream

d) PipeInputStream

26. State whether the following statements about DataInputStream class are True.

i) readBoolean() reads one byte and returns true if that byte is nonzero, false if it is zero.

ii) readByte() reads a byte as an 8-bit signed value.

iii) readChar() reads a unicode character.

a) True, False, True

b) False, True, False

c) True, False, False

d) True, True, True

27. The class implements the DataInput and DataOutput interfaces for performing I/O using the primitive data types.

a) RandomAccessFile

b) OutputStream Reader

c) InputStreamReader

d) DataOutputStream

28. The class is a subclass of object class which can be used for breaking up a stream of text from an input text file into meaningful pieces.

a) Stream Tokenizer

b) RandomAccessFile

c) InputStreamReader

d) DataOutputStream

29. Combining two or more input streams into a single input stream can be achieved using the class.

a) SequenceOutputStream

b) BufferedInputStream

c) BufferedOutputStream

D) SequenceInputStream

30. streams provide functionality for threads to communicate and exchange data between them.

a) Object

b) Piped

c) Pushback

d) Filtered

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT307 – JAVA PROGRAMMING

UNIT – I

1. What is the use of constants?

Constants are basically variables whose value can't change. In C/C++, the keyword `const` is used to declare these constant variables. In Java, you use the keyword `final`. For example:

```
public static final int RED = 5;
public void someMethod()
{ setColor( RED ); }
```

2. Write the syntax for variable declaration.

Declare all variables before they can be used. Following is the basic form of a variable declaration –

```
data type variable [ = value ][, variable [ = value ] ...] ;
```

3. What are the different data types used in java?

There are two data types available in Java –

Primitive Data Types: `byte, short, int, long, float, double, char, Boolean`.

Reference/Object Data Types: `class` and `objects`.

4. Write about relational operators.

a relational operator is a programming language constructor operator that tests or defines some kind of relation between two entities.

```
==, !=, <, >, <=, >=
```

5. How is if() condition used in java? Give an example.

An if statement consists of a boolean expression followed by one or more statements.

```
if (condition) {
    // block of code to be executed if the condition is true
}
```

6. What is syntax for switch case?

Use the switch statement to select one of many code blocks to be executed.

Syntax

```
switch(expression) {  
    case x:  
        // code block  
        break;  
    case y:  
        // code block  
        break;  
    default:  
        // code block  
}
```

7. What is the use of decrement operator?

the previous value is obtained for the use in expression, and then the operand is modified.

Ex:-d = a--

8. How was literals used?

Any constant value which can be assigned to the variable is called as literal/constant.

Ex:- Here 100 is a constant/literal.

```
int x = 100;
```

9. What are the different types of conditional statements?

the if-else statement, to choose between two alternatives;

the switch statement, to choose between multiple alternatives.

10. Write any two features of java.

Any two(Simple,Object-Oriented,Portable,Platform

Independent,Secured,Robust,Architecture Neutral,Dynamic,High Performance,Multi-Threaded,Distributed)

11. What are the two types of Java programs?

Application program.

Applet programming.

12. What are the uses of final keyword?

final keyword in **java**. final keyword is used in different contexts. First of all, final is a **non-**access modifier applicable only to a variable, a method or a class. Following are different contexts where final is used. When a variable is declared with final keyword, its value can't be modified, essentially, a constant.

13. What is an infinite loop?

An **infinite loop** is an instruction sequence that **loops** endlessly when a terminating condition isn't met. Creating an **infinite loop** might be a programming error, but may also be intentional based on the application **behavior**.

14. What is type casting?

Assigning a value of one **type** to a variable of another **type** is known as **Type Casting**.

Example : `int x = 10; byte y = (byte)x;` In **Java**, **type casting** is classified into two **types**, Widening **Casting**(Implicit)

UNIT - II

1. How is objects are used in java?

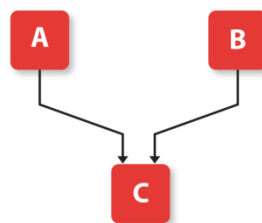
Answer: A Java program can have as many objects as it requires, objects in Java interact through methods. Java objects correspond to real life entities.

2. Write the syntax for array decalaration.

Answer: `var-name = new type [size];`

3. Explain multiple inheritance.

Answer: In Java, multiple inheritances are only possible with 'interfaces', this allows a base class to have more than one superclass.



Multiple Inheritance

4. Explain about importing packages.

Answer: Java has import statement that allows you to import an entire package (as in earlier examples), or use only certain classes and interfaces defined in the package.

The general form of import statement is:

```
import package.name.ClassName; // To import a certain class only
```

```
import package.name.* // To import the whole package
```

For example,

```
import java.util.Date; // imports only Date class
```

```
import java.io.*; // imports everything inside java.io package
```

5. What is the use of inheritance?

Answer: Inheritance in Java, allows us to carry the features of the parent class to the subclasses. This feature saves a lot of time and also data redundancy, as a writer of the codes gets reduced.

Some of the important terms used in Inheritance are –

Super Class – A superclass in Java is the class from which the features are inherited.

Sub Class – A subclass in Java is the class which inherits the features of the superclass.

I can have its own features and methods as well.

Reusability – The concept of reusability is supported by inheritance, the codes can be reused by the subclasses.

6. What are the types of arrays?

Answer: One-dimensional array, Two-dimensional array and multi-dimensional array.

7. Explain method overloading.

Answer: Method Overloading is a feature that allows a class to have more than one method having the same name, if their argument lists are different. It is similar to constructor overloading in Java, that allows a class to have more than one constructor having different argument lists. example: This is a valid case of overloading is: add(int, int), add(int, int, int)

8. How a class can be extended?

Answer: extends means that you are creating a subclass of the base class you are extending. You can only extend one class in your child class, but you can implement as many interfaces as you would like.

9. Define string.

Answer: strings in Java are a collection of Java characters and they are immutable, i.e. they cannot be changed once created.

There are two ways to create a Java string.

a. Using a string literal in Java

```
String s = "DataFlair";
```

b. Using a new Java keyword

```
String s = new String ("DataFlair");
```

10. How to pass arguments in java?

Answer: The two most common mechanisms in modern programming languages are "Pass-by-Value" and "Pass-by-Reference".

Pass-by-Value

When a parameter is pass-by-value, the caller and the called method operate on two different variables which are copies of each other. Any changes to one variable don't modify the other.

Pass-by-Reference

When a parameter is pass-by-reference, the caller and the callee operate on the same object. It means that when a variable is pass-by-reference, the unique identifier of the object is sent to the method.

11. How does String class differ from the StringBuffer class?

In **Java** programming language, **strings** are treated as objects. The **Java** platform provides the **String** class to create and manipulate **strings**. Whereas, **StringBuffer** class is a thread-safe, mutable sequence of characters. A **string buffer** is like a **String**, but **can** be modified.

12. Define Method Overriding.

Java – Overriding-The benefit of **overriding** is: ability to **define** a behavior that's specific to the subclass type, which means a subclass can implement a parent class **method** based on its requirement. In object-oriented terms, **overriding** means to **override** the functionality of an existing **method**.

13. In which package does Vector class defined?

java.util.Vector

14. What are the similarities between interfaces and classes?

An **interface** contains the only signature of members. A **class** can only be inherited from a single **class** but can be inherited from more than one **interfaces**. **Interfaces** are always implemented whereas **classes** are extended. **Classes** represent the “real object” and do all the work

15. Can a class implement more than one interfaces?

A Java **class** can only **extend one** parent **class**. **Multiple** inheritance (extends) is not allowed. **Interfaces** are not **classes**, however, and a **class can implement more than one interface**. The parent **interfaces** are declared in a comma-separated list, after the **implements** keyword.

16. Why do we need the import statement?

The **import statement** in Java allows to refer to classes which are declared in other packages to be accessed without referring to the full package name. You **do not need any import statement** if you are willing to always refer to java.util.List by its full name, and so on for all other classes.

17. What is the use of Vector class in Java?

Class java.util.Vector. The **Vector class** implements a growable array of objects. Like an array, it contains components that can be accessed using an integer index. However, the size of a **Vector** can grow or shrink as needed to accommodate adding and removing items after the **Vector** has been created.

18. What is a package?

Package in Java is a mechanism to encapsulate a group of classes, sub packages and interfaces.

UNIT - III

1. What is the difference between Process and Thread?

A process is a self contained execution environment and it can be seen as a program or application whereas Thread is a single task of execution within the process. Java runtime environment runs as a single process which contains different classes and programs as processes. Thread can be called lightweight process. Thread requires less resources to create and exists in the process, thread shares the process resources.

2. What are the benefits of multi-threaded programming?

In Multi-Threaded programming, multiple threads are executing concurrently that improves the performance because CPU is not idle incase some thread is waiting to get some resources. Multiple threads share the heap memory, so it's good to create multiple threads to execute some task rather than creating multiple processes. For example, Servlets are better in performance than CGI because Servlet support multi-threading but CGI doesn't.

3. What is difference between user Thread and daemon Thread?

When we create a Thread in java program, it's known as user thread. A daemon thread runs in background and doesn't prevent JVM from terminating. When there are no user threads running, JVM shutdown the program and quits. A child thread created from daemon thread is also a daemon thread.

4. How can we create a Thread in Java?

There are two ways to create Thread in Java – first by implementing Runnable interface and then creating a Thread object from it and second is to extend the Thread Class. Read this post to learn more about [creating threads in java](#).

5. What are different states in lifecycle of Thread?

When we create a Thread in java program, its state is New. Then we start the thread that change it's state to Runnable. Thread Scheduler is responsible to allocate CPU to threads in Runnable thread pool and change their state to Running. Other Thread states are Waiting, Blocked and Dead. Read this post to learn more about [life cycle of thread](#).

6. Can we call run() method of a Thread class?

Yes, we can call run() method of a Thread class but then it will behave like a normal method. To actually execute it in a Thread, we need to start it using **Thread.start()** method.

7. How can we pause the execution of a Thread for specific time?

We can use Thread class sleep() method to pause the execution of Thread for certain time. Note that this will not stop the processing of thread for specific time, once the thread awake from sleep, it's state gets changed to runnable and based on thread scheduling, it gets executed.

8. What do you understand about Thread Priority?

Every thread has a priority, usually higher priority thread gets precedence in execution but it depends on Thread Scheduler implementation that is OS dependent. We can specify the priority of thread but it doesn't guarantee that higher priority thread will get executed before lower priority thread. Thread priority is an *int* whose value varies from 1 to 10 where 1 is the lowest priority thread and 10 is the highest priority thread.

9. What is context-switching in multi-threading?

Context Switching is the process of storing and restoring of CPU state so that Thread execution can be resumed from the same point at a later point of time. Context Switching is the essential feature for multitasking operating system and support for multi-threaded environment.

10. How can we make sure main() is the last thread to finish in Java Program?

We can use Thread join() method to make sure all the threads created by the program is dead before finishing the main function. Here is an article about [Thread join method](#).

11. What is volatile keyword in Java

When we use volatile keyword with a variable, all the threads read it's value directly from the memory and don't cache it. This makes sure that the value read is the same as in the memory.

12. List some of the most common types of exceptions that might occur in Java.

- Arithmetic Exception
- ArrayIndexOutOfBoundsException
- ClassNotFoundException
- FileNotFoundException
- IOException
- InterruptedException
- NoSuchFieldException

- NoSuchMethodException

13. What are the two ways to create threads in Java?

There are **two ways** to specify what code the **thread** should execute. The first is to **create** a subclass of **Thread** and override the **run() method**. The **second method** is to pass an object that implements **Runnable** (**java.lang.Runnable** to the **Thread** constructor.

14. Which keyword is used to explicitly throw an exception?

throw keyword is used to **throw an exception explicitly**. **throws keyword** is used to declare an **exception** possible during its execution. **throw keyword** is followed by an instance of **Throwable** class or one of its sub-classes.

15. What is a finally block?

Java **finally block** is a **block** that is used to execute important code such as closing connection, stream etc. Java **finally block** is always executed whether exception is handled or not. Java **finally block** follows try or catch **block**.

16. What Java interface must be implemented by all threads?

java.lang.Runnable is an interface that is to be implemented by a class whose instances are intended to be executed by a thread. There are two ways to start a new Thread –
Subclass Thread and implement **Runnable** .

17. Mention the two broad categories of errors.

In the Essential Tools Module model, **errors** are divided into **two broad categories**: internal and external Internal **errors**, which are further classified as either recoverable or non-recoverable, are due to **errors** in the internal logic of the program.

UNIT - IV

1. **What is an applet?**

Applet is a Java program with special syntax to execute in a browser. Applet does not contain main() method.

2. **What is the importance of applets in Java coding?**

Applets can be loaded on client-side so that they can communicate with server (most probably with a servlet).

3. **What is life cycle?**

Different states in which an applet exist between its object creation, by the browser, and garbage collection is known as life cycle.

4. **What are life cycle methods of applet?**

There are 5 life cycle methods and an applet exists in one of these methods during its life cycle. They are **init()**, **start()**, **stop()** and **destroy()** all defined in **java.applet.Applet** and **paint()** method defined in **java.awt.Component**, an indirect super class of Applet.

5. **What is the tag used to embed an applet in HTML file?**

It is <applet> tag.

6. **What is AppletContext class?**

It is used to get the reference of the execution area of an applet in the browser. Programmer can use the object of AppletContext to communicate between two servlets.

7. **How many ways exist to display messages to the user in applets?**

There exists two ways using **drawString()** method of **java.awt.Graphics** class and **showStatus()** method of **java.applet.Applet**.

8. **Which method is called only once during the run time of your applet?**

init()

9. **When an applet is terminated which of the sequence of methods calls take place?**

stop(),destroy()

10. Which method is used to suspend threads that don't need to run when the applet is not visible?

stop()

11. What is the purpose of drawOval method?

drawOval() The method drawOval() is one of the methods of a Graphics object. This draws a circle or an oval that fits within the rectangle specified by the X, Y, width and height arguments. The oval is drawn inside a rectangle whose **upper** left hand corner is at (X, Y), and whose width and height are as specified.

12. Which method is used to draw a rectangle in the applet?

Java comes with two methods to draw right-angled **rectangles**. void drawRect(int x, int y, int width, int height): Draws an outline **rectangle** with the left-top coordinates of x and y and with the width and height specified.

UNIT - V

1.What is an I/O filter?

An I/O filter is an object that reads from one stream and writes to another, usually altering the data in some way as it is passed from one stream to another.

2.What is the purpose of the File class?

The File class is used to create objects that provide access to the files and directories of a local file system.

3.What interface must an object implement before it can be written to a stream as an object?

An object must implement the Serializable or Externalizable interface before it can be written to a stream as an object.

4.What is the difference between the File and RandomAccessFile classes?

The File class encapsulates the files and directories of the local file system. The RandomAccessFile class provides the methods needed to directly access data contained in any part of a file.

5.What class allows you to read objects directly from a stream?

The ObjectInputStream class supports the reading of objects from input streams.

6. What value does read() return when it has reached the end of a file?

The read() method returns - 1 when it has reached the end of a file.

7. What value does readLine() return when it has reached the end of a file?

The readLine() method returns null when it has reached the end of a file.

8. What is meant by StreamTokenizer?

StreamTokenizer breaks up InputStream into tokens that are delimited by sets of characters. It has the constructor :StreamTokenizer(Reader inStream). Here inStream must be some form of Reader.

9. What is Serialization and deserialization?

Serialization is the process of writing the state of an object to a byte stream. Deserialization is the process of restoring these objects.

10. What does AWT stands for?

AWT stands for Abstract Window Toolkit, it is used by applets to interact with the user.

11.Which method of FileReader class is used to read characters from a file?

Java FileReader class is used to read data from the file. It returns data in byte format like FileInputStream class. It is character-oriented class which is used for file handling in java.

12. What is the use of FileInputStream Class?

Java FileInputStream class **obtains** input bytes from a file. It is used for **reading** byte-oriented data (streams of raw bytes) such as image data, audio, video etc. You can also **read** character-stream data. But, for **reading** streams of characters, it is recommended to use FileReader class.

13. What are the two types of Java Streams?

There are **two** basic **types of stream** defined by **Java**, called byte **stream** and character **stream**.

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT307 – Java Programming

K3 Level Questions

UNIT – I

1. List at least five major differences between C++ and Java.
2. Briefly explain the Java program structure with a suitable example.
3. Using command line arguments, write a java program.
4. Write a program to display the grade of a student by using else...if ladder.
5. Using command line arguments, write a program to find maximum and minimum of 'n' given numbers.
6. Write a program to determine the sum of the following harmonic series for a given value of n:
$$1 + 1/2 + 1/3 + \dots + 1/n$$
7. List a few areas of application of OOP technology.
8. Write a program for method overriding in java.
9. Write a program for method overloading in java..
10. Explain briefly about the evolution of Java language.

UNIT – II

1. Explain about user defined packages with an example.
2. Give a brief discussion on string manipulation in java.
3. Write a java program, by implementing Runnable interface.
4. Explain about Vectors with an example program.
5. Discuss about an interface. Develop a standalone Java program to illustrate the same.

- 6.Explain interface in java with example.
7. Discuss the various levels of access protection available for packages and their implications.
8. Write about defining a class and adding methods in Java with an example.
- 9.What is constructor? Explain the different types of constructor?.
10. What are objects? How are they created from class?

UNIT - III

1. Write a java program, by extending Thread class.
2. Write a short note on throwing our own exceptions.
3. Explain how exception handling mechanism in Java.
4. What is a finally block? When and how is it used? Give a suitable example.
- 5.Give the difference between multithreading and multitasking.
6. Give the difference between multithreading and multitasking.
7. Discuss the different levels of access protection available in Java.
8. Discuss briefly on stopping and blocking threads.
9. What are the thread class methods? Explain it.
10. Explain the Synchronization of thread with an example program.

UNIT – IV

- 1.Briefly explain how an applet program works.
- 2.How do Applets differ from Applications?
- 3.Write the steps for converting Java application to the applets? Explain with example.
- 4.Describe the different ways of running Applet.
- 5.Explain about various AWT classes used in Java.
- 6.Explain the concept of passing parameter from HTML to Applet with example program.
- 7.Illustrate the concept of getting input from user with example program.
- 8.Write a note on Mouse Event Handling with example.
- 9.Explain Graphics class. Give example implementing any 4 methods of Graphics class.
- 10.List the necessary methods for drawing a Line and Rectangle.

UNIT – V

1. Elaborate on Byte Stream classes.
2. Write a java program to copy from one file to another file using command line arguments.
3. Elucidate on character stream classes.
4. Explain the Byte Stream Classes with the block diagram for its hierarchy of Input and Output stream classes.
5. Describe the functions of a Fileclass with a program.
6. Explain the Character Stream Classes with the block diagram for its hierarchy of reader and writer stream classes.
7. Explain about Input Stream classes.
8. Write about creation of files with example.
9. Explain about I/O Exception.
10. Write short notes on File stream used for I/O.

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT307 – Java Programming

K4 & K5 Level Questions

UNIT – I

1. Discuss the salient features of java.
2. Write a Java program to print the largest of given three numbers.
3. Write a detailed note on Decision making and branching.
4. Using Bubble sort algorithm, write a program to sort the given numbers.
5. Write a java program using a do...while loop to calculate and print the first m Fibonacci numbers.
6. Discuss briefly on data types in Java with examples.
7. Explain branching and looping statements in Java with suitable example.
8. Explain the different types of operators in Java?

UNIT – II

1. Discuss the various forms of implementing interfaces. Give examples of java code for any one case.
2. Compare and contrast method overloading and method overriding with an example.
3. Write a java program to demonstrate hierarchical inheritance.
4. Explain different forms of inheritance in Java with examples.
5. Write a program to demonstrate multilevel Inheritance.
6. Write a short note on Vector class.
7. Discuss about an interface. Develop a standalone Java program to illustrate the same.
8. What are objects? How are they created from a class explain with a program?
9. Explain in detail about how to create an user defined package.

UNIT – III

1. Explain in detail the life cycle of a thread with a neat diagram.
2. Discuss about the user defined exception by using keyword throw and throws.
3. Write a java program for creating multithreads by extending Thread class.
4. Using Heapsort algorithm, write a java program to sort the given numbers.
5. How to create and run Thread? Explain with example.
6. Write a Java program to illustrate how to implement the Runnable interface.
7. What is an exception? Discuss on the types of exceptions.
8. Explain the concept of Exception handling mechanism in detail.

UNIT – IV

1. With a neat diagram, explain the applet life cycle.
2. Discuss the various drawing methods of the Graphics class.
3. Discuss about applet tag and HTML tags.
4. Develop an applet that receives three numeric values as input from the user and then displays the largest of the three on the screen. Write a HTML page and test the applet.
5. Discuss the different types of event handling in Java.
6. Briefly explain about the adapter classes in Java.
7. Explain the various Event Listener interfaces with examples.
8. Write Applet program for a) Drawing polygons b) Drawing a line graph

UNIT – V

1. Write a brief note on File class and explain its methods with a program.
2. Give an account on handling primitive data types.
3. Write a program that will count the number of lines and characters in a given file.
4. Write a program to copy characters from one file to another File.
5. Explain about random access files in Java with example.
6. Explain about Reader and Writer classes.
7. Describe the usage of ByteStream classes with examples.

DEPARTMENT OF COMPUTER TECHNOLOGY

17UCT413 - RELATIONAL DATA BASE MANAGEMENT SYSTEM

Multiple Choice Questions

UNIT – I

1. Choose the correct statement regarding super keys

- a) A super key is an attribute or a group of multiple attributes that can uniquely identify a tuple
- b) A super key is a tuple or a set of multiple tuples that can uniquely identify an attribute
- c) Every super key is a candidate key
- d) A super key is an attribute or a set of attributes that distinguish the relation from other relations

Answer : a

2. What is an Instance of a Database?

- a) The logical design of the database system
- b) The entire set of attributes of the Database put together in a single relation
- c) The state of the database system at any given point of time
- d) The initial values inserted into the Database immediately after its creation

Answer : c

3. What is a foreign key?

- a) A foreign key is a primary key of a relation which is an attribute in another relation
- b) A foreign key is a super key of a relation which is an attribute in more than one other relations
- c) A foreign key is an attribute of a relation that is a primary key of another relation
- d) A foreign key is the primary key of a relation that does not occur anywhere else in the scheme

Answer : c

4. What action does $\bowtie$ operator perform in relational algebra

- a) Output specified attributes from all rows of the input relation and remove duplicate tuples from the output
- b) Outputs pairs of rows from the two input relations that have the same value on all attributes that have the same name
- c) Output all pairs of rows from the two input relations (regardless of whether or not they have the same values on common attributes
- d) Return rows of the input relation that satisfy the predicate

Answer : a

5. What does the “x” operator do in relational algebra?

- a) Output specified attributes from all rows of the input relation. Remove duplicate tuples from the output
- b) Output pairs of rows from the two input relations that have the same value on all attributes that have the same name
- c) Output all pairs of rows from the two input relations (regardless of whether or not they have the same values on common attributes)
- d) Returns the rows of the input relation that satisfy the predicate

Answer : c

6. An attribute is a _____ in a relation.

- a) Row
- b) Column
- c) Value
- d) Tuple

Answer : b

7. What is the method of specifying a primary key in a schema description?

- a) By writing it in bold letters
- b) By underlining it using a dashed line
- c) By writing it in capital letters
- d) By underlining it using a bold line

Answer : d

8. Statement 1: A tuple is a row in a relation

Statement 2: Existence of multiple foreign keys in a same relation is possible

- a) Both the statements are true
- b) Statement 1 is correct but Statement 2 is false
- c) Statement 1 is false but Statement 2 is correct
- d) Both the statements are false

Answer : a

9. Choose the option that correctly explains in words, the function of the following relational algebra expression

$\sigma_{\text{year} \geq 2009} (\text{book} \bowtie \text{borrow})$

- a) Selects all tuples from the Cartesian product of book and borrow

- b) Selects all the tuples from the natural join of book and borrow wherever the year is lesser than 2009
- c) Selects all the tuples from the natural join of book and student wherever the year is greater than or equal to 2009
- d) Selects all tuples from the Cartesian product of book and borrow wherever the year is greater than or equal to 2009

Answer : b

10. State true or false: If a relation consists of a foreign key, then it is called a referenced relation of the foreign key dependency.
- a) True
 - b) False

Answer : b

11. The _____ of the entity set is an actual collection of entities belonging to that entity set.
- a) Extension
 - b) Intention
 - c) Description
 - d) Availability

Answer : a

12. A _____ is an association among several entities.
- a) Relationship
 - b) Association
 - c) Set
 - d) Combination

Answer : a

13. The attributes of a relationship are called as _____ attributes
- a) Relational
 - b) Conjunctive
 - c) Descriptive
 - d) None of the mentioned

Answer : c

14. What are composite attributes?

- a) They are those attributes which cannot be further divided into other attributes
- b) They are those attributes which can further be divided into other attributes
- c) They are those attributes which are essentially the primary keys of the relation
- d) None of the mentioned

Answer : b

15. Let E be an entity set in a relationship set R. If every entity in E participates in at least one relationships in R, Then the participation of E in R is _____

- a) Partial
- b) Total
- c) Complete
- d) Incomplete

Answer : b

16. Let E be an entity set in a relationship set R. If only some entities in E participate in relationships in R, Then the participation of E in R is _____

- a) Partial
- b) Total
- c) Complete
- d) Incomplete

Answer : b

17. State true or false: We cannot specify keys in the Entity-Relationship model

- a) True
- b) False

Answer : b

18. State true or false: Multiple attributes combined together can be primary keys

- a) True
- b) False

Answer : a

19. Which of the following is a good database management practice?

- a) Adding redundant attributes
- b) Removing redundant attributes
- c) Not specifying primary keys
- d) None of the mentioned

Answer : b

20. In relationship the M:N represents_____.

- a) Many –to- Many
- b) One – to- Many
- c) Many –to- One
- d) Many –to – N

. Answer : a

UNIT – II

1. Which of the following information does an SQL DDL not specify?

- a) The schema for each relation
- b) The integrity constraints
- c) The operations on the tuples
- d) The security and authorization information for each relation

Answer : c

2. Which of the following data types does the SQL standard not support?

- a) char(n)
- b) String(n)
- c) varchar(n)
- d) float(n)

Answer : b

3. Which command is used to create a new relation in SQL

- a) create table(, ...)
- b) create relation(, ...)
- c) new table(, ...)
- d) new relation(, ...)

Answer : a

4. If a1, a2, a3 are attributes in a relation and S is another relation, which of the following is an incorrect specification of an integrity constraint?

- a) primary key(a1, a2, a3)
- b) primary key(a1)
- c) foreign key(a1, a2) references S
- d) foreign key(a1, a2)

Answer : d

5. What is the syntax to load data into the database? (Consider D as the database and a, b, c as data)

- a) enter into D (a, b, c);
- b) insert into D values (a, b, c);
- c) insert into D (a, b, c);
- d) insert (a, b, c) values into D;

Answer : b

6. Which of the following commands do we use to delete a relation (R) from a database?

- a) drop table R
- b) drop relation R
- c) delete table R
- d) delete from R

Answer : a

7. Which of the following commands do we use to delete all the tuples from a relation (R)?

- a) delete table R

- b) drop table R
- c) delete from R
- d) drop from R

Answer : c

8. Choose the correct command to delete an attribute A from a relation R

- a) alter table R delete A
- b) alter table R drop A
- c) alter table drop A from R
- d) delete A from R

Answer : b

9. create table apartment(ownerID varchar (5), ownername varchar(25), floor numeric(4,0), primary key (ownerID));

Choose the correct option regarding the above statement

- a) The statement is syntactically wrong
- b) It creates a relation with three attributes ownerID, ownername, floor in which floor cannot be null.
- c) It creates a relation with three attributes ownerID, ownername, floor in which ownerID cannot be null.
- d) It creates a relation with three attributes ownerID, ownername, floor in which ownername must consist of at least 25 characters.

Answer : c

10. What does the notnull integrity constraint do?

- a) It ensures that at least one tuple is present in the relation
- b) It ensures that at least one foreign key is present in the relation
- c) It ensures that all tuples have a finite value on a specified attribute
- d) It ensures that all tuples have finite attributes on all the relations

Answer : c

11. Which of the following is not a valid Date and Time data type?

- a) date

- b) time
- c) datestamp
- d) timestamp

Answer : d

12. What is a timestamp?

- a) A combination of date and time with date first
- b) A combination of date and time with time first
- c) A combination of time and place with time first
- d) A combination of time and place with place first

Answer : a

13. What does p indicate in the following data type?

time(p)

- a) The amount of delay that needs to be added to the time
- b) The number of fractional digits for the seconds
- c) The maximum number of allowed hours
- d) None of the mentioned

Answer : b

14. What is a default value?

- a) It is a value that automatically creates a primary key
- b) It is a value that cannot be altered during insertion of values in the tuple
- c) It is a value that is initially loaded into the attribute
- d) None of the mentioned

Answer : c

15. Which of the following is an illegal data type in SQL

- a) number
- b) clob
- c) blob
- d) lint

Answer : d

16. State true or false: Users can define new data types in SQL

- a) True
- b) False

Answer : a

17. What does the following statement do?

create table temp_inst like institute

- a) It creates a new relation temp_inst with all the tuples and attributes of the institute relation
- b) It creates a new relation temp_inst with the same schema as that of the institute relation
- c) It creates a new relation named temp_inst with institute as its only attribute
- d) It does not create any relations and returns an error

Answer : b

18. Which of the following is a privilege in SQL standard?

- a) select
- b) insert
- c) update
- d) All of the mentioned

Answer : d

19. The _____ statement is used in SQL to confer authorization.

- a) grant
- b) confer
- c) implement
- d) permit

Answer : a

20. revoke select on takes from amit;

What does the above query perform?

- a) It revokes all authorizations from amit

- b) It revokes select authorization from amit
- c) It revokes takes authorization from amit
- d) It gives an error

Answer : b

UNIT - III

1. What is a view?

- a) An brief description of the schema diagram.
- b) A relation that is not a part of the schema but is a virtual relation
- c) Any relation that is a part of the schema
- d) A relation that is a part of the schema but which needs to be specified in every operation made on that particular relation.

Answer : b

2. What is the command used to define view in SQL?

- a) define view
 - b) new view
 - c) create view
 - d) none of the mentioned
3. create view studentdet
select ID, address, name
from student;

Answer : c

3.What is the result of the above query?

- a) It creates a view named studentdet with 3 attributes
- b) It creates a view named studentdet with 1 attribute
- c) It creates a view named ID with 2 attributes
- d) It is syntactically wrong and does not give a result

Answer : d

4. State true or false: One view can be used in the expression defining another view

- a) True
- b) False

Answer : a

5. If the actual relations used in the view definition change, the view is updated immediately. Such views are called _____

- a) Instant views
- b) Instantaneous views
- c) Materialistic views
- d) Materialized views

Answer : d

6. The process of maintaining views up to date is called _____

- a) View maintenance
- b) View updating
- c) View materialization
- d) View isolation

Answer : a

7. How can we insert data into a view?

- a) insert into ();
- b) create data values ();
- c) enter ();
- d) insert into values ();

Answer : d

8. State true or false: We can update a view if it has multiple database relations in the from clause

- a) True
- b) False

Answer : b

9. The _____ statement makes the updates performed by the transaction permanent.

- a) Finalize work
- b) Finish work
- c) Commit work
- d) None of the mentioned

Answer : c

10. Which of the following is not an integrity constraint?

- a) not null

- b) unique
- c) identical
- d) check

Answer : c

11. What is the function of the not null constraint?

- a) It prevents illegal data from being entered into the database
- b) It ensures that data is entered into the database
- c) It ensures that the data entered is unique
- d) None of the mentioned

Answer : b

12. What is the function of the unique constraint?

- a) It ensures that no two values under an attribute are identical
- b) It ensures that all the attributes are perfectly unique in their data type
- c) It ensures that all the relations in the database have a unique set of attributes
- d) It does not have any function in SQL

Answer : a

13. What are the functions of on delete cascade?

- a) It is used to delete a tuple in a table
- b) It is used to specify the precise attribute that needs to be deleted in a single relation.
- c) It is used to preserve referential integrity in a relation
- d) It is used to execute sub-queries in the from clause.

Answer : c

14. What does the following condition do?

check(name in('Ryan', 'Cristiano', 'Leo'))

- a) The condition checks whether the name attribute includes the three mentioned names
- b) The condition allows the name attribute to possess only the three mentioned names
- c) The condition checks whether the given names are sub-strings in at least one of the values
- d) None of the mentioned

Answer : b

15. Referential integrity constraints are also called as _____

- a) Functional dependencies

- b) Subset dependencies
- c) Superset dependencies
- d) Primary dependencies

Answer : b

16. _____ is a predicate that we expect the database to always satisfy

- a) Assertion
- b) Reason
- c) Mandate
- d) Verify

Answer : a

17. State true or false: Oracle does not support complex check conditions

- a) True
- b) False

Answer : a

18. What statement is used to define a new assertion in SQL?

- a) create check ;
- b) create assertion where ;
- c) create where ;
- d) create assertion check ;

Answer : d

19. DDL, DML, TCL are SQL Languages?

- a) True
- b) False

Answer: a

20. DCL is SQL Languages?

- a) True
- b) False

Answer: a

UNIT – IV

1. What is the function of the union operation?

- a) It combines the results of any two different queries
- b) It combines the results of two different queries which have the same set of attributes in the select clause
- c) It combines the results of two different queries which have the same condition in the where clause
- d) It gives the Cartesian product of the results of any 2 queries

Answer: b

2. What is the function of the intersect operation?

- a) It returns the intersection of the results of the results of any two different queries
- b) It returns the intersection of the results of two different queries which have the same set of attributes in the select clause
- c) It returns the intersection of the results of two different queries which have the same condition in the where clause
- d) None of the mentioned

Answer: b

3. What is the function of the except operation?

- a) It excludes all the results present in both the queries
- b) It includes the results of the second query but excludes the results of the first query
- c) It includes the results of the first query but excludes the results of the second query
- d) It includes all the results of both queries but removes duplicates

Answer: c

4. When does the predicate is null succeed?

- a) If the value on which it is applied is finite
- b) If the value on which it is applied is invalid
- c) If the value on which it is applied is blank
- d) If the value on which it is applied is more than the allowed limit

Answer: c

5. Using the _____ clause retains only one copy of identical tuples

- a) distinct
- b) is not null
- c) no repeat
- d) from

Answer: a

6. Observe the following query and choose the correct option

```
SELECT DISTINCT name  
FROM student  
WHERE ID IS NOT NULL;
```

- a) The query is syntactically wrong
- b) The query gives all the possible student names where a finite value exists for ID
- c) The query gives the names of the students that have a null ID and it also excludes identical names
- d) The query gives the student names where a finite value exists for ID and it excludes identical names

Answer: d

7. What will be the result of the following query?

```
(SELECT studentid  
FROM student  
WHERE SECTION = 'c')  
EXCEPT  
(SELECT studentid  
FROM student  
WHERE roll < 10);
```

- a) All the values of the studentid for which section is c and roll < 10
- b) All the values of the studentid for which section is c and roll > 10
- c) All the values of the studentid for which section not c and roll < 10
- d) All the values of the studentid for which section not c and roll > 10

Answer: b

8. Which of the following correctly describes the between predicate in the where clause?
- a) It is used to check whether a value is in between two specified values
 - b) It is used to check whether a value is exactly in the center of the relation alphabetically
 - c) It is used to check whether a value is in between any two other values in the database
 - d) None of the mentioned

Answer: a

9. The on condition appears at the _____ of the join expression
- a) Beginning
 - b) End
 - c) Between
 - d) The on condition is not related to join expression

Answer: b

10. What is the difference between a join and an outer join operation?
- a) There is no difference
 - b) Join preserves a few tuples that are otherwise lost in the outer join
 - c) Outer join preserves a few tuples that are otherwise lost in the join
 - d) An outer join can be used only on outer queries whereas a join operation can be used in Subqueries

Answer: c

11. The join operations that do not retain mismatched tuples are called as _____ operations
- a) outer join
 - b) natural join
 - c) full outer join
 - d) inner join

Answer: d

12. What is the function of a left outer join?
- a) It preserves tuples only in the relation named before the operation
 - b) It preserves tuples only in the relation named after the operation
 - c) It preserved tuples in the relations named on both the sides of the operation
 - d) It does not preserve any tuples on either side of the relation

Answer: a

13. What is the function of a full outer join?

- a) It preserves tuples only in the relation named before the operation
- b) It preserves tuples only in the relation named after the operation
- c) It preserved tuples in the relations named on both the sides of the operation
- d) It does not preserve any tuples on either side of the relation

Answer: c

14. What is the function of a right outer join?

- a) It preserves tuples only in the relation named before the operation
- b) It preserves tuples only in the relation named after the operation
- c) It preserved tuples in the relations named on both the sides of the operation

Answer: b

15. What is the function of inner join?

- a) It preserves tuples only in the relation named before the operation
- b) It preserves tuples only in the relation named after the operation
- c) It preserved tuples in the relations named on both the sides of the operation
- d) It does not preserve any tuples on either side of the relation

Answer: d

16. State true or false: on and where behave differently for outer join

- a) True
- b) False

Answer: a

17. Which off the following is not a valid type of join?

- a) left outer join
- b) outer join
- c) join

Answer: d

18. If a left outer join is performed and the tuple on the left hand side does not match with the tuple on the right hand side, what happens to the values that are preserved on the left hand side?

- a) They are given null values
- b) They are given a random value
- c) The user is asked to enter data
- d) The query is declared invalid by the compiler

Answer: a

19. The dependency rules specified by the database designer are known as _____

- a) Designer dependencies
- b) Database rules
- c) Functional dependencies
- d) None of the mentioned

Answer : c

20. If the decomposition is unable to represent certain important facts about the relation, then such a decomposition is called as?

- a) Lossless decomposition
- b) Lossy decomposition
- c) Insecure decomposition
- d) Secure decomposition

Answer :b

UNIT- V

1. A _____ is a special kind of a store procedure that executes in response to certain action on the table like insertion, deletion or updation of data.

- a) Procedures
- b) Triggers
- c) Functions
- d) None of the mentioned

Answer: b

2. Triggers are supported in

- a) Delete
- b) Update
- c) Views
- d) All of the mentioned

Answer: c

3. The CREATE TRIGGER statement is used to create the trigger. THE _____ clause specifies the table name on which the trigger is to be attached. The _____ specifies that this is an AFTER INSERT trigger.

- a) for insert, on
- b) On, for insert
- c) For, insert
- d) None of the mentioned

Answer: b

4. What are the after triggers?

- a) Triggers generated after a particular operation
- b) These triggers run after an insert, update or delete on a table
- c) These triggers run after an insert, views, update or delete on a table
- d) All of the mentioned

Answer: b

5. The variables in the triggers are declared using

- a) –
- b) @
- c) /
- d) /@

Answer: b

6. The default extension for an Oracle SQL*Plus file is:

- a) .txt
- b) .pls
- c) .ora
- d) .sql

Answer: d

7. Which of the following is NOT an Oracle-supported trigger?

- a) BEFORE

- b) DURING
- c) AFTER
- d) INSTEAD OF

Answer: b

8. What are the different in triggers?

- a) Define, Create
- b) Drop, Comment
- c) Insert, Update, Delete
- d) All of the mentioned

Answer: c

9. Triggers _____ enabled or disabled

- a) Can be
- b) Cannot be
- c) Ought to be
- d) Always

Answer: a

10. Which prefixes are available to Oracle triggers?

- a) : new only
- b) : old only
- c) Both :new and : old
- d) Neither :new nor : old

Answer: c

11. Which of the following blocks are used for error handling in SQL Server ?

- a) TRY...CATCH
- b) TRY...FINAL
- c) TRY...END
- d) CATCH...TRY

Answer: a

12. Point out the correct statement :

- a) While executing some DML Statement like INSERT, DELETE, UPDATE we can handle the error for checking proper output
- b) If transaction fails, then we need to commit – This can be done by error handling
- c) If transaction succeeds, then we need to rollback – This can be done by error handling
- d) None of the mentioned

Answer: a

13. Which of the following statements can be checked for Errors ?

- a) CREATE
- b) DROP
- c) DELETE
- d) INSERT

Answer: d

14. Purpose of TRY...CATCH block in SQL Server is :

- a) Error handling
- b) Stored Procedure handling
- c) Message handling
- d) None of the mentioned

Answer: a

15. Point out the wrong statement:

- a) If an error occurs in the TRY block, control is not passed to another group of statements that is enclosed in a CATCH block
- b) If an error occurs in the TRY block, control is passed to another group of statements that is enclosed in a CATCH block
- c) If an error does not occur in the TRY block, control is passed to another group of statements that is enclosed in a CATCH block
- d) None of the mentioned

Answer: b

16. Which of the following benefit does Exception handling with the TRY and CATCH blocks provide ?

- a) Exceptions provide a mechanism to signal errors directly rather than using some side effects
- b) Exceptions can be seen by the programmer and checked during the compilation process

- c) Exceptions provide a clean way to check for errors without cluttering code
- d) All of the mentioned

Answer: d

17. Exception handling is possible in SQL Server using :

- a) THROW
- b) FINAL
- c) FINALLY
- d) All of the mentioned

Answer: a

18. Which of the following is a Error function used within CATCH block ?

- a) ERROR_STATE()
- b) ERROR_STATUS()
- c) ERROR_MSG()
- d) All of the mentioned

Answer: a

19. ERROR_SEVERITY() returns the _____level of the error.

- a) State number
- b) Full text
- c) Severity
- d) None of the mentioned

Answer: c

20. Which of the following is global variable for error handling ?

- a) @@ERRORS
- b) @@ERROR
- c) @@ERR
- d) None of the mentioned

Answer: b

DEPARTMENT OF COMPUTER TECHNOLOGY

17 UCT 413 - RELATIONAL DATABASE MANAGEMENT SYSTEM

K2 Level Questions

UNIT- I

1. Define DBMS.
2. Give an outline about Normalization.
3. Compare foreign key and composite key.
4. Rephrase the term cardinality.
5. Name some database software packages.
6. Define weak entity.
7. Relate dependencies and its types.
8. Infer the types of relationship.
9. Classify the types of anomalies.
10. What is meant by metadata?

UNIT-II

1. Compare primary key and foreign key.
2. Name some of the data types in oracle.
3. Name some DDL commands.
4. Classify the different forms of CONSTRAINTS.
5. Define Spooling.
6. Write about oracle error codes.
7. Compare oracle errors and online helps.
8. Demonstrate the uses of DROP keyword.
9. Compare DROP and TRUNCATE.
10. Write a syntax for creating an oracle table.

UNIT – III

1. Name some of the DML Commands.
2. Define Substitution Variable.
3. List out the uses of Customized prompts.
4. How will you Restrict data with a WHERE Clause.
5. Demonstrate the uses of Wild Cards.
6. Compare Define Command and Data Command with example.
7. What is meant by Data types?
8. Classify the various methods of Entering Null Values.
9. Define Column alias.
10. Show the various types of Distinct Function

UNIT - IV

1. Define join.
2. Draw a structure of PL/SQL programming language.
3. Show the levels of PL/SQL Block structure.
4. Name some Data Types.
5. How will you print the statement in SQL?
6. Compare about substitution variables and normal variables.
7. List the keywords of Data manipulation language.
8. Compare the PL/SQL and SQL.
9. Write the syntax of Extended Nested blocks.
10. Define Anchor declaration.

UNIT - V

1. Compare implicit cursor and explicit cursor.
2. Define Cursor.

3. Define Cursor For Loops.
4. How will you declare an explicit cursor?
5. Write the types of Exception.
6. Define Composite Data type.
7. Name some uses of Triggers.
8. Define Packages.
9. Give the uses of Function.
10. What is meant by varray?

DEPARTMENT OF COMPUTER TECHNOLOGY

17UCT413 – Relational Database Management System

K3 - Level Questions

UNIT- I

1. Examine the concepts of Relational Database Management System.
2. Write about Dependencies and their types with example.
3. Build an Oracle query to create an oracle table with necessary examples.
4. Compare DBMS and RDBMS.
5. Conclude the concept of Data Modelling with suitable diagram.
6. Categorize the various forms of Normal Forms with example.
7. Compare the conversions from 1NF to 2NF and 2NF to 3NF.
8. List out the types of relationships with example.
9. List the various types of Keys and their rules.
10. Discuss the concept of Relational Calculus with sample query.

UNIT- II

1. Compare and Contrast the concept of SQL and SQL* plus.
2. List out the various methods that are available for logging into SQL environment.
3. Examine the functions of SQL *plus environment with sample diagram.
4. Categorize the various tools provided by the Oracle9i.
5. Discuss the concept TRUNCATE statement with necessary examples.

6. Write about the concept of Integrity constraints in oracle.
7. Distinguish Primary key and foreign key with example.
8. Describe about basic commands in SQL* plus.
9. Build an oracle query for Data Definition Language with example.
10. Conclude the advanced data types in Data Definition Language.

UNIT- III

1. Describe the concept of functions with example.
2. Explain about CASE structure with syntax and example.
3. Discuss about the concept of sorting with an example.
4. Create an oracle query for bank details using HAVING clause.
5. List the various types of Date functions with example.
6. Classify the various methods of Character functions with example.
7. Evaluate the concept of Concatenation with example query.
8. How will you Update an existing rows/records in a table?
9. Write the methods of inserting a NULL values in a column.
10. Build an oracle query for grouping data with example.

UNIT- IV

1. Compare the Basic loop and While loop with syntax.
2. Discuss about selection statements with example.
3. Describe about the DML statements to manipulate employee details.
4. Construct an PL/SQL query to find average of n numbers using WHILE loop.

5. Write about IF...THEN...ELSIF...END IF statement with example.
6. Create and Build an PL/SQL block structure with example.
7. How will you declare a Host variable? Explain it.
8. Illustrate the concept of substitution variables with example.
9. Write about the fundamentals of PL/SQL programming structure.
10. Compare Equijoin and Non Equijoin with example.

UNIT- V

1. Discuss about the parts of packages in a PL/SQL blocks.
2. Compare Actual and Formal parameters in procedures with suitable query.
3. Construct an oracle program for calling a function.
4. Write the benefits of using a package in oracle.
5. Write down the uses of PL/SQL records in oracle
6. List the methods of Assigning a values to row in a PL/SQL table.
7. Categorize the uses of array and v_array.
8. Compare implicit cursor and explicit cursor with example.
9. Write the uses of cursor attributes with examples.
10. Classify the types of user defined exceptions and explain it.

DEPARTMENT OF COMPUTER TECHNOLOGY

17UCT413 – Relational Database Management System

K4 & K5 - Level Questions

UNIT- I

1. Discuss about the Theoretical Relational Languages with example.
2. Describe about Database design with Block Structure.
3. Classify the different forms of keys in RDBMS.
4. Compare Data Model and Relational Data Model.
5. Examine about De-normalization with examples.

UNIT- II

1. Discuss the types of data types in oracle llg.
2. Classify the different types of Constraints with example.
3. Compare online helps and online errors.
4. How will you altering the details/information in an existing table? Explain it.
5. How will you Delete an existing row/records from Oracle table? Explain with example.

UNIT- III

1. Describe about DEFINE commands with suitable example.
2. Discuss about various types of single row functions in PL/SQL.
3. Build an SQL query using GROUP command and functions with necessary example.
4. Create an SQL query for student details using WHERE clause.

5. Classify the DML and DDL statements with Example.

UNIT- IV

1. Write about different forms of Joins with suitable example.
2. Describe about various set operators with example.
3. Evaluate the Scalar data types in PL/SQL blocks with example.
4. Create an oracle query for TCL statements with example.
5. Examine the concept of looping structure with suitable syntax and example.

UNIT- V

1. Discuss about Exceptions and their handling methods.
2. Construct a cursor with use of Parameters and explain it.
3. How will you create a PL/SQL block and how that can perform one or more task at a time? Explain it.
4. Examine the uses of function in a PL/SQL block with suitable example.
5. Compare the working principal of BEFORE and AFTER triggers with example.

17UCT309 - OPERATING SYSTEM

K1 Level Questions

UNIT -I

1. _____ a collection of related information defined by its creator

- a) **File**
- b) Device driver
- c) Process
- d) Main-memory

2. _____ is a collection of processors that do not share memory, peripheral devices or clock

- a) Networking system
- b) **Distributed system**
- c) Secondary Storage management
- d) I/O system management

3. _____ is the interface between user and operating system

- a) HTTP
- b) FTP
- c) **Command Interpreter**
- d) Control statements

4. Os provides environments for _____ of programs

- a) **Execution**

- b) Distributed
- c) Networking
- d) I/O system

5. _____ is a technique which packets of information are moved between processes by OS.

- a) Resource allocation
- b) Error detection
- c) Communication
- d) **Message passing**

6. _____ is the interface between process and operating system

- a) Memory management
- b) Application programs
- c) **System call**
- d) System programs

7. _____ uses map memory system calls to gain access to regions of memory owned by other process.

- a) Message passing
- b) System mapping
- c) **Shared-memory model**
- d) Real-time Mapping

8. Main advantages of layered approach is _____

- a) **Modularity**

- b) Ease of use
- c) Flexibility
- d) Hardware

9. Kernel is _____ of user threads

- a) a part of
- b) the creator
- c) **unaware of**
- d) aware of

10. _____ is a example of an operating system that support single user process and single thread

- a) UNIX
- b) **Ms-Dos**
- c) OS/2
- D) Windows 2000

UNIT -II

1. The state of a process is defined by:

- a) the final activity of the process
- b) the activity just executed by the process
- c) the activity to next be executed by the process
- d) **the current activity of the process**

2. Which of the following is not the state of a process?

- a) New

- b) **Old**
- c) Waiting
- d) Running

3. The entry of all the PCBs of the current processes is in:

- a) Process Register
- b) Program Counter
- c) **Process Table**
- d) Process Unit

4. When a process terminates :

- a) **It is removed from all queues**
- b) It is removed from all, but the job queue
- c) Its process control block is de-allocated
- d) Its process control block is never de-allocated

5. What is a long-term scheduler ?

- a) **It selects which process has to be brought into the ready queue**
- b) It selects which process has to be executed next and allocates CPU
- c) It selects which process to remove from memory by swapping
- d) None of the mentioned

6. The only state transition that is initiated by the user process itself is :

- a) **block**
- b) wakeup
- c) dispatch
- d) none of the mentioned

7. The primary distinction between the short term scheduler and the long term scheduler is :

- a) The length of their queues
- b) The type of processes they schedule

c) **The frequency of their execution**

d) None of the mentioned

8. Suppose that a process is in “Blocked” state waiting for some I/O service. When the service is completed, it goes to the :

a) Running state

b) **Ready state**

c) Suspended state

d) Terminated state

9. What is a short-term scheduler ?

a) It selects which process has to be brought into the ready queue

b) **It selects which process has to be executed next and allocates CPU**

c) It selects which process to remove from memory by swapping

d) None of the mentioned

10. To ensure difficulties do not arise in the readers – writers problem, _____ are given exclusive access to the shared object.

a) readers

b) **writers**

c) readers and writers

d) none of the mentioned

11. The dining – philosophers problem will occur in case of :

a) **5 philosophers and 5 chopsticks**

b) 4 philosophers and 5 chopsticks

c) 3 philosophers and 5 chopsticks

d) 6 philosophers and 5 chopsticks

12. The bounded buffer problem is also known as

a) Readers – Writers problem

- b) Dining – Philosophers problem
- c) **Producer – Consumer problem**
- d) None of the mentioned

UNIT- III

1. Which of the following condition is required for deadlock to be possible?
 - a) mutual exclusion
 - b) a process may hold allocated resources while awaiting assignment of other resources
 - c) no resource can be forcibly removed from a process holding it
 - d) **all of the mentioned**
2. The circular wait condition can be prevented by
 - a) **defining a linear ordering of resource types**
 - b) using thread
 - c) using pipes
 - d) all of the mentioned
3. What is the drawback of banker's algorithm?
 - a) in advance processes rarely know that how much resource they will need
 - b) the number of processes changes as time progresses
 - c) resource once available can disappear
 - d) **all of the mentioned**
4. A problem encountered in multitasking when a process is perpetually denied necessary resources is called
 - a) deadlock
 - b) **starvation**
 - c) inversion
 - d) aging

5. To avoid deadlock
- a) **there must be a fixed number of resources to allocate**
 - b) resource allocation must be done only once
 - c) all deadlocked processes must be aborted
 - d) inversion technique can be used
6. Run time mapping from virtual to physical address is done by
- a) **Memory management unit**
 - b) CPU
 - c) PCI
 - d) None of the mentioned
7. The page table contains
- a) **base address of each page in physical memory**
 - b) page offset
 - c) page size
 - d) none of the mentioned
8. In segmentation, each address is specified by :
- a) **a segment number & offset**
 - b) an offset & value
 - c) a value & segment number
 - d) a key & value
9. The offset 'd' of the logical address must be :
- a) greater than segment limit
 - b) **between 0 and segment limit**
 - c) between 0 and the segment number
 - d) greater than the segment number
10. A deadlock can be broken by
- a) **abort one or more processes to break the circular wait**

- b) abort all the process in the system
- c) preempt all resources from all processes
- d) none of the mentioned

UNIT- IV

1. _____ is the concept in which a process is copied into main memory from the secondary memory according to the requirement.
 - a) Paging
 - b) **Demand paging**
 - c) Segmentation
 - d) Swapping
2. The pager concerns with the
 - a) **individual page of a process**
 - b) entire process
 - c) entire thread
 - d) first page of a process
3. When a program tries to access a page that is mapped in address space but not loaded in physical memory, then
 - a) segmentation fault occurs
 - b) fatal error occurs
 - c) **page fault occurs**
 - d) no error occurs
4. Effective access time is directly proportional to
 - a) **page-fault rate**
 - b) hit ratio
 - c) memory access time
 - d) none of the mentioned

5. Which algorithm chooses the page that has not been used for the longest period of time whenever the page required to be replaced?
- a) first in first out algorithm
 - b) additional reference bit algorithm
 - c) **least recently used algorithm**
 - d) counting based page replacement algorithm
6. Working set model for page replacement is based on the assumption of
- a) modularity
 - b) **locality**
 - c) globalization
 - d) random access
7. Virtual memory allows
- a) **execution of a process that may not be completely in memory**
 - b) a program to be smaller than the physical memory
 - c) a program to be larger than the secondary storage
 - d) execution of a process without being in physical memory
8. A swapper manipulates _____ whereas the pager is concerned with individual _____ of a process.
- a) the entire process, parts
 - b) all the pages of a process, segments
 - c) **the entire process, pages**
 - d) none of the mentioned
9. A page fault occurs when :
- a) a page gives inconsistent data
 - b) **a page cannot be accessed due to its absence from memory**

- c) a page is invisible
- d) all of the mentioned

10. To create a file

- a) allocate the space in file system
- b) make an entry for new file in directory
- c) **allocate the space in file system & make an entry for new file in directory**
- d) none of the mentioned

11. File type can be represented by

- a) file name
- b) **file extension**
- c) file identifier
- d) none of the mentioned

12. File system fragmentation occurs when

- a) **unused space or single file are not contiguous**
- b) used space is not contiguous
- c) unused space is non-contiguous
- d) multiple files are non-contiguous

UNIT-IV

1. The file organization module knows about

- a) files
- b) logical blocks of files
- c) physical blocks of files
- d) **all of the mentioned**

2. For processes to request access to file contents, they need to :

- a) they need to run a separate program

- b) they need special interrupts
- c) **implement the open and close system calls**
- d) none of the mentioned

3. When in contiguous allocation the space cannot be extended easily :

- a) **the contents of the file have to be copied to a new space, a larger hole**
- b) the file gets destroyed
- c) the file will get formatted and lost all its data
- d) none of the mentioned

4. The major disadvantage with linked allocation is that :

- a) internal fragmentation
- b) external fragmentation
- c) there is no sequential access
- d) **there is only sequential access**

5. A section of disk at the beginning of each partition is set aside to contain the table in

- a) **fat**
- b) linked allocation
- c) hashed allocation
- d) indexed allocation

6. Indexed allocation _____ direct access.

- a) **supports**
- b) does not support
- c) is not related to
- d) none of the mentioned

7. For any type of access, contiguous allocation requires _____ access to get a disk block.

- a) **only one**
- b) at least two

- c) exactly two
- d) three

8. The set of tracks that are at one arm position make up a _____

- a) magnetic disks
- b) electrical disks
- c) assemblies
- d) **cylinders**

9. The time taken for the desired sector to rotate to the disk head is called :

- a) positioning time
- b) random access time
- c) seek time
- d) **rotational latency**

10. SSTF algorithm, like SJF _____ of some requests.

- a) **may cause starvation**
- b) will cause starvation
- c) does not cause starvation
- d) causes aging

17UCT309 - OPERATING SYSTEM

K2 Level Questions

UNIT -1

1. Define operating system
2. State program counter
3. Mention any two activities of file management
4. What is distributed system
5. Expand NFS
6. State application programs
7. List two types of communication model
8. Define command-line Interpreter
9. What is the use of system calls?
10. Write any two services of operating system

UNIT -2

1. Define process
2. What is scheduler?
3. What is the use of fork system call?
4. Mention any two types of scheduler
5. What is critical section problem?
6. How will you evaluate an average waiting time in SJF scheduling?
7. What are the three types of scheduling queues?
8. Define semaphore
9. What is meant by throughput?
10. What is critical section?
11. Name some classical problem of synchronization.
12. Define Dispatch Latency

UNIT -3

1. Define deadlock
2. Expand GDT & LDT
3. What is meant by pages?
4. What are the data structures available in banker's algorithm
5. When the deadlock situation can occur?
6. Define race condition
7. What is meant by race condition?
8. What is Resource-Allocation Graph?
9. Define fragmentation
10. List the need of inverted page table

UNIT -4

1. State Belady's Anomaly
2. Define memory-mapping
3. When page-fault trap occurs?
4. Define Lazy Swapper
5. Expand LRU
6. What is mean by Best fit?
7. What is reference string?
8. What is the use of page table
9. What is the use of valid-invalid bits in paging?
10. What is executable file?

UNIT -5

1. What is mean by Linked allocation?
2. Define C-Scan scheduling
3. Distinguish file from directory
4. Expand MFD
5. List the advantages of Two-level directory
6. What are the allocation methods of a disk space?

7. Mention any 2 drawbacks of contiguous allocation of disk space
8. Expand FAT
9. List down various disk-scheduling algorithms
10. What is the use of boot block?
11. What is seek time?
12. List the components of LINUX system
13. Mention some LINUX network services.

17UCT309 - OPERATING SYSTEM

K3 Level Questions

UNIT -1

1. List out operating system services
2. What are the system programs available in operating system?
3. Discuss Layered approach in system architecture
4. Write a short note on secondary-storage management
5. State File management system calls
6. Describe Message-Passing model
7. Describe process management in system components
8. Classify device management system calls
9. Write a short notes on shared-memory model
10. Discuss simple structure of operating system

UNIT -2

1. Classify process scheduling in process management
2. Elaborate Dining Philosophers problem
3. Discuss in detail about process states
4. Differentiate preemptive and Non-preemptive scheduling
5. Write a note on Round-Robin scheduling with example
6. State various scheduling criteria for CPU scheduling
7. Describe Real-Time scheduling
8. What is PCB? Explain information associated with PCB
9. Distinguish between CPU bounded and I/O bounded processes
10. Priority inversion is a condition that occurs in real-time scheduling –Analyze this statement

UNIT -3

1. List the necessary conditions of deadlocks
2. What is paging? Write its basic method.
3. State the methods for handling Deadlock? Discuss
4. What are the common strategies to select a free holes from a set of available holes?
Discuss
5. Analyze contiguous memory allocation
6. Elaborate how deadlock can be prevented
7. Explain swapping in memory management
8. Discuss Resource-Allocation Graph algorithm
9. Describe Inverted Page table
10. Write a note on shared pages in page table

UNIT -4

1. List out various file attributes
2. Mention the steps to handle a page fault
3. State common file types and it functions
4. Discuss memory –mapped files in virtual memory
5. What is Demand paging? Discuss its basic concept
6. Demonstrate FIFO page replacement
7. Discuss File Access method
8. What are all the various file operations available? Discuss
9. Illustrate working principle of optimal page replacement
10. Illustrate LRU page replacement

UNIT -5

1. Write a note on components of LINUX system
2. Explain system components of WindowsXP with block diagram
3. Discuss file system carried out in WindowsXP

4. Write a note on disk management with neat diagram
5. What are the data structures used for directory implementation?
6. Write in detail about contiguous allocation method in file system implementation
7. Demonstrate shortest-seek time first disk scheduling
8. Discuss the disadvantages of Linked allocation.
9. What is Bad Block in disk management? Discuss
10. Determine common schemes for defining logical structure of a directory

17UCT309 - OPERATING SYSTEM

K4 & K5 Level Questions

UNIT -1

1. Explain system structure in operating system
2. Elaborate various operating system services
3. What is system call? List down various system calls used for process control
4. Explain in detail about purpose of system programs
5. Illustrate System components in Operating system

UNIT -2

1. Illustrate critical-section problem with example
2. What is semaphore? Explain management implementation of semaphore
3. What is CPU scheduling? Explain SJF scheduling and priority scheduling
4. Demonstrate three methods of message-passing parameters to operating system with example
5. Elaborate Short-term, Long-term, Long-term scheduling with suitable example.

UNIT -3

1. Explain in detail about Banker's algorithm to avoid deadlock with example
2. How deadlock can be detected? Explain
3. What is the use of segmentation in memory management? Explain with neat diagram
4. Explain in detail about Contiguous memory allocation
5. Illustrate various types of structure in page table.

UNIT -4

1. What is demand paging? Demonstrate its concept
2. Consider the following page-reference string:
1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6
How many page faults would occur for following replacement algorithm
i) LRU replacement ii) FIFO replacement iii) Optimal replacement
3. Explain in detail about directory structure and its types.
4. Illustrate optimal page replacement and LRU page replacement algorithm with example
5. Elaborate various file access methods.

UNIT -5

1. Explain in detail about allocation methods of a file
2. What is meant by Disk scheduling? Explain its types briefly
3. Illustrate system components of WindowsXP
4. Explain about Indexed Allocation methods in file system implementation
5. Elaborate files system in LINUX system
6. Distinguish design principles of LINUX system with WindowsXP.

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT624- Embedded System

UNIT -I

1. Which one of the following offers CPUs as integrated memory or peripheral interfaces?
 - a) Microcontroller
 - b) Microprocessor
 - c) Embedded system
 - d) Memory system**

2. What is CISC?
 - a) Computing instruction set complex
 - b) Complex instruction set Computing**
 - c) Complimentary instruction set
 - d) Complex instruction set Complementary

3. How is the protection and security for an embedded system made?
 - a) OTP
 - b) IPR**
 - c) Memory disk security
 - d) Security chips

4. Abbreviation of SOC
 - a) Single on chip**
 - b) Single off chip
 - c) Simple in chip
 - d) Simple off chip

5. A _____ is a way of working, organizing or doing one or many tasks according to a fixed plan, program, or set of rules.
 - a) System**
 - b) Memory
 - c) CPU
 - d) Embedded system

6. An _____ is a system that has embedded system software and computer-hardware, which makes it a system dedicated for an application.
 - a) Embedded system**
 - b) IPR
 - c) computer system
 - d) Security chips

7. RTOS is abbreviated as _____

- a) Reel-Time operating system
- b) Real-Time operating system**
- c) Run-Time operating system
- d) Real latency operating system

8. A _____ is an important unit in the embedded system hardware.

- a) Memory
- b) Processor**
- c) Computer
- d) Control unit

9. _____ is the heart of the embedded system.

- a) System Components
- b) Software
- c) Interrupt Handler
- d) Processor**

10. _____ is used for fetching instructions from the memory

- a) Execution unit
- b) Control unit**
- c) CPU
- d) Processor

11. The _____ has circuits that implement the instructions pertaining to data transfer operations and conversion from one form to another.

- a) Memory
- b) Control unit
- c) Execution unit**
- d) Interrupt Handler

12. Which of the following offers external chips for memory and peripheral interface circuits?

- a) Microcontroller
- b) Microprocessor**
- c) Peripheral system
- d) Embedded system

13. Abbreviation of VLSI?

- a) Very Large Scale On Integrated Chip
- b) Very Large Scale Integrated Chip**
- c) Very Large Scale On Chip Integrated Chip
- d) Very Long Scale Integrated Chip

14. A _____ is an integrated chip that has processor, memory and several other hardware units in it.

a) **Microcontroller**

b) Microprocessor

c) Embedded system

d) Memory system

15. _____ and _____ processor are required in speech and video processing.

a) **DCT and DCIT**

b) ASIC and FLPU

c) DMA and TCP/IP

d) DCN and DCIT

16. The _____ holds the address from where the instruction is to be fetched for execution.

a) Processor

b) Instruction controller

c) **Program Counter**

d) Instruction pointer

17. A _____ is a digital circuit that sends digital outputs at any instance to one of the provided channels

a) Memory

b) **De-multiplexer**

c) Multiplexer

d) Processor

18. The software is also called _____ .

a) RAM image

b) RAM

c) ROM

d) **ROM image**

19. An _____ translates the assembly software into the machine codes using a step called assembling.

a) Memory

b) **Assembler**

c) Microcontroller

d) processor

20. A _____ is a processor core or chip for the applications that process digital signals.

a) Memory

b) **Digital signal Processor**

c) Multiplexer

d) Processor

UNIT -II

1. _____ port is used for parallel communication

a) Parallel port

b) Serial port

c) Serial input port.

d) Parallel input port.

2. _____ input is used for keypad and modem inputs.

a) Synchronous Serial Input

b) Asynchronous Serial Input.

c) Synchronous Serial Output

d) Asynchronous Serial Output.

3. _____ is a device that controls the regular interval clock pulses at its input.

a) Timer device

b) Clock pulse

c) Processor

d) CPU

4. A _____ is a device that counts the input for events that may occur at regular or irregular intervals.

a) Counting Device

b) Timer

c) Timer Device

d) Clock Pulse.

4. Abbreviation of SWT

a) System tool

b) Software tool

c) System timer

d) Software time.

5. _____ is a timing device that can be set for a preset time interval.

a) Counting Device

b) Timer Device

c) Timer

d) Watch Dog Timer

6. _____ is a clock that causes occurrences of regular interval interrupts on its each tick.

- a) Timer device b) Clock pulse c) Watchdog Timer **d) Real Time Clock**

7. _____ provides a system clock and it has a number of applications.

- a) Timer device. **b) Real Time Clock**
c) Processor d) Clock pulse

8. _____ bus is a standard bus in distributed networks.

- a) CAN** b) I2C c) ARM d) Data

9. _____ bus is used mainly in automotive electronics.

- a) USB b) Controller c) I2C **d) CAN**

10. _____ is a bus between host system and number of interconnected peripheral devices.

- a) Serial Bus b) Interrupt service **c) USB** d) ISA Bus

11. _____ is a high speed 800 Mbps serial bus for interconnecting a system with multimedia streaming devices and systems.

- a) USB b) Data Bus c) CAN Bus **d) Fire Wire**

12. The exceptional condition sets during execution, causes a diversion then the ISR is called as _____ .

a) USB

b) Interrupt vector

c) Exception Handler

d) Fire Wire

13. Which factor depends on the number of times of polling the port while executing the task?

a) Data

b) Data transfer rate

c) Data size

d) Number of bits

14. _____ is the most efficient method of communicating between other devices

a) Serial port

b) Parallel port

c) Peripheral port

d) Memory port

15. Which buffer is used mostly in the serial porting?

a) LIFO

b) FIFO

c) FILO

d) LILO

16. _____ is necessary for the parallel input-output port

a) Inductor

b) Pull-up resistor

c) Push-up register

d) Capacitor

17. _____ can be described as general-purpose.

a) Multifunction I/O port

b) Input port

c) DMA port

d) Output port

18. _____ can transfer multiple bits of data simultaneously.

a) Serial port

b) Sequential port

c) concurrent unit

d) Parallel port

19. How buffers are enabled in the parallel ports?

a) by the data register

b) by data direction register

c) by individual control register

d) by data and individual control register

UNIT -III

1. _____ is an important part of interrupts service mechanism, which associates a processor.

a) USB

c) Exception Handler

b) Interrupt vector

d) Fire Wire

2. _____ one bit is also called as the primary- level bit for enabling or disabling the complete interrupt system.

a) EA

b) ES

c) EB

d) ET

3. _____ is a status register, which can hold one or more status flags for the one or several of the interrupt source or group of sources.

a) Local-Level flag.

c) Middle level flag

b) Local flag

d) Register

4. _____ saves the context of the interrupted routine and then retrieving or loading the new context of the called routine.

a) Context Switching.

c) Registers.

b) Switching

d) Processor

5. What does ISR stand for?

a) Interrupt Standard Routine

c) Interrupt Software Routine

b) Interrupt Service Routine

d) Interrupt Synchronous Routine

6. Which can activate the ISR?

a) **Interrupt**

b) Function

c) Procedure

d) Structure

7. Which code is written as part of the ISR?
- a) Data receive code
 - b) Sequential code
 - c) Data transfer code**
 - d) Concurrent code
8. An interrupt breaks the execution of instructions and diverts its execution to_____
- a) Interrupt service routine**
 - b) Counter word register
 - c) Execution unit
 - d) Control unit
9. While executing the main program, if two or more interrupts occur, then the sequence of appearance of interrupts is called_____
- a) Multi-Interrupt
 - b) Nested Interrupt
 - c) Interrupt within interrupt
 - d) both a & b**
10. If any interrupt request given to an input pin cannot be disabled by any means then the input pin is called_____
- a) Maskable interrupt
 - b) Non-maskable interrupt**
 - c) Maskable & Non-maskable interrupt
 - d) None of the above
11. The INTR interrupt may be_____
- a) Maskable**
 - b) Non-maskable
 - c) Maskable and Non-maskable
 - d) None of the above
12. The Programmable interrupt controller is required to handle
- a) one interrupt request
 - b) one or more interrupt requests at a time**
 - c) one or more interrupt requests with a delay
 - d) No interrupt request
13. The INTR interrupt may be masked using _____ .
- a) Direction flag
 - b) Overflow flag
 - c) Interrupt flag**
 - d) Sign flag

14. The interrupt for which the processor has the highest priority among all the external interrupts is

- a) Keyboard interrupts
- b) TRAP
- c) NMI**
- d) Software Interrupts

15. The interrupt for which the processor has highest priority among all the internal interrupts is

- a) Keyboard interrupt
- b) TRAP**
- c) Hardware Interrupt
- d) INT

16. In case of string instructions, the NMI interrupt will be served only after

- a) Initialization of string
- b) Execution of some part of the string
- c) Complete string is manipulate**
- d) the occurrence of the interrupt

17. Which of the following can transfer multiple bits of data simultaneously?

- a) Serial port
- b) Sequential port
- c) Concurrent unit
- d) Parallel port**

18. How many registers are there to control the parallel port in the basic form?

- a) 1
- b) 3
- c) 2**
- d) 5

19. Which of the following can be used as a chip select?

- a) Multifunction I/O port**
- b) Parallel port
- c) DMA port
- d) Memory port

20. _____ is necessary for the parallel input-output port

- a) Inductor
- b) Pull-up resistor**
- c) Push-up resistor
- d) Capacitor

UNIT-IV

1. Methods in C can have the same name in the inherited class called _____

- a) **Method overloading**
- b) Method over-riding
- c) Function overloading
- d) Operator overloading

2. Methods in C can have the same name as well as the same number and type of arguments in the inherited class are called _____

- a) Operator overloading
- b) **Method over-riding**
- c) Function overloading
- d) Method overloading

3. _____ find extensive use in C++ environment in embedded software development.

- a) Diab compilers
- b) C++ compilers
- c) C compilers
- d) **GNU C/C++ compilers**

4. GNU also called as _____

- a) Diab
- b) gss
- c) GUI
- d) **gcc**

5. An embedded system C++ compiler (other than gcc) is _____ compiler.

- a) **Diab compilers**
- b) C++ compilers
- c) C compilers
- d) GNU C/C++ compilers

6. _____ as an alternative to JVM.

- a) JVM
- b) **KVM**
- c) VM
- d) J2ME

7. _____ gives portability with respect to the processor and OS used.

- a) **Platform Independence**
- b) Platform Dependence
- c) Dependent function
- d) None of these

8. Java does not permit _____

- a) Inheritance
- b) Polymorphism
- c) Data abstraction
- d) Pointer manipulation instructions**

9. Java byte codes can be converted to native machine codes for fast running using _____

- a) Diab Compilation
- b) Just-in-time compilation**
- c) gcc compilation
- d) GNU compilation

10. _____ helps in reducing the code size to 8kB for the usual applications like smart cards.

- a) smart card
- b) ATM card
- c) Java card**
- d) Embedded Card

11. _____ provides the optimized run-time environment

- a) JVM
- b) KVM
- c) VM
- d) J2ME**

12. A _____ function is which changes a state to its next state.

- a) State machine**
- b) Event machine
- c) Finite State Machine
- d) Sequential flow

13. Java generates _____ code

- a) Bit
- b) Word
- c) Object
- d) Byte**

14. Expand MIDP

- a) Mobile Investigate device Provider
- b) Mobile Information Device Profiler**
- c) Microprocessor Information Device Provider
- d) None of these

15. _____ are used for modeling the data paths and program flow of software.

- a) CDFG**
- b) DFG
- c) CFG
- d) DFGS

16. A _____ does not have any conditions within it so that the program has one data entry point and one data output point.

- a) IDFG **b) DFG** c) CFG d) DFGS

17. A _____ is also known as ADFG.

- a) CDFG **b) DFG** c) CFG d) DFGS

18. A _____ is a model which uses states and state transition functions, which produce the states.

- a) State machine** b) Event machine c) Finite State Machine d) Sequential flow

19. Which one has scalable OS feature?

- a) JVM b) KVM c) VM **d) J2ME**

20. A large program can be partitioned into the tasks sets of instructions and can run concurrently on different processors and by some mechanism the tasks can communicate with each other. These system are called as _____

- a) Microprocessor system b) Multitasking system
c) Single-processor System **d) Multiprocessor system**

UNIT –V

1. Application program can be said to consist of a number of processes and each process runs under the control of an _____

- a) OS b) CPU c) System d) ALU

2. Process is defined as a computational unit that processes on a CPU and whose state changes under the control of kernel of an OS

- a) CPU b) System **c) Processor** d) ALU

3. _____ is a data structure having the information using which the OS controls the process state.

- a) ALU b) PCB c) ALU d) System

4. The state information of a thread is represented by _____ .

- a) Thread-state b) Thread c) Multitask d) Task

5. A thread is _____ .

- a) Heavyweight b) **Lightweight** c) Process-controlled d) Data

6. _____ can share the data of the process

- a) Multitasks **b) Multiple threads** c) CPU d) PCB

7. _____ is in a multiprocessor system are used to generate information about certain sets of computations

- a) IPCs** b) ISR c) CPU d) OS

8. The signal forces the OS to first run a signaled process or task called signal handler.

- a) Signal b) Processor c) Process d) CPU

9. A _____ is a function, which executes software interrupt instruction INT n or SWI n.

- a) **Signal** b) Processor c) Process d) CPU

10. _____ is a unit of the OS that is the entity responsible for controlling a process execution.

- a) Process **b) Process manager** c) Process-state d) Running process

11. _____ are the subsystems of OS Device management systems.

- a) **I/O ports** b) Process c) Synchronous I/O operations d) I/O instructions

12. An _____ is an multitasking Os for the applications needing meeting of time deadlines and functioning and in real-time constraints.

- a) Operating Systems **b) Real-Time Operating System** c) ISR d) Multiprocess

13. An _____ is an OS for response time-controlled and event-controlled processes.

- a) **RTOS** b) OS c) Mutliprocess d) CPU

14. I/O sub systems are an important of _____

- a) **OS services** b) RTOS c) CPU d) System

15. An Embedded system with a single CPU can only _____ process at an instance.

- a) Two **b) One** c) Three d) Five

16. The embedded system hardware source call generates_____

- a) **Interrupts** b) Parameters c) Semaphores d) RTOS

17. Expand EDF

- a) **Earliest deadline first** b) Earliest deadlock found

- c) Early deadline find d) Earliest deadlock first

18. _____ means that each ready task cooperates to let a running one finish.

- a) Operative b) Cooperation c) Operation **d) Cooperative**

19. Each RTOS uses a system clock ticked by a _____ timer.

- a) ClkIntr b) SysIntr c) Intr **d) SysClkIntr**

20. The_____ needed at any instant in the processor for an embedded system depends on the state and mode of the processor.

- a) current b)System c)Processor **d)Time**

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT624- EMBEDDED SYSTEM

K2 Level Questions

Unit – 1

1. Define embedded system
2. Define system
3. Write down the characteristics of embedded system
4. What is microcontroller?
5. Write down various forms of memories in the system.
6. List out the types of embedded system
7. Mention any two real time application for Small scale embedded system
8. What is meant by System on Chip?
9. What is medium scale embedded system?
10. Mention program models used for software designing

Unit – 2

1. What is serial port?
2. What is meant by asynchronous communication?
3. What is parallel device port?
4. Define timing device
5. What is counting device?
6. What is Watchdog timer?
7. Define Real time clock
8. Mention various types of serial bus communication protocols
9. Expand USB
10. Mention the disadvantage of IO bus.

Unit – 3

1. List any four generic commands used in device driver.
2. What is meant by device driver
3. Abbreviate SWI
4. Define Interrupt Vector
5. How is the vector address used for an interrupt source?
6. What is meant by interrupt vector table
7. Expand POSIX
8. Write any two features of device driver
9. Define interrupt Latency
10. What is context switching

Unit – 4

1. List out the program models
2. Expand HSDFG
3. What is Acrylic DFG model
4. List the disadvantages of java in embedded system
5. Mention any two features of KVM
6. How JavaCard is used in real time applications
7. How C++ in embedded system is compiled?
8. Write down any four elements used in java program
9. How Control DFG differs from DFG model
10. How FSM state table is designed?

Unit – 5

1. Define process

2. What is a thread?
3. Expand UART
4. How shared data can be eliminated?
5. List out the types of modes used in os.
6. How Interprocess communication is used in a process?
7. What is shared data problem?
8. Expand RTOS
9. What is meant by Round Robin scheduling?
10. Mention any four common scheduling models .

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT624- EMBEDDED SYSTEM

K3 Level Questions

Unit1

1. Write a note on various processors embedded in processor chip
2. Describe microprocessor
3. Explain various forms of memory and functions assigned to them
4. Explain the Exemplary applications of each type of embedded system
5. How software is embedded into a system? Discuss
6. List the hard ware units that must be present in the embedded systems
7. Explain the various form of memories present in a system
8. Explain the software tools in designing of an embedded system.
9. Classification of embedded systems
10. List out skills required for medium scale embedded system designer.

UNIT 2

1. What are the classifications of IO devices? Give examples
2. Discuss asynchronous communication
3. Discuss parallel port interfacing with Switches and Keypad with diagram
4. Discuss parallel port interfacing with LCD controller with diagram
5. Write a short note on asynchronous serial input and output.
6. Describe I²C Bus.
7. Write a short notes on USB bus
8. List any five forms of a timer
9. Discuss watchdog timer with example
10. Describe i) Counting device ii) Timer cum counting devices

UNIT-3

1. Write a short note on Device driver.
2. Discuss processor vector address
3. Write a note on Context switching
4. Describe Interrupt Latency
5. Write a short note on device driver programming
6. Discuss parallel port drivers in a system with diagram
7. Discuss various registers involved in serial port drivers in a system
8. Write a note on IPTD in device driver
9. How a group of interrupts sources are handled in vector address?
10. Differentiate status register and Interrupt pending registers

UNIT- 4

1. List out advantages of C++
2. Discuss disadvantages of C++
3. Analyze various elements used in the java program
4. Describe a) J2ME b)JavaCard
5. Write a note on program models.
6. Compare Data flow graph with Control DFG Model
7. Discuss SDFG, HSDFG, APEG with one example
8. Discuss FSM state model with neat diagram
9. Write a short note on Finite State Machine (FSM) model with example
10. Discuss Synchronous Data Flow Graph (SDFG) model

UNIT-5

1. What are the various informationsstored in PCB.
2. State various solutions for shared data problem.
3. Discuss Interprocess communication
4. Analyze the layered model of the system in RTOS.
5. Describe multiple threads in an application
6. How RTOS is used in embedded system? Discuss.
7. Write a short note on design principles of RTOS.
8. Discuss Real Time Operating System.
9. Describe Petri net model with neat diagram.
10. How tasks are scheduled in preemptive scheduling model? Discuss with neat diagram

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT624- EMBEDDED SYSTEM

K4 & k5 Level Questions

UNIT 1

1. Explain the different program layers in the embedded software and also the process of converting a "C" program into the file for ROM image with suitable block diagrams.
2. Elaborate single purpose processors
3. Explain in detail about various hardware units in the embedded system
4. Explain the Embedded System on Chip (SoC) & VLSI circuit.
5. Explain in detail about skills required for an embedded system designer.
6. List the hardware units that must be present in the embedded systems
7. Explain the various forms of memories present in a system
8. Explain the software tools in designing of an embedded system.
9. Classification of embedded systems
10. List out skills required for medium scale embedded system designer.

UNIT 2

1. Explain various IO devices types with neat diagram.
2. Elaborate synchronous communication in serial communication devices
3. Explain in detail about working of timers and counters with neat diagram.
4. Elaborate serial communication using CAN bus in detail
5. With a neat diagram explain networked embedded systems
6. Describe I²C Bus.
7. Write a short note on USB bus
8. List any five forms of a timer

9. Discuss watchdog timer with example
10. Describe i) Counting device ii) Timer cum counting devices

UNIT 3

1. Elaborate Interrupt servicing mechanism with neat diagram
2. Discuss with neat diagram
 - a) Interrupt Latency
 - b) Interrupt Service Deadline
3. Illustrate parallel and serial port involved in device driver programming
4. Explain in detail about Interrupt vector and Interrupt Vector table with neat diagram
5. Illustrate context and period of context switching and Interrupt latency with diagram.
6. Discuss parallel port drivers in a system with diagram
7. Discuss various registers involved in serial port drivers in a system
8. Write a note on IPTD in device driver
9. How a group of interrupts sources are handled in vector address?
10. Differentiate status register and Interrupt pending registers

UNIT 4

1. Explain in detail about advantages of java programming in embedded system
2. Elaborate State Machine Models for Event-controlled program flow
3. Write a briefly on Modeling of Multiprocessor system
4. Analyze advantages and disadvantages of C++ in embedded system
5. Explain in detail about various program models with neat diagram
6. Compare Data flow graph with Control DFG Model
7. Discuss SDFG, HSDFG, APEG with one example
8. Discuss FSM state model with neat diagram
9. Write a short note on Finite State Machine (FSM) model with example
10. Discuss Synchronous Data Flow Graph (SDFG) model

UNIT 5

1. Illustrate various design principles of Real Time Operating System.
2. Write briefly about RTOS services
3. Analyze Round Robin scheduling models with neat diagram
4. Elaborate Petri Net model for the task with preemptive scheduler with neat diagram
5. Explain in detail about multiple processes and threads in an application.
6. How RTOS is used in embedded system? Discuss.
7. 7. Write a short note on design principles of RTOS.
8. 8. Discuss Real Time Operating System.
9. 9. Describe Petri net model with neat diagram.
10. 10. How tasks are scheduled in preemptive scheduling model? Discuss with neat diagram

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT518 – COMPUTER GRAPHICS

K1 - QUESTIONS

UNIT I

1. Which devices provides positional information to the graphics system ?
 - a) Input devices
 - b) Output devices
 - c) Pointing devices
 - d) **Both a and c**
2. The number of pixels stored in the frame buffer of a graphics system is known as
 - a) Resolution
 - b) Depth
 - c) Resolution
 - d) **Only a**
3. The maximum number of points that can be displayed without overlap on a CRT is referred as
 - a) Picture
 - b) **Resolution**
 - c) Persistence
 - d) Neither b nor c
4. _____ stores the picture information as a charge distribution behind the phosphor-coated screen.
 - a) Cathode ray tube
 - b) **Direct-view storage tube**
 - c) Flat panel displays
 - d) 3D viewing device
5. The process of digitizing a given picture definition into a set of pixel-intensity for storage in the frame buff
 - a) Rasterization
 - b) Encoding
 - c) **Scan conversion**
 - d) True color system
6. In LCD, the refresh rate of the screen is
 - a) **60 frames/sec**
 - b) 80 frames/sec
 - c) 30 frames/sec
 - d) 100 frames/sec
7. Aspect ratio means

- a) Number of pixels
 - b) Ratio of vertical points to horizontal points
 - c) Ratio of horizontal points to vertical points
 - d) **Both b and c**
8. The primary output device in a graphics system is_____
- a) Scanner
 - b) **Video monitor**
 - c) Neither a nor b
 - d) Printer
9. Random-scan system mainly designed for
- a) Realistic shaded screen
 - b) **Fog effect**
 - c) Line-drawing applications
 - d) Only b
10. _____ allows screen positions to be selected with the touch of a finger.
- a) **Touch panels**
 - b) Image scanner
 - c) Light pen
 - d) Mouse
11. The device which is designed to minimize the background sound is
- a) **Microphone**
 - b) Digitizers
 - c) Data glove
 - d) Joy stick
12. The quality of a picture obtained from a device depends on
- a) Dot size
 - b) Number of dots per inch
 - c) Number of lines per inch
 - d) **All of the mentioned**
13. Which of the following device is not the input device?
- a) Trackball and space ball
 - b) Data glove
 - c) **Only d**
 - d) Impact printers
14. Which device contains thumbwheel, trackball and a standard mouse ball?
- a) **Z mouse**
 - b) Joystick
 - c) Mouse
 - d) Trackball

15. Virtual reality, CAD, and animations are the application of

- a) **Z mouse**
- b) Digitizers
- c) Data tablets
- d) Image Scanners

16. Beam penetration method is usually used in_____.

- a)LCD b)**Raster Scan display** c) Random scan display d)DVST

17. Identify different type of computer graphics

- a) Monochrome and Color b)CRT and Flat panel
- c)**Vector an Raster** d)Monitors and Hardcopy devices

18.In which of the following transformation methods of Computer Graphics is the Shape of the Object not def

- a. **Translation**
- b. Shearing
- c. Both a. and b.
- d. None of the above

19.Translation equation:

$$x_1 = x + T_x$$

$$y_1 = y + T_y$$

What is another name for the Translation pair (T_x , T_y)?

- a. **Shift Vector**
- b. Shift Coordinates
- c. Translation points
- d. None of the above

20.What value of the rotation angle rotates the object in clockwise direction?

- a. Positive Value
- b. **Negative value**
- c. Value less than 180 degree
- d. All of the above

UNIT II

1. Vector display is well suited for _____.
a) Animation b) **Line drawing applications** c) Cartoons d) All of the above
2. Identify the colors produced in beam penetration method.
a) Red, Green, Blue, White b) **Red, Orange, Yellow, Green**
c) Red, Green, Blue d) Green, Red, White, Orange
3. An RGB color system with 24 bits of storage per pixel is known as
a) Color CRT b) **True-color system** c) RGB monitor d) Color- Depth
4. Identify the features of Vector display
a) **High resolution, Jagged lines, Lack in color depth**
b) Smooth lines, Poor resolution, Black & White
c) High resolution, Lack in color depth, Smooth lines
d) Inexpensive, monochromatic, smooth lines
5. DVST stands for _____.
a) Digital View Storing Table b) Direct Visual Storage Tube
c) **Direct View Storage** Tube d) Digital View Storage Tube
6. Refreshing is not needed in DVST because of the presence of _____.
a) Primary gun b) **Flood gun** c) Focusing anode d) Control grid
7. In DVST, the electron beam from primary electron gun strikes on _____.
a) Phosphor screen b) Collector mesh c) **Storage mesh** d) Flood gun
8. Identify the features of DVST from the following.
a) Monochromatic, Flicker free, Low resolution b) **Monochromatic, Flicker free**
c) Color screens, Refresh monitors, High resolution d) Expensive, Low resolution
9. Video devices with reduced volume, weight and power consumption are collectively known as _____.
a) Light weight monitors b) **Flat-panel displays** c) CRT d) Portable display

10. is responsible for accessing the frame buffer to refresh the screen.
a) Graphics package b) **Video controller** c) CPU d) Monitor

11. Digitizing a picture definition into a set of intensity values is known as
a) Digitization b) **Scan conversion** c) Refreshing d) Scanning

12. will free the CPU from graphics chores.
a) **Display processor** b) Monitor c) ALU d) Video controller

13. Identify impact printer from the following
a) Drum Plotter b) Inkjet printer c) Electrostatic printer d) **Dot-matrix printer**

14. Write an example for non-impact printer
a) Drum plotter b) Electrostatic printer c) Laser printer d) **All of the above**

15. Identify the odd one out.
a) Mouse b) **Keyboard** c) Trackball d) Space ball

d. Shearing

16. An ellipse can also be rotated about its center coordinates by rotating
a. End points
b. **Major and minor axes**
c. Only A
d. None

17. is the rigid body transformation that moves object without deformation.
a. Translation
b. Scaling
c. **Rotation**
d. None of these

18. The two-dimensional rotation equation in the matrix form is
a. $P' = P + T$
b. $P' = R * P$
c. $P' = P * P$
d. $P' = R + P$

19. The original coordinates of the point in polar coordinates are
a. $X' = r \cos(\Phi + \Theta)$ and $Y' = r \cos(\Phi + \Theta)$
b. $X' = r \cos(\Phi + \Theta)$ and $Y' = r \sin(\Phi + \Theta)$
c. $X' = r \cos(\Phi - \Theta)$ and $Y' = r \cos(\Phi - \Theta)$
d. $X' = r \cos(\Phi + \Theta)$ and $Y' = r \sin(\Phi - \Theta)$

20. The rotation axis that is perpendicular to the xy plane and passes through the pivot point is known as

- a. **Rotation**
- b. Translation
- c. Scaling

UNIT III

1. The matrix representation for translation in homogeneous coordinates is

- a) $P' = T + P$
- b) $P' = S * P$
- c) $P' = R * P$
- d) **$P' = T * P$**

2. What is the use of homogeneous coordinates and matrix representation?

- a) **To treat all 3 transformations in a consistent way**
- b) To scale
- c) To rotate
- d) To shear the object

3. If point are expressed in homogeneous coordinates then the pair of (x, y) is represented as

- a) (x', y', z')
- b) (x, y, z)
- c) (x', y', w)
- d) **(x', y', w)**

4. For 2D transformation the value of third coordinate i.e. w=?

- a) **1**
- b) 0
- c) -1
- d) Any value

5. We can combine the multiplicative and translational terms for 2D into a single matrix representation by expanding

- a) 2 by 2 matrix into 4*4 matrix
- b) **2 by 2 matrix into 3*3**
- c) 3 by 3 matrix into 2 by 2
- d) Only c

6. We translate a two-dimensional point by adding
- Translation distances
 - Translation difference
 - X and Y
 - Only a**
7. The basic geometric transformations are
- Translation
 - Rotation
 - Scaling
 - All of the mentioned**
8. The original coordinates of the point in polar coordinates are
- $X' = r \cos(\Phi + \Theta)$ and $Y' = r \cos(\Phi + \Theta)$
 - $X' = r \cos(\Phi + \Theta)$ and $Y' = r \sin(\Phi + \Theta)$**
 - $X' = r \cos(\Phi - \Theta)$ and $Y' = r \cos(\Phi - \Theta)$
 - $X' = r \cos(\Phi + \Theta)$ and $Y' = r \sin(\Phi - \Theta)$
9. If the scaling factors values s_x and $s_y < 1$ then
- It reduces the size of object**
 - It increases the size of object
 - It stunts the shape of an object
 - None
10. If the value of $s_x = 1$ and $s_y = 1$ then
- Reduce the size of object
 - Distort the picture
 - Produce an enlargement
 - No change in the size of an object**
11. In DVST, the electron beam from primary electron gun strikes on _____.
- Phosphor screen
 - Collector mesh
 - Storage mesh**
 - Flood gun
12. Identify the features of DVST from the following.
- Monochromatic, Flicker free, Low resolution
 - Monochromatic, Flicker free**
 - Color screens, Refresh monitors, High resolution
 - Expensive, Low resolution
13. Video devices with reduced volume, weight and power consumption are collectively known as _____.
- Light weight monitors
 - Flat-panel displays**
 - CRT
 - Portable display
14. is responsible for accessing the frame buffer to refresh the screen.
- Graphics package
 - Video controller**
 - CPU
 - Monitor

15. Digitizing a picture definition into a set of intensity values is known as
a) Digitization b) **Scan conversion** c) Refreshing d) Scanning

16. _____ will free the CPU from graphics chores.
a) **Display processor** b) Monitor c) ALU d) Video controller

17. Identify impact printer from the following

a) Drum Plotter b) Inkjet printer c) Electrostatic printer d) **Dot-matrix printer**

18. Write an example for non-impact printer

a) Drum plotter b) Electrostatic printer c) Laser printer d) **All of the above**

19. Identify the odd one out.

a) Mouse b) **Keyboard** c) Trackball d) Space ball

20. An ellipse can also be rotated about its center coordinates by rotating

- a. End points
- b. **Major and minor axes**
- c. Only A
- d. None

UNIT IV

1 Three dimensional computer graphics become effective In the late

- a. 1960
- b. **1980**
- c. 1970
- d. 1950

2 A three dimensional object can also be represented using_____.

- a. Method
- b. **Equation**
- c. Point
- d. None of these

3 An_____ can be considered as an extension of spherical surface.

- a. Bezier
- b. **Ellipsoid**
- c. Shearing
- d. None of these

4 _____ curve is one of the sp line approximation methods.

- a. Bezier
 - b. Ellipsoid
 - c. **Shearing**
 - d. None of these
- 5 A Bezier curve is a polynomial of degree _____ the no of control points used.
- a. One more than
 - b. **One less than**
 - c. Two less than
 - d. None of these
- 6 The sweep representation of an object refers to the
- a. 2D representation
 - b. **3D representation**
 - c. Both a & b
 - d. None of these
- 7 The types of projection are
- a. **Parallel projection and perspective projection**
 - b. Perpendicular and perspective projection
 - c. Parallel projection and Perpendicular projection
 - d. None of these
- 8 _____ are the three dimensional analogs of quad trees.
- a. Quadric
 - b. **Octrees**
 - c. Geometry
 - d. None of these
- 9 _____ refer to the shapes created by union, intersection and difference of given shapes.
- a. Wire frame model
 - b. Composite transformation
 - c. **Constructive solid geometry methods**
 - d. None of these
- 10 In which projection, the plane normal to the projection has equal angles with these three axes
- a. Wire frame projection
 - b. Constructive solid geometry projection
 - c. **Isometric projection**
 - d. Perspective projection
11. Vector display is well suited for _____.
- a) Animation b) **Line drawing applications** c) Cartoons d) All of the above
12. Identify the colors produced in beam penetration method.
- a) Red, Green, Blue, White b) **Red, Orange, Yellow, Green**

- c)Red, Green, Blue d) Green, Red, White, Orange
13. An RGB color system with 24 bits of storage per pixel is known as
- a) Color CRT b)**True-color system**c)RGB monitor d)Color- Depth
14. Identify the features of Vector display
- a)**High resolution, Jagged lines, Lack in color depth**
- b)Smooth lines, Poor resolution, Black & White
- c)High resolution, Lack in color depth, Smooth lines
- d)Inexpensive, monochromatic, smooth lines
15. DVST stands for
- a)Digital View Storing Tube b)Direct Visual Storage Tube
- c)**Direct View Storage Tube** d)Digital View Storage Tube
16. Refreshing is not needed in DVST because of the presence of
- a) Primary gun b) **Flood gun**c) Focusing anode d)Control grid
17. In DVST, the electron beam from primary electron gun strikes on
- a) Phosphor screen b) Collector mesh c)**Storage mesh**d) Flood gun
18. Identify the features of DVST from the following.
- a) Monochromatic, Flicker free, Low resolution b)**Monochromatic, Flicker free**
- c) Color screens, Refresh monitors, High resolution d)Expensive, Low resolution
- 19.Video devices with reduced volume, weight and power consumption are collectively known as
- a) Light weight monitors b)**Flat-panel displays**c)CRT d) Portable display
20. is responsible for accessing the frame buffer to refresh the screen.
- a) Graphics package b) **Video controller**c) CPU d) Monitor

UNIT V

- 1 . The basic graphical interactions are
 - a. Pointing
 - b. Positioning
 - c. **Both a & b**
 - d. None of the above

2. _____ is a flexible strip that is used to produce smooth curve using a set of point.
 - a. **Spline**
 - b. Scan-line method
 - c. Depth-sorting method
 - d. None of these

- 3 . Cubic spline are
 - a. Simple to compute
 - b. Provides continuity of curves
 - c. **Both a & b**
 - d. None of these

- 4 The parametric form of 3D sp line are
 - a. **$X=f(t), y=g(t), z=h(t)$**
 - b. $X=a_0, y=b_0, z=c_0$
 - c. $F(t)=0, g(t)=0, h(t)=0$
 - d. None of these

- 5 The problem of hidden surface are
 - a. Removal of hidden surface
 - b. Identification of hidden surface
 - c. **Both a & b**
 - d. None of these

- 6 The algorithm of hidden surface are
 - a. Object-space method
 - b. Image-space method
 - c. **Both a & b**
 - d. None of these

- 7 The method which is based on the principle of comparing objects and parts of objects to each other to find which are visible and which are hidden are called
 - a. **Object-space method**
 - b. Image-space method
 - c. Surface-space method
 - d. Both a & b

- 8 Which surface algorithm is based on perspective depth ?

- a. Depth comparison
- b. **Z-buffer or depth-buffer algorithm**
- c. subdivision method
- d. back-face removal

9. A process with the help of which images or picture can be produced in a more realistic way is called

- a. Fractals
- b. Quad-tree
- c. **Rendering**
- d. None of these

10. Ray-tracing is an extension of

- a. Ray calling
- b. **Ray casting**
- c. Ray sampling
- d. Ray coherence

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT518 & COMPUTER GRAPHICS

UNIT I K2 Questions

1. Define Computer Graphics.
2. List the Application of Computer Graphics.
3. Define Refreshing of Screen.
4. Define Pixel.
5. Define refresh Buffer.
6. List out the merits and demerits of DVST.
7. Discuss about LCD.
8. Differentiate Emissive and Non – Emissive Displays.
9. List out the merits and demerits of Plasma Panel Display.
10. Define Persistence.

UNIT II K2 Questions

1. Write short notes on lines.
2. Define Circle.
3. Define polygon.
4. Distinguish between convex and concave polygons.
5. What is seed fill?
6. What is scan line algorithm?
7. Define coherence properties
8. What is an active edge list in the scan line algorithm?
9. What is cell array?
10. What are the various attributes of a line?

UNIT III
K2 Questions

1. What is Transformation?
2. Define Translation
3. Define Scaling
4. Define Rotation
5. Define Window
6. What is Composite transformation
7. What is Window to view port coordinate transformation
8. What is shearing?
9. What is fixed point scaling?
10. What is covering (exterior clipping)?
11. Are there Types of Clipping?
12. What is the need of homogeneous coordinates?
13. What is Polygon clipping

UNIT IV
K2 Questions

1. What are the various representation schemes used in three dimensional objects?
2. What are polygon surfaces, polygon tables and polygon equations
3. Differentiate parallel projection from perspective projection.
4. What is shear transformation?
5. Define quadric surfaces.
6. Categorize the 3D object representations?
7. What is Transformation?
8. What are the types of transformations?
9. What is a Blobby object
10. What is Polygon mesh?

11. What do you mean by view plane? What is view distance?
12. What are the various visible face detection methods or hidden surface elimination?

UNIT V
K2 Questions

1. How will you convert from YIQ to RGB color model?
2. What are subtractive colors?
3. What is RGB color model? How RGB model represented?
4. How RGB is converted to CMY?
5. How CMY is converted to RGB?
6. What is HLS color model?
7. What is color look up table?
8. Define Octrees
9. Define visible surface detection methods
10. Define image space method
11. Define object space method

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT518 & COMPUTER GRAPHICS

K3 QUESTIONS

UNIT I

1. Describe in CRT in details
2. Explain briefly about CRT Monitors
3. Discuss about three dimensional viewing devices
4. Explain how CAD is used in computer graphics
5. Explain the following two applications of computer graphics (a) Presentation Graphics(b) Image Processing
6. List out the merits and demerits of Plasma panel display
7. List out the merits and demerits of Penetration techniques
8. List out the difference between impact and non-impact printers
9. Explain direct view storage tubes and liquid crystal displays.
10. Explain the following: 1. Joysticks 2. Touch panels 3. Image scanners 4. Data glove

UNIT II

1. What is Output Primitive? What is point and lines in the computer graphics system?
2. Explain the following
 - i.Line Drawing algorithm.
 - ii.Line clipping algorithm.
3. How boundary fill algorithm works
4. What is DDA? What are the disadvantages of DDA algorithm?
5. How flood fill algorithm works.
6. Digitize a line from (10,12) to (15,15) on a raster screen using Bresenham's straight line
7. Algorithm what are the various line drawing algorithms
8. Write down and explain the midpoint circle drawing algorithm. Assume 10 cm as the radius and co-ordinate as the centre of the circle.

9. Calculate the pixel location approximating the first octant of a circle having centre at (4,5) and radius 4 units using Bresenham's algorithm.
10. Explain Ellipse generating Algorithm?

UNIT III

1. Write short notes on active and passive transformations?
2. Distinguish between window port & view port?
3. Write about Cohen-Sutherland line clipping algorithm with an example
4. List out the various Text clipping?
5. Distinguish between uniform scaling and differential scaling?
6. List out the Various types of Polygon clipping.
7. Explain frame buffer in detail.
8. Explain the following composite transformations(i)Translation(ii)Rotation
9. List out the advantages of rendering polygons by scan line method?
10. Explain about clipping operations.

UNIT IV

1. List out the steps involved in 3D transformation
2. With suitable examples explain all 3D transformations.
3. Differentiate parallel and perspective projections and derive their projection matrices.
4. Explain about 3D object representation.
5. Explain polygon surfaces and quadric surfaces.
6. Explain Bezier curve and spline.
7. Explain the following visible surface detection methods.(i)Back face detection
ii)Depth –Buffer method(iii)A-Buffer method
8. Write short notes on Polygons, curved Lines, and Quadratic surfaces
9. Explain three dimensional viewing
10. Write short notes on the following hidden surface elimination methods (i)Scan line Method (ii) Painter's algorithm (iii) BSP-tree method (iv) Area subdivision method

UNIT V

1. Differentiate image space method and object space method
2. Explain about various color models?
3. Explain in detail the CMY color model.
4. Compare and contrast between RGB and CMY color models.
5. Write notes on RGB and HSV color models.
6. Explain Depth sorting method
7. Explain Back face detection method and Depth buffer method
8. Explain about Color Selection.
9. List out the applications of Color
10. Explain on Ray-Casting Method.

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT518 – COMPUTER GRAPHICS

Section - C

UNIT I

K4 & K5 Questions

1. Explain Raster and Random Scan Displays.
2. Explain Briefly About flat panel displays
3. Explain Raster and Random Scan Systems
4. Discuss about Graphics Monitors and Workstations
5. List and Explain the Input Devices.

UNIT II

K4 & K5 Questions

1. Discuss in detail about the Line drawing DDA scan conversion algorithm.
2. Explain briefly about DDA algorithm for Line Drawing.
3. Explain Bresenham's Circle drawing algorithm in detail.
4. Explain Bresenham's Line drawing algorithm in detail
5. Discuss various region filling algorithms.

UNIT III

K4 & K5 Questions

1. Discuss about the general point pivot point and scaling .
2. Discuss about composite transformations for translation, scaling, rotation
3. Explain in detail about two dimensional viewing
4. Explain Sutherland Hodgeman polygon clipping
5. Explain Liang Barsky line clipping
6. Explain (i) General Pivot point rotation(ii)general Fixef Point Scaling(iii)General Pivot PointRotation

UNIT IV
K4 & K5 Questions

1. List and describe polygon table representation for two adjacent polygon surface formed with six edges and five vertices
2. Discuss about matrix for 3D z-axis rotation.
3. Explain matrix for 3D translation.
4. Explain the three dimensional display methods.
5. Analyze the procedure to calculate the parameters A,B,C,D using Cramers rule If the equation for plane surface is expressed in the form $Ax+By+Cz+D=0$

UNIT V
K4 & K5 Questions

1. Explain A – Buffer method
2. Explain depth sorting method
3. Explain the BSP tree method for visible surface detection
4. Solve the equation of a plane through the points (2,4,3), (4,4,5) and (8,9,3)
5. Discuss about the followings:
 - (a) depth field in A – buffer do
 - (b) intensity field in A – buffer do

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT625 - CYBER SECURITY

QUESTION BANK

Multiple Choice Questions

UNIT - I

1. Applets and Activex controls are _____ side programs.

- a) **Client**
- b) Database
- b) Server
- d) none of the above

2. The _____ attack is related to authentication.

- a) interception
- b) **fabrication**
- c) modification
- d) interruption

3. Interruption attacks are also called is _____ attacks

- a) **Masquerade**
- b) Alteration
- c) Denial of service
- d) Reply attacks

4. The language that we commonly used can be termed as _____

- a) Pure text
- b) Simple text
- c) **Plain text**
- d) normal text

5. Virus is a computer _____

- a) File
- b) **Programme**
- c) database
- d) Network

6. DOS attacks are caused by _____

- a) Authentication
- b) Alteration
- c) **fabrication**
- d) reply attacks

7. A worm _____ modify a program.

- a) **Does not**
- b) does

c) may or may not d) may

8. Allowing certain users specific accesses comes in the purview of _____

a) confidentiality b) Authentication

c) Availability d) **Access control**

9. The principle of _____ ensures that the sender of a message cannot later claim that the message was never sent

a) **access control** b) authentication

c) availability d) non repudiation

10. Active X controls are _____ as compared to applets

a) more b) **equally**

c) far more d) less

11. Caesar cipher is an example of _____

a) **substitution cipher** b) trans position cipher

c) substitution as well as trans position cipher

d) none of the above

12. The codified language can be termed as _____

a) clear text b) unclear text

c) code text d) **cipher text**

13. The book cipher is also called as _____

a) rail fence technique b) one time pad

c) mono alphabetic cipher d) **running key cipher**

14. Crypt analyst is a person who _____

a) devises cryptography solutions

b) **attempts to break cryptography solutions**

c) none of these

d) both of these

15. If the number of parties involved in a lock key mechanism is 4, the number of keys needed is _____

a) 2

b) 4

c) 6

d) 8

16. Homophonic substitution cipher is _____ to break as compared to mono alphabetic cipher

a) easier

b) **same**

c) difficult

d) easier or same

17. The conversion of plain text into cipher text is called as _____

a) **Encryption**

b) decryption

c) crypto graphy

d) crypt analyst

18. A poly alphabetic cipher uses may _____

a) **keys**

b) trans positions

c) codes

d) mono alphabetic rules

19. Conversion of cipher text into plain text is called as _____

a) Encryption

b) **decryption**

c) crypto graphy

d) crypt analyst

20. Vernam cipher is called as

a) rail fence technique

b) **one time pad**

c) book cipher

d) running key cipher

UNIT-II

1. There are _____ rounds in DES

a) 8

b) 10

c) 14

d) **16**

2. In _____ one bit of plain text is encrypted at a time

a) **stream cipher**

b) block cipher

c) both of them

d) none of the above

3. The actual algorithm AES encryption scheme is

a) blowfish

b) **RIJNDAEL**

c) RC4

d) IDEA

4. In IDEA, the key size is _____

a) **128 bytes**

b) 128 bits

c) 256 bytes

d) 256 bits

5. There are _____ encryption rounds in RC5

a) 8

b) 12

c) **16**

d) 20

6. The _____ steps ensures that plain text is not vulnerable in block cipher mode.

a) **encryption**

b) Round

c) Initial

d) chaining

7. _____ works on block mode.

a) CFB

b) OFB

c) CCB

d) **CBC**

8. _____ increase the redundancy of plain text

a) confusion

b) **diffusion**

c) both

d) none of these

9. _____ is based on IDEA algorithm.

a) S/MIME

b) **PGP**

c) SET

d) SSL

10. In _____ one block of plain text is encrypted at a time

a) **stream cipher**

b) block cipher

c) both

d) none of the above

11. _____ is a message digest algorithm

a) DES

b) IDEA

c) **MD5**

d) RSA

12. MAC is _____ a message digest.

a) **same as**

b) different from

c) subset of

d) none of the above

13. The strongest message digest algorithm is considered as _____

a) **SHA-1**

b) SHA-256

c) SHA-128

d) SHA-512

14. A _____ is used to verify the integrity of message.

a) **message digest**

b) decryption algorithm

c) Digital envelope

d) none of the above

15. To decrypt a message encrypted using RSA, we need the _____

a) **senders private key**

b) senders public key

c) receivers private key

d) receivers public key

16. To verify a digital signature need the _____

a) senders private key

b) senders public key

c) **receivers private key**

d) receivers public key

17. The private key is _____

a) must be distributed

b) must be shared with every one

c) **must remain secret with an individual**

d) none of the above

18. Symmetric key cryptographic is _____ than asymmetric key cryptography.

a) always slower

b) of the same speed

c) **faster**

d) usually slower

19. In asymmetric key cryptography, _____ keys are required per communicating party

a) **2**

b) 3

c) 4

d) 5

20. RSA _____ be used for digital signatures.

a) must not

b) cannot

c) **can**

d) should not

UNIT - III

1. A _____ can issue digital certificates.

a) **CA**

b) Government

c) shop keeper

d) Bank

2. The CA sign a digital certificate with _____

a) **the user's public key**

b) the user's private key

c) its own private key

d) its own public key

3. CRL is _____

a) **online**

b) offline

c) both

d) not defined

4. We trust a digital certificates because it contains _____

- a) owners public key
- b) CA Public key
- c) **CA Signature**
- d) Owners signature

5.OCSP is _____

- a) **online**
- b) offline
- c) both
- d) not defined

6. To solve the problem of trust _____ is used

- a) private key
- b) public key
- c) self signed certificates
- d) **digital signature**

7. The CA with the highest authority is called as _____ CA

- a) **root**
- b) head
- c) main
- d) chief

8. The _____ of the user should never appear in the certificate

- a) Private key
- b) Public key
- c) Organization name
- d) **name**

9. Requesting for a certificate results into the creation of _____

- a) PKCS#7
- b) PKCS#9
- c) PKCS#10
- d) **PKCS#12**

10. The final solution to the problem of key exchange is the use of _____

- a) passport
- b) digital envelope
- c) **digital certificate**
- d) message digest

11. A registration authority _____ issued digital certificates.

- a) **can**
- b) may or maynot

d) can never

b) Privacy Enhanced Mail

c) Private Electronic Mail

b) data base authentication

d) client authentication

b) HTTPS

d) **SHTTP**

b) Single signature

d) Dual signature

b) second

d) None of the above

b) Customer

d) issuer

b) Single signature

d) Dual signatures

b) record

d) dynamic

20. 3D secure is an enhancement to _____

- a) **SET**
- b) SSL
- c) HTTP
- d) PGP

UNIT – IV

1. PEM allow for _____ security options

- a) 2
- b) 3
- c) **4**
- d) 5

2. The security layer in WAP is between the _____ layer and the _____ layer.

- a) transaction, transport
- b) **application, transport**
- c) transport, physical
- d) session, transport

3. In _____ we have concept of key rings.

- a) PEP
- b) **PGP**
- c) SMTP
- d) MIME

4. The _____ protocol need to identified the content type before email can be transmitted

- a) **PEM**
- b) PGP
- c) SMTP
- d) MIME

5. Electronic money made up to _____ in physical form

- a) Floppy disks
- b) hard disks
- c) **credit card**
- c) computer files

6. _____ security is located in the lower layers.

- a) **GSM**
- b) PGP
- c) PEP
- C) **WTLS**

7. Wireless transport layer security provides security in _____

- a) GSM
- b) **WAP**
- c) PEP
- c) PGP

8. _____ is quite simple to understand and implement

- a) GSM
- b) WAP
- c) PEP
- c) **PGP**

9. The output of S/MIME is a _____ object.

- a) GSM
- b) **PKCS**
- c) PEP
- c) PGP

10. _____ provides services such as encryption, messages digest and digital signatures.

- a) **PEM**
- b) WAP
- c) PEP
- c) PGP

11. Kerberos provides for _____

- a) Encryption
- b) SSO
- c) **Remote login**
- d) local login

12. Password based authentication is an example of _____ authentication

- a) 1 factor
- b) **2 factor**
- c) 3 factor
- d) 4 factor

13. _____ is the most common authentication mechanism.

- a) smartcard
- b) pin
- c) bio-metrics
- d) **password**

14. In time based tokens the variable token is _____

- a) seed
- b) **time**

d) random challenge

a) credit card

b) debit card

d) ATM card

a) 2

b) 2

d) 0 or 1

a) Authentication

b) authorization

d) access control

a) **password**

b) user ID

c) Message digest

a) **SSO**

b) HTTP

d) private key

a) **One way**

b) two way

c) None of these.

1. out of JCA and JCE, _____ needs licensing

b) **only JCE**

d) neither JCA nor JCE

2. JAVA cryptography mechanism are in the form of _____ and _____

- a) JCP, JCA
- b) JCA, JCB
- c) **JCA, JCE**
- d) JCE, JCF

3. _____ provides for plug-able architecture

- a) **JCA**
- b) JCB
- c) JCE
- d) JCP

4. digital signature are a part of _____

- a) only JCA
- b) only JCE
- c) **both JCA and JCE**
- d) neither JCA nor JCE

5. _____ privileges apply to individual users.

- a) **Object**
- b) table
- c) Index
- d) system

6. .NET security has architecture similar to that of _____

- a) JCA
- b) JCB
- c) **JCE**
- d) JCP

7. _____ toolkits can also be used for cryptography

- a) database
- b) **cryptographic**
- c) JAVA
- d) SQL

8. Data base control can be classified into _____ types

- a) 1
- b) **2**
- c) 3
- d) 4

9. _____ provides rich futures for data base control and privilege enforcement

- a) database
- b) **cryptographic**

c) JAVA

d) **SQL**

10. _____ consists of engine classes and provider classes

a) JCA

b) cryptographic

c) **JAVA**

d) SQL

11. Firewall is specialized form of a _____

a) bridge

b) disk

c) printer

d) **router**

12. key management in IPSec is done by _____

a) tunnel mode

b) **transport mode**

c) IKE

d) ESP

13. _____ allows reuse of IP address.

a) firewall

b) **IPSec**

c) NAT

d) VPN

14. Encryption in IPSec is done by _____

a) **tunnel mode**

b) transport mode

c) IKE

d) ESP

15. A packet filter examines _____ packets.

a) **all**

b) no

c) some

d) alternate.

16. Application gateways are _____ than packet filters.

a) less secure

b) **more secure**

c) equally secure

d) slower

17. IPSec provides security at the _____ layer

a) applications

b) **transport**

c) network

d) data link

18. The trap set to attract potential attackers is called is _____

a) VPN

b) TRAP DOOR

c) PROXY

d) **Honey pot**

19. _____ provides security between the transport and the internet layers

a) **IPSec**

b) NAT

c) DMZ

c) HTTP

20. _____ Architectures combines the various types of firewalls in some combinations.

a) Transport

b) firewall

c) **internet**

d) applications

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT625 – CYBER SECURITY

K2 QUESTIONS

UNIT 1

1. What is trusted system?
2. What are the four chief principles of security?
3. Define the term virus?
4. List out the four phases of virus?
5. Define is Brute- force attack?
6. Define Cryptography.
7. What is Cryptanalysis?
8. Define the term plain text.
9. Define the term Cipher text.
10. Distinguish between encryption and decryption.

UNIT II

1. Define the term Stream cipher.
2. Define the term Block cipher.
3. List out the types of algorithm modes.
4. What is another name for Book cipher?
5. Expand “CFB”.
6. What is Initialization Vector?
7. What is Encrypt – Decrypt- Encrypt mode?
8. How many rounds in DES?
9. Define Confusion.
10. Define diffusion.

UNIT III

1. Similarities between a passport and a digital certificate.
2. Which standard defines the structure of a digital certificate?
3. What is Registration Authority?
4. List out the steps involved in creation of digital certificate.
5. Expand CLR.
6. Online Certificate Status protocol works on which mechanism?
7. Define static web page.
8. Define active web page.
9. List out TCP/IP layers.
10. List out the sub-protocols used in secure Socket Layer.

UNIT IV

1. What are the email-protocols used at the receiver end?
2. List out the three main email security protocols.
3. What are the cryptographic functions supported by privacy enhanced mail.
4. List out the operations of PEM.
5. What are the other names for Base-64 encoding?
6. Expand the term S/MIME.
7. What are the three key aspects of GSM?
8. Expand the term GPRS and UMTS.
9. Define password.
10. List out four parties involved in Kerberos protocol.

UNIT V

1. List out java cryptography classification.
2. Which is commonly known as provider architecture?
3. What are the two classes in JCA?
4. What is keystore?
5. List out the two types firewalls.
6. Define packet filters.
7. List out the other names for packet filter.
8. List out three types of intruders.
9. Define masquerader.
10. What are the two categories of audit records?

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT625 - CYBER SECURITY

K3 Questions

UNIT 1

1. Examine the need for security
2. Discriminate the security approaches in computer.
3. Analyze the general view of attack in computer security.
4. Point out the types of attacks and explain the same.
5. Illustrate the passive attacks and explain.
6. Identify the relationship between plain text and cipher text with example.
7. Differentiate Substitution Cipher and Transposition Cipher?
8. Discuss the concept of Caesar Cipher with experiment
9. Distinguish between encryption and decryption.
10. Illustrate the function of Rail Fence Technique.

UNIT 2

1. Illustrate the concept of symmetric key cryptography.
2. Distinguish between stream cipher and block cipher.
3. Explain the algorithm modes with neat classification diagram.
4. Illustrate the concept of Electronic Code Book Mode.
5. Illustrate the concept of Cipher Block Chaining Mode.
6. Examine the details and usage of algorithm modes.
7. Discriminate the key advantages and disadvantages of the various algorithm modes.

8. Point out the concept of S-box substitution in DES algorithm.
9. Analyze the history of Asymmetric key cryptography.
10. Outline of asymmetric key cryptography explain the concept.

UNIT 3

1. Examine the concept of Digital Certificate.
2. Discriminate the Certification Authority in detail.
3. Point out the steps for verifying the digital certificate.
4. Explain the certificate hierarchy with the outline.
5. Distinguish between OCSP and SCVP.
6. Criticize why we need self-signed certificate?
7. Illustrate the concept of static web pages.
8. Examine the layered organization in TCP/IP protocol.
9. Explain about SSL Record Protocol operation with neat diagram.
10. Discriminate the concept of SHTTP.

UNIT 4

1. With neat diagram explain the SMT Protocol.
2. Write a short on Privacy Enhanced Mail with neat diagram.
3. Illustrate PGP algorithm in detail.
4. Illustrate the cryptographic algorithms used in S/MIME.
5. Infer the three key aspects to GSM security.

6. Examine the basic concept of security in 3G.
7. Discriminate the concept of clear text password step by step.
8. Criticize the problems in clear text password
9. Explain about password encryption with the elaborate diagram.
10. Point out the work of Kerberos in detail.

UNIT 5

1. Illustrate the basic concept of cryptographic solutions using Java.
2. Discriminate the features of Java Cryptographic Architecture.
3. What is the reason behind separating JCA and JCE?
4. Illustrate the basic concept of TCP/IP.
5. Illustrate the overview of firewall.
6. What are the three main actions of a packet filter?
7. How is a circuit gateway differentiate from an application gateway?
8. Illustrate the limitations of firewall.
9. Examine the concept of Intrusion.
10. Explain about intrusion detection with neat classification diagram.

DEPARTMENT OF COMPUTER TECHNOLOGY

20UCT625 – CYBER SECURITY

K4 , K5 QUESTIONS

UNIT 1

1. List out the principles of security and explain in detail.
2. Summarize mono-alphabetic cipher, homophonic cipher, polygram cipher and polyalphabetic cipher of substitution technique in detail.
3. Write about playfair cipher in detail with suitable example.
4. Explain in detail on Simple columnar transposition technique with multiple rounds.
5. Describe about Rail Fence, vernam cipher and book cipher of transposition technique in detail.
6. Analyze the general view of attack in computer security.
7. Point out the types of attacks and explain the same.
8. Illustrate the passive attacks and explain.
9. Identify the relationship between plain text and cipher text with example.
10. Differentiate Substitution Cipher and Transposition Cipher?

UNIT 2

1. Explain in detail about Cipher Feedback Mode.
2. Explain in detail about Output Feedback Mode.
3. Write about DES algorithm and explain how does it work?
4. Explain the steps for RSA algorithm with appropriate example.
5. Discriminate variations of DES with neat diagram.
6. Distinguish between stream cipher and block cipher.

7. Explain the algorithm modes with neat classification diagram.
8. Illustrate the concept of Electronic Code Book Mode.
9. Illustrate the concept of Cipher Block Chaining Mode.
10. Examine the details and usage of algorithm modes

UNIT 3

1. Explain in detail on technical details of digital certificate.
2. Describe the concept of certificate revocation.
3. Describe about the mechanism of PKIX model.
4. Explain in detail about dynamic and active web pages.
5. Explain in detail about Secure Socket Layer.
6. Discriminate the Certification Authority in detail.
7. Point out the steps for verifying the digital certificate.
8. Explain the certificate hierarchy with the outline.
9. Distinguish between OCSP and SCVP.
10. Criticize why we need self-signed certificate?

UNIT 4

1. Write about PGP and explain how does it work?
2. Explain the idea behind the PGP certificates.
3. Describe in detail about Security in 3G.
4. Summarize the concept of “Something derived from passwords” with neat diagrams.
5. Explain in detail about Kerberos.

- 6.Examine the basic concept of security in 3G.
7. Discriminate the concept of clear text password step by step.
8. Criticize the problems in clear text password
9. Explain about password encryption with the elaborate diagram.
10. Point out the work of Kerberos in detail.

UNIT 5

1. Describe the java cryptography architecture in detail.
2. Explain briefly about TCP/IP with suitable diagrams.
3. List out the types of firewalls and explain in detail.
4. Write about VPN and explain its architecture elaborately.
5. Describe briefly about intrusion.
- 6.Discriminate the features of Java Cryptographic Architecture.
7. What is the reason behind separating JCA and JCE?
8. Illustrate the basic concept of TCP/IP.
9. Illustrate the overview of firewall.
10. What are the three main actions of a packet filter?

20UCT4A4- ALLIED-IV BIG DATA ANALYTICS

(K1 LEVEL QUESTIONS)

UNIT-1

1. As companies move past the experimental phase with Hadoop, many cite the need for additional capabilities, including _____

- a) Improved data storage and information retrieval
- b) Improved extract, transform and load features for data integration
- c) Improved data warehousing functionality
- d) Improved security, workload management, and SQL support**

2. Point out the correct statement.

- a) Hadoop do need specialized hardware to process the data
- b) Hadoop 2.0 allows live stream processing of real-time data**
- c) In Hadoop programming framework output files are divided into lines or records
- d) None of the mentioned

3. According to analysts, for what can traditional IT systems provide a foundation when they're integrated with big data technologies like Hadoop?

- a) Big data management and data mining**
- b) Data warehousing and business intelligence
- c) Management of Hadoop clusters
- d) Collecting and storing unstructured data

4. Hadoop is a framework that works with a variety of related tools. Common cohorts include _____

- a) MapReduce, Hive and HBase**
- b) MapReduce, MySQL and Google Apps

- c) MapReduce, Hummer and Iguana
- d) MapReduce, Heron and Trumpet

5. Point out the wrong statement.

- a) Hardtop processing capabilities are huge and its real advantage lies in the ability to process terabytes & petabytes of data
- b) Hadoop uses a programming model called “MapReduce”, all the programs should conform to this model in order to work on Hadoop platform
- c) The programming model, MapReduce, used by Hadoop is difficult to write and test**
- d) All of the mentioned

6. What was Hadoop named after?

- a) Creator Doug Cutting’s favorite circus act
- b) Cutting’s high school rock band
- c) The toy elephant of Cutting’s son**
- d) A sound Cutting’s laptop made during Hadoop development

7. All of the following accurately describe Hadoop, EXCEPT _____

- a) Open-source
- b) Real-time**
- c) Java-based
- d) Distributed computing approach

8. _____ can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of data.

- a) MapReduce**
- b) Mahout

- c) Oozie
- d) All of the mentioned

9. Facebook Tackles Big Data With _____ based on Hadoop.

- a) 'Project Prism'**
- b) 'Prism'
- c) 'Project Big'
- d) 'Project Data'

10. _____ has the world's largest Hadoop cluster.

- a) Apple
- b) Datamatics**
- c) Facebook
- d) None of the mentioned

11. Which of the following are incorrect Big Data Technologies?

- A. Apache Hadoop
- B. Apache Spark
- C. Apache Kafka
- D. Apache Pytarch**

12. How many V's of Big Data

- A. 2
- B. 3
- C. 4
- D. 5**

13. Transaction data of the bank is?

- A. structured data**
- B. unstructured data

- C. Both A and B
- D. None of the above

14. In how many forms BigData could be found?

- A. 2
- B. 3**
- C. 4
- D. 5

15. Which of the following are Benefits of Big Data Processing?

- A. Businesses can utilize outside intelligence while taking decisions
- B. Improved customer service
- C. Better operational efficiency
- D. All of the above**

16. Which of the following are Benefits of Big Data Processing?

- A. Businesses can utilize outside intelligence while taking decisions
- B. Improved customer service
- C. Better operational efficiency
- D. All of the above**

17. The overall percentage of the world's total data has been created just within the past two years is ?

- A. 80%
- B. 85%
- C. 90%**
- D. 95%

18. Apache Kafka is an open-source platform that was created by?

A. LinkedIn

B. Facebook

C. Google

D. IBM

19. What was Hadoop named after?

A. Creator Doug Cutting's favorite circus act

B. Cuttings high school rock band

C. The toy elephant of Cutting's son

D. A sound Cutting's laptop made during Hadoop development

20. What are the main components of Big Data?

A. MapReduce

B. HDFS

C. YARN

D. All of the above

UNIT-2

1: Point out the correct statement:

(A) Applications can use the Reporter to report progress

(B) The HadoopMapReduce framework spawns one map task for each InputSplit generated by the InputFormat for the job

(C) The intermediate, sorted outputs are always stored in a simple (key-len, key, value-len, value) format

(D) All of the above

2: Input to the _____ is the sorted output of the mappers.

(A) Reducer

(B) Mapper

(C) Shuffle

(D) All of the above

3. The right number of reduces seems to be _____ .

(A) 0.65

(B) 0.55

(C) 0.95

(D) 0.68

4: The output of the _____ is not sorted in the Mapreduce framework for Hadoop.

(A) Mapper

(B) Cascader

(C) Scalding

(D) None of the above

5: Which of the following phases occur simultaneously ?

(A) Reduce and Sort

(B) Shuffle and Sort

(C) Shuffle and Map

(D) All of the above

6: Mapper and Reducer implementations can use the _____ to report progress or just indicate that they are alive.

(A) Partitioner

(B) OutputCollector

(C) Reporter

(D) All of the above

7: _____ is a generalization of the facility provided by the MapReduce framework to collect data output by the Mapper or the Reducer.

(A) Partitioner

(B)OutputCollector

(C) Reporter

(D) All of the above

8: _____ is the primary interface for a user to describe a MapReduce job to the Hadoop framework for execution.

(A) Map Parameters

(B) JobConf

(C) MemoryConf

(D) All of the above

9. A _____ serves as the master and there is only one NameNode per cluster.

(A) Data Node

(B) NameNode

(C) Data block

(D) Replication

10: HDFS works in a _____ fashion.

(A) master-worker

(B) master-slave

(C) worker/slave

(D) All of the above

11: _____ NameNode is used when the Primary NameNode goes down.

(A) Rack

(B) Data

(C) Secondary

(D) None

12: Which of the following scenario may not be a good fit for HDFS?

(A) HDFS is not suitable for scenarios requiring multiple/simultaneous writes to the same file

(B) HDFS is suitable for storing data related to applications requiring low latency data access

(C) HDFS is suitable for storing data related to applications requiring high latency data access

(D) None of the above

13: The need for data replication can arise in various scenarios like _____ .

(A) Replication Factor is changed

(B) DataNode goes down

(C) Data Blocks get corrupted

(D) All of the above

14: _____ is the slave/worker node and holds the user data in the form of Data Blocks.

(A) DataNode

(B) NameNode

(C) Data block

(D) Replication

15: HDFS provides a command line interface called _____ used to interact with HDFS.

(A) HDFS Shell

(B) FS Shell

(C) DFSA Shell

(D) None

16: HDFS is implemented in _____ programming language.

(A) C++

(B) Java

(C) Scala

(D) None

17: _____ is the world's most complete, tested, and popular distribution of Apache Hadoop and related projects.

(A) MDH

(B) CDH

(C) ADH

(D) BDH

18: Cloudera _____ includes CDH and an annual subscription license (per node) to Cloudera Manager and technical support.

(A) Enterprise

(B) Express

(C) Standard

(D) None the above

19: Cloudera Express includes CDH and a version of Cloudera _____ lacking enterprise features such as rolling upgrades and backup/disaster recovery.

(A) Enterprise

(B) Express

(C) Standard

(D) Manager

20: Cloudera Enterprise comes in _____ edition .

(A) One

(B) Two

(C) Three

(D) Four

UNIT-3

1: _____ is a online NoSQL developed by Cloudera.

(A) HCatalog

(B) Hbase

(C) Imphala

(D) Oozie

2: _____ is an open source set of libraries, tools, examples, and documentation engineered.

(A) Kite

(B) Kize

(C) Ookie

(D) All of the above

3: To configure short-circuit local reads, you will need to enable _____ on local Hadoop.

(A) librayhadoop

(B) libhadoop

(C) libhad

(D) hadoop

4. CDH process and control sensitive data and facilitate _____ .

(A) multi-tenancy

(B) flexibility

(C) scalability

(D) resiliability

5: _____ can change the maximum number of cells of a column family.

(A) set

(B) reset

(C) alter

(D) connect

6: Which of the following is not a table scope operator ?

(A) MEMSTORE_FLUSH

(B) MEMSTORE_FLUSHSIZE

(C) MAX_FILESIZE

(D) None of the mentioned

7: You can delete a column family from a table using the method _____ of HBaseAdmin class.

(A) delColumn()

(B) removeColumn()

(C) deleteColumn()

(D) None of the mentioned

8: _____ class adds HBase configuration files to its object.

(A) Configuration

(B) Collector

(C) Component

(D) None of the above

9: The _____ class provides the getValue() method to read the values from its instance.

(A) Get

(B) Result

(C) Put

(D) Value

10: _____ communicate with the client and handle data-related operations.

(A) Master Server

(B) Region Server

(C) Htable

(D) All of the above

11: _____ is the main configuration file of HBase.

(A) hbase.xml

(B) hbase-site.xml

(C) hbase-site-conf.xml

(D) None of the above

12: HBase uses the _____ File System to store its data.

(A) Hive

(B) Impala

(C) Hadoop

(D) Scala

13: Which of the following is a principle of analytic graphics?

(A) Don't plot more than two variables at a time

(B) Make judicious use of color in your scatterplots

(C) Show box plots (univariate summaries)

(D) Show causality, mechanism, explanation

14. Which of the following is true about the base plotting system?

(A) Margins and spacings are adjusted automatically depending on the type of plot and the data

(B) Plots are typically created with a single function call

(C) Plots are created and annotated with separate functions

(D) The system is most useful for conditioning plots

15: Which of the following is an example of a valid graphics device in R?

(A) A socket connection

(B) A Microsoft Word document

(C) A PDF file

(D) A file folder

16: Which of the following is an example of a vector graphics device in R?

(A) JPEG

(B) GIF

(C) PNG

(D) SVG

17: Bitmapped file formats can be most useful for _____ .

(A) Plots that may need to be resized

(B) Plots that require animation or interactivity

(C) Plots that are not scaled to a specific resolution

(D) Scatterplots with many many points

18: Which of the following functions is typically used to add elements to a plot in the base graphics system?

(A) lines()

(B) hist()

(C) plot()

(D) boxplot()

19: Which of the following is a base package for R language ?

(A) util

(B) lang

(C) tools

(D) all the above

20: Advanced users can write ____ code to manipulate R objects directly.

(A) C

(B) C++

(C) Java

(D) None

UNIT-4

1: InfoSphere DataStage has _____ levels of Parallelism.

(A) 1

(B) 2

(C) 3

(D) 4

2: _____ is used for processing complex transactions and messages.

(A) PS

(B) Server Edition

(C) MVS Edition

(D) TX

3: DataStage originated at _____, a company that developed two notable products: UniVerse database and the DataStage ETL tool

(A) VMark

(B) Vzen

(C) Hatez

(D) SMark

4: DataStage RTI is real time integration pack for _____.

(A) STD

(B) ISD

(C) EXD

(D) FSD

5: The IBM _____ Platform provides all the foundational building blocks of trusted information, including data integration, data warehousing, master data management, big data and information governance.

(A) InfoStream

(B) InfoSphere

(C) InfoSurface

(D) InfoSurface

6: _____ is a standard Java API for monitoring and managing applications.

(A) JVM

(B) JVN

(C) JMX

(D) JMY

7: For YARN, the _____ Manager UI provides host and port information.

(A) Data Node

(B) NameNode

(C) Resource

(D) Replication

8: . Collection of objects currently stored in R is called as _____ .

(A) package

(b) workspace

(C) list

(D) array

9. According to analysts, for what can traditional IT systems provide a foundation when they're integrated with big data technologies like Hadoop?

(A) Big data management and data mining

(B) Data warehousing and business intelligence

(C) Management of Hadoop clusters

(D) Collecting and storing unstructured data

10.What are the main components of Big Data?

(A) MapReduce

(B) HDFS

(C) YARN

(D) All of these

11.What are the different features of Big Data Analytics?

(A) Open-Source

(B) Scalability

(C) Data Recove

(D) All the above

12. What are the four V's of Big Data?

(A) Volume

(B) Velocity

(C) Variety

(D) All the above

13. For drawing insights for business, what are needed?

a. Collecting the data

b. Storing the data

c. Analysing the data

d. All the above

14. Does Facebook use "Big Data" to perform the concept of Flashback? Is this True or False

.

a. TRUE

b. FALSE

15. The process of describing the data that is huge and complex to store and process is known as

a. Analytics

b. Data mining

c. Big Data

d. Data Warehouse

16.Data generated from online transactions is one of the example for volume of big data. Is this true or False.

a. TRUE

b. FALSE

.

17.Velocity is the speed at which the data is processed

a. TRUE

b. FALSE

18._____ have a structure but cannot be stored in a database.

a. Structured

b. Semi-Structured

c. Unstructured

d. None of these

19._____refers to the ability to turn your data useful for business.

- a. Velocity
- b. Variety

c. Value

- d. Volume

20. _____ is an open source framework for storing data and running application on clusters of commodity hardware.

- a. HDFS

b. Hadoop

- c. MapReduce

- d. Cloud

UNIT-5

1.HDFS Stores how much data in each clusters that can be scaled at any time?

- a. 32

- b. 64

c. 128

- d. 256

2.Hadoop MapReduce allows you to perform distributed parallel processing on large volumes of data quickly and efficiently... is this MapReduce or Hadoop... i.e statement is True or False

a. TRUE

b. FALSE

3.There is only one operation between Mapping and Reducing is it True or False...

a. TRUE

b. FALSE

4._____ is factors considered before Adopting Big Data Technology.

a. Validation

b. Verification

c. Data

d. Design

5._____ for improving supply chain management to optimize stock management, replenishment, and forecasting;

a. Descriptive

b. Diagnostic

c. Predictive

d. Prescriptive

6. which among the following is not a Data mining and analytical applications?

a. profile matching

b. social network analysis

c. facial recognition

d. **Filtering**

7. _____ as a result of data accessibility, data latency, data availability, or limits on bandwidth in relation to the size of inputs.

a. Computation-restricted throttling

b. Large data volumes

c. **Data throttling**

d. Benefits from data parallelization

8. As an example, an expectation of using a recommendation engine would be to increase same-customer sales by adding more items into the market basket.

a. Lowering costs

b. **Increasing revenues**

c. Increasing productivity

d. Reducing risk

9. Which storage subsystem can support massive data volumes of increasing size.

a. Extensibility

b. Fault tolerance

c. Scalability

d. High-speed I/O capacity

10. _____ is a programming model for writing applications that can process Big Data in parallel on multiple nodes.

a. HDFS

b. MAP REDUCE

c. HADOOP

d. HIVE

11. _____ takes the grouped key-value paired data as input and runs a Reducer function on each one of them.

a. MAPPER

b. REDUCER

c. COMBINER

d. PARTITIONER

12. _____ is a type of local Reducer that groups similar data from the map phase into identifiable sets.

a. MAPPER

b. REDUCER

c. COMBINER

d. PARTITIONER

13. While Installing Hadoop how many xml files are edited and list them ?

i. **core-site.xml**

ii. hdfs-site.xml

iii. mapred.xml

iv. yarn.xml

14. Sentiment Analysis is an example of

1. Regression 2. Classification 3. Clustering 4 Reinforcement Learning

a. 1, 2 and 4

b. 1 and 3

c. 1, 2 and 3

d. 1 and 2

15. Can decision trees be used for performing clustering?

a. True

b. False

16. What is the minimum no. of variables/ features required to perform clustering?

1. 0

2. 1

3. 2

4. 3

17. For two runs of K-Mean clustering is it expected to get same clustering results?

1. Yes

2. No

18. Which of the following can act as possible termination conditions in K-Means?

1. For a fixed number of iterations.
2. Assignment of observations to clusters does not change between iterations. Except for cases with a bad local minimum.
3. Centroids do not change between successive iterations.
4. Terminate when RSS falls below a threshold.

a. 1, 3 and 4

b. 1, 2 and 3

c. 1, 2 and 4

d. All of the above

19. Which of the following algorithm is most sensitive to outliers?

1. K-means clustering algorithm

2. K-medians clustering algorithm

3. K-modes clustering algorithm

4. K-medoids clustering algorithm

20. Prior knowledge of the data, they are among the most popular algorithms for classifying text documents.

a. ID3

b. Naïve Bayes classifiers

c. CART

d. None of these..

20UCT4A4- Big Data Analytics

K2 LEVEL

UNIT- 1

1. What is big data approach?
2. List out the applications of big data analytics.
3. List the types of cloud environment.
4. What is reporting?
5. What is analysis?
6. List out the cross validation technique
7. Write short note on Map Reduce?
8. What is cloud computing?
9. Describe the drawbacks of cloud computing?
10. List out the four major types of resampling.

UNIT 2

1. What are the three stages of IDA process?
2. What is linear regression?
3. Explain Bayesian Inference ?
4. What is meant by rule induction?
5. What are the two strategies in Learn-One-Rule Function?
6. Write down the topologies of Neural Network
7. What is meant by fuzzy logic?
8. Write short note on fuzzy qualitative modeling.
9. What are the steps for Bayesian data analysis?
10. What are the three techniques of Feature selection?

UNIT 3

1. What is data stream model?
2. Define Data Stream Mining.
3. Explain “Over fitting.”
4. what is meant by one-time queries?
5. Define biased reservoir sampling.
6. What is Bloom Filter?
7. List out the applications of RTAP.
8. Draw a High-Level architecture for RADAR.
9. What are the three layers of Lambda architecture?
10. What is RTSA?

UNIT 4

1. What is Association Rule Mining?
2. List any two algorithms for Finding Frequent Item set
3. What is meant by curse of dimensionality?
4. Write an algorithm of Park-Chen-Yu
5. Define Toivonen’s Algorithm
6. List out some applications of clustering.
7. What are the types of Hierarchical Clustering Methods?
8. Define CLIQUE
9. What is meant by k-means algorithm?
10. Explain the different features of Hadoop.

UNIT 5

1. What are the main goals of Hadoop?
2. What is hive?

3. What are the responsibilities of Map Reduce Framework?
4. What is a Key-Value store?
5. What is visualization?
6. What is shading?
7. Define the Port Numbers for Name Node, Task Tracker and Job Tracker
8. What are Edge Nodes in Hadoop?
9. Write the core methods of a Reducer.
10. Difference between NFS and HDFS?

20UCT3A3- BIG DATA ANALYTICS

K3 QUESTION

UNIT 1

1. What is Bigdata? Describe the main features of a big data in detail.
2. Explain the types of cloud environment
3. Explain Machine generated structured data with example.
4. Explain Machine generated unstructured data with example.
5. Explain Human generated structured data with example.
6. List out the four major types of resampling. explain briefly.
7. . How to manage the data? Explain .
8. Explain Human generated unstructured data with example.
9. List out the applications of big data analytics and explain
10. Compare and Contrast structured and unstructured data with examples.

UNIT 2

11. Discuss the redundancies in physical infrastructure needed for bid data.
12. Explain the cycle of big data management.
13. Discuss performance matters of big data management.
14. Justify the usage of role of a CMS in big data management.
15. What are the features needed to consider when real time data are being used? Discuss.
16. Explain the components that need to be included for integration of data types into big data environment.
17. How to get performance right while using distributed computing? Explain.
18. Discuss the properties of operational databases.
19. Exemplify the three classes of tools in big data analytics
20. Discuss the importance of virtualization to big data.

UNIT 3

21. Explain i) Server Virtualization ii) Application Virtualization.

22. Explain i) Network Virtualization ii) Process and Memory Virtualization.
23. How to manage virtualization with the Hypervisor.
24. Discuss the implementation of virtualization to work with big data.
25. Explain Cloud deployment models.
26. Explain Cloud delivery models.
27. Discuss the cloud characteristics to make an important part of big data ecosystem.
28. Compare and contrast Mongo and Couch Database
29. Compare and contrast Mongo and Couch Database
30. Where to be careful when using cloud services? Explain.

UNIT 4

31. Explain PostgreSQL relational databases with example
32. Demonstrate the concept of Key-Value pair databases with example.
33. Explain Riak key-value database with its features.
34. Explain briefly about the different features of Hadoop.
35. Explain HBase columnar database with its characteristics.
36. Name the database used for graphical purpose. Explain.
37. Justify the usage of PostGIS/OpenGEO Suite in big data
38. What is necessity of Polygot Persistence? Explain.
39. Explain CLIQUE
40. Explain the use of reduce function

UNIT 5

1. Elucidate the applications of Bigdata.

- 2.Explain Analysis and Extraction Techniques
- 3.What are ten do's and don's of bigdata?
- 4.Discuss the characteristics of file system in MapReduce
- 5.Explain the Characteristics of Big data analysis framework
- 6.Describe text analytics.
- 7.Elaborate visualization.
- 8.Explain briefly extraction techniques.
- 9.Describe Exploring Unstructured Data.
- 10.Explain why do we need Hadoop for Big Data Analytics?

20UCT4A4- Big Data Analytics

UNIT – 1

1. Explain the evolution of data management?
2. Write a note on big data and explain its types?
3. Describe about the waves of managing data?
4. Examine the steps for defining structured data?
5. Illustrate the concept of big data with example?

UNIT – 2

1. Evaluate the history of distributed computing?
2. Explain about big data technology components with its application?
3. What are the basics of distributed computing and explain the concept of big data technology?
4. Describe about redundant physical infrastructure with its application?
5. Explain the factors of distributed computing with suitable example?

UNIT – 3

1. Discuss the basics of virtualization and its types?
2. Explain about importance of virtualization of big data?
3. Describe the big data management with its example?
4. Differentiate between Columnar database and H base columnar database with example?
5. Examine about the concept of document database?

UNIT – 4

1. Explain the origins of map reduction with its application?
2. Illustrate the concept of map function with suitable example?
3. How will you add the reduce function?
4. Describe a short note on putting map and reduce together?
5. Mention what is the difference between an Rdbms and Hadoop?

UNIT – 5

1. Evaluate the exploring unstructured data?
2. Write the concept of Text analytics with its types?
3. Describe about analysis and extraction techniques?
4. Write a short note on techniques of data analysis?
5. Differentiate between the characteristics of big data analysis and big data analysis framework?

16UCT519 - SOFTWARE ENGINEERING

K1 QUESTIONS

UNIT-I

1. The two dimensions of spiral model are
 - a) diagonal, angular
 - b) radial, perpendicular
 - c) radial, angular**
 - d) diagonal, perpendicular
2. The Incremental Model is combination of elements of
 - a) Build & FIX Model & Waterfall Model
 - b) Linear Model & RAD Model
 - c) Linear Model & Prototyping Model**
 - d) Waterfall Model & RAD Model
3. Model preferred to create client/server applications is
 - a) WINWIN Spiral Model
 - b) Spiral Model
 - c) Concurrent Model**
 - d) Incremental Model
4. Spiral model was developed by
 - a) Victor Bisili
 - b) Berry Boehm**
 - c) Bev Littlewood
 - d) Roger Pressman
5. Software evolution does not comprises:
 - a) Development activities
 - b) Negotiating with client**
 - c) Maintenance activities
 - d) Re-engineering activities

6. Which of the following is not the objective of CMMI?
- a) Produce quality product or services by process improvement
 - b) Increase customer satisfaction**
 - c) Expanding market presence
 - d) Removing the bugs in product thereby direct product improvement
7. Abbreviate the term CMMI.
- a) Capability Maturity Modification integration
 - b) Capability Managed Maturity Integration
 - c) Capability Maturity Model Integrator
 - d) Capability Maturity Model Integration**
8. Which of the following is the Process Improvement Model?
- a) CMMI**
 - b) Agile
 - c) Prototyping
 - d) V model
9. Which of the following is not a phase of CMMI?
- a) Initial
 - b) Quantitatively managed
 - c) Integrated**
 - d) Defined
10. Which of the following is process improvement model?
- a) CMMI**
 - b) Agile
 - c) Prototyping
 - d) V model
11. Oldest paradigm for software engineering is
- a) Incremental process model
 - b) RAD model
 - c) Evolutionary process model
 - d) Waterfall model**

12. In incremental process model, some high-end function are designed in
- a) construction framework
 - b) modeling framework**
 - c) planning framework
 - d) deployment framework
13. Programs, documents and data that are produced as a consequence of activities and tasks defined by process are called
- a) work product**
 - b) user product
 - c) control process
 - d) open source
14. Actual work to be done to accomplish objective of software engineering action is termed as
- a) task cell
 - b) task set**
 - c) task drive
 - d) task modification
15. CMMI stands for
- a) Capability Maturity Melt Integration
 - b) Consumed Maturity Model Integration
 - c) Capability Maturity Model Integration**
 - d) Capability Maturity Model Increment
16. Waterfall model phase in which system design is prepared and this system design helps in specifying system requirements and define overall system architecture is
- a) Modeling**
 - b) Planning
 - c) Construction
 - d) Communication
17. SCAMPI stands for
- a) Standard CMMI Assessment Method for Process Improvement**
 - b) Standard CMM Assessment Method for Process Internal
 - c) Standard PMMI Assign Method for Process Improvement

d) Standard CMMI Agreement Method for Process Improvement

18. Each iteration in incremental model passes through the

a) communication and modeling phases

b) planning and construction phases

c) deployment and maintenance phases

d) all phases

19. Element that holds technology layers together and enables rational and timely development of computer software is

a) hardware process

b) software process

c) control process

d) embedded process

20. Pattern type which define a software engineering action or work task that is part of process and relevant to successful software engineering practice is termed as

a) task pattern

b) stage pattern

c) phase pattern

d) dynamic pattern

UNIT-II

1. Term software refers to

- a) computer manuals
- b) computer programs
- c) machinery

d) both computer programs and manuals

2. The Unified Modeling Language (UML) has become an effective standard for software modelling. How many different notations does it have?

- a) Three
- b) Four
- c) Six

d) Nine

3. Which model in system modelling depicts the dynamic behaviour of the system?

a) Context Model

b) Behavioral Model

c) Data Model

d) Object Model

4. Which model in system modelling depicts the static nature of the system ?

a) Behavioral Model

b) Context Model

c) Data Model

d) Structural Model

5. Which perspective in system modelling shows the system or data architecture.

a) Structural perspective

b) Behavioral perspective

c) External perspective

d) All of the mentioned

6. Activity diagrams are used to model the processing of data.

a) True

b) False

7. Model-driven engineering is just a theoretical concept. It cannot be converted into a working/executable code.

a) True

b) False

8. The UML supports event-based modeling using _____ diagrams.

a) Deployment

b) Collaboration

c) State chart

d) All of the mentioned

9. Which is not a step of Requirement Engineering?

a) Requirements elicitation

b) Requirements analysis

c) Requirements design

d) Requirements documentation

10. SRD stands for _____

a) Software Requirements Definition

b) Structured Requirements Definition

c) Software Requirements Diagram

d) Structured Requirements Diagram

11. Modelling is a representation of the object-oriented classes and the resultant collaborations will allow a system to function.

a) True

b) False

12. In the requirement analysis which model depicts the information domain for the problem?

a) Data models

b) Class-Oriented models

c) Scenario-based models

d) Flow-oriented models

13. In the requirement analysis which model depicts how the software behaves as a consequence of external events?

- a) Class-Oriented models
- b) Scenario-based models
- c) Flow-oriented models

d) Behavioural models

14. The process together the software requirements from Client, Analyze and Document is known as _____ .

- a) **Requirement engineering process**
- b) Requirement elicitation process
- c) User interface requirements
- d) Software system analyst

15. Abbreviate the term SRS.

- a) **Software Requirement Specification**
- b) Software Refining Solution
- c) Software Resource Source
- d) None of the above

16. Which of these primary objectives have to be achieved for the requirement model?

- a) To describe what the customer requires
- b) To establish a basis for the creation of a software design
- c) To define a set of requirements that can be validated once the software
- d) All mentioned above**

17. The process together the software requirements from Client, Analyze and Document is known as _____ .

- a) **Requirement engineering process**
- b) Requirement elicitation process
- c) User interface requirements
- d) Software system analyst

18. In Software validation, requirements can be checked against following conditions:

- 1) If they can be practically implemented
- 2) If they are valid and as per functionality and domain of software
- 3) If there are any ambiguities
- 4) If they are completed

a. True

b. False

19. What computer-based system can have a profound effect on the design that is chosen and also the implementation approach will be applied?

a) Scenario-based elements

b) Class-based elements

c) Behavioural elements

d) Flow-oriented elements

20. Which is focused towards the goal of the organization?

a) Feasibility study

b) Requirement gathering

c) Software requirement specification

d) Software requirement validation

21. In which elicitation process the developers discuss with the client and end users and know their expectations from the software?

a) Requirement gathering

b) Organizing requirements

c) Negotiation & discussion

d) Documentation

UNIT-III

1. What are the types of requirement?
 - a) Portability
 - b) Maintainability**
 - c) Availability
 - d) Both Portability and Maintainability
2. Which one of the following is not a step of requirement engineering?
 - a) Elicitation
 - b) Design**
 - c) Analysis
 - d) Documentation
3. QFD stands for?
 - a) Quality function design
 - b) Quality function development
 - c) Quality function deployment**
 - d) none of the mentioned
4. The user system requirements are the parts of which document?
 - a) SDD
 - b) SRS**
 - c) DDD
 - d) SRD
5. FAST stands for
 - a) Functional Application Specification Technique
 - b) Fast Application Specific Technic
 - c) Facilitated Application Specification Technique**
 - d) None of these
6. Requirement engineering process includes which of these steps?
 - a) Feasibility study
 - b) Requirement Gathering
 - c) Software Requirement Specification & Validation
 - d) All mentioned above**

7. What are the types of requirement in (QFD)?

a) Known, Unknown, Undreamed

b) User, Developer

c) Functional, Non-Functional

d) Normal, Expected, Exciting

8. What are the actors used in OOSE?

a) Primary

b) Secondary

C) Ternary

d) A (and) B

9. Requirement elicitation is a cyclic process

a) True

b) False

10. How Many Scenarios are there in elicitation activites?

a) One

b) Two

c) Three

d) Four

11. Which of the following is not a Requirement Management workbench tool?

a) RTM

b) DOORS

c) Rational Suite

d) RDD 100

12. Which of the following is a Requirement Management activity?

a) Investigation

b) Design

c) Construction and Test

d) All of the mentioned

13. Which of the following is not defined in a good Software Requirement Specification (SRS) document?

a) Functional Requirement

b) Non-functional Requirement

c) Goals of Implementation

d) Algorithm of Software Implementation

14. Which project is undertaken as a consequence of a specific customer request?

a) Concept development project

b) Application enhancement project

c) New application development project

d) Application maintenance project

15. Which is focused towards the goal of the organization?

a) Feasibility study

b) Requirement gathering

c) Software requirement specification

d) Software requirement validation

16. Which documentation works as a key tool for software designer, developer and their test team is to carry out their respective tasks?

a) Requirement documentation

b) User documentation

c) Software design documentation

d) Technical documentation

17. Which project is undertaken as a consequence of a specific customer request?

a) Concept development project

b) Application enhancement project

c) New Application development project

d) Application Maintenance project

18. If requirements are easily understandable and defined then which model is best suited?

a) Spiral model

b) Waterfall model

c) Prototyping model

d) None of the above

19. In which elicitation process the developers discuss with the client and end users and known their expectations from the software?

a) Requirement gathering

b) Organizing requirements

c) Negotiations & document

d) Documentation

20) Identifying and addressing the impact of project on organization and personnel?

a) Software Design

b) Feasibility Study

c) Requirement gathering

d) System Analysis

UNIT- IV

1. Software Design consists of
 - a) Software Product Design
 - b) Software Engineering Design
 - c) Software Product & Engineering Design**
 - d) None of the mentioned
2. What is Reference architecture?
 - a) It is a reference model mapped onto software components
 - b) It provided data flow with comments
 - c) It provides data flow with pieces
 - d) It is a reference model mapped onto software components & data flow with comments**
3. What is Architecture?
 - a) Architecture is components
 - b) Architecture is connectors
 - c) Architecture is constraints
 - d) All of the mentioned**
4. Which of these truly defines Software design?
 - a) Software design is an activity subjected to constraints
 - b) Software Design specifies nature and composition of software product
 - c) Software Design satisfies client needs and desires
 - d) All of the mentioned**
5. Which of these describes stepwise refinement?
 - a) Nicklaus Wirth described the first software engineering method as stepwise refinement
 - b) Stepwise refinement follows its existence from 1971
 - c) It is a top down approach
 - d) All of the mentioned**
6. What is incorrect about structural design?
 - a) Structural design introduced notations and heuristics
 - b) Structural design emphasis on procedural decomposition
 - c) The advantage is data flow representation**
 - d) It follows Structure chart

7. The UML was designed for describing _____

- a) object-oriented systems
- b) architectural design
- c) SRS

d) Both object-oriented systems and Architectural design

8. Which of the following is a type of Architectural Model?

- a) Static structural model
- b) Dynamic process model
- c) Distribution model

d) All of the mentioned

9. What describes how a set of interacting components can share data?

- a) model-view-controller
- b) architecture pattern

c) repository pattern

d) none of the mentioned

10. Coupling is a qualitative indication of the degree to which a module

- a) can be written more compactly
- b) focuses on just one thing
- c) is able to complete its function in a timely manner

d) is connected to other modules and the outside world

11. Which of the following is not included in Architectural design decisions?

- a) Type of application
- b) distribution of the system
- c) architectural styles

d) testing the system

12. Which of the following pattern is the basis of interaction management in many web-based systems?

- a) Architecture
- b) repository pattern

c) model-view-controller

d) different operating system

13. Which view in architectural design shows the key abstractions in the system as objects or object classes?

a) Physical

b) development

c) logical

d) process

14. Which tool is use for structured designing?

a) Program flowchart

b) Structure chart

c) Data-flow diagram

d) Module

15. In the Analysis phase, the development of the _____ occurs, which is a clear statement of the goals and objectives of the project.

a) Documentation

b) flowchart

c) program specification

d) design

16. Who designs and implement database structures.

a) Programmers

b) Project managers

c) Technical writers

d) Database administrators

17. _____ is the process of translating a task into a series of commands that a computer will use to perform that task.

a) Project design

b) Installation

c) Systems analysis

d) Programming

18. In Design phase, which is the primary area of concern ?

- a) Architecture
- b) Data
- c) Interface

d) All of the mentioned

19. The importance of software design can be summarized in a single word which is:

- a) Efficiency
- b) Accuracy

c) Quality

d) Complexity

20. Cohesion is a qualitative indication of the degree to which a module

a) can be written more compactly

b) focuses on just one thing

c) is able to complete its function in a timely manner

d) is connected to other modules and the outside world

UNIT-V

1., sometimes called glass-box testing, is a test case design method that uses the control structure of the procedural design to derive test cases.
a) White-box testing
b) Control structure testing
c) Black-box testing
d) Gray-box testing
2. While using white-box testing methods, the software engineer can derive test cases that
 - i) guarantee that all independent paths within a module have been exercised at least once.
 - ii) Exercise all logical decisions on their True and False sides.
 - iii) Execute all loops at their boundaries and within their operational bounds.
a) i and ii only
b) ii and iii only
c) i and iii only
d) All i, ii, and iii
3., also called behavioral testing which focuses on the functional requirements of the software.
a) White-box testing
b) Control structure testing
c) **Black-box testing**
d) Gray-box testing
4. enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.
a) White-box testing
b) Control structure testing
c) **Black-box testing**
d) Gray-box testing
5. Black-box testing attempts to find errors in which of the following categories.
 - i) incorrect or missing functions
 - ii) interface errors
 - iii) logical errors
 - iv) behavior or performance errors

v) incorrect assumptions

a) i, ii and iii only

b) ii, iii and iv only

c) iii, iv and v only

d) i, ii and iv only

6. While using black-box testing techniques, we drive a set of test cases that satisfy which of the following criteria.

i) test cases that reduce, by a count that is greater than one.

ii) test cases that tell us something about the presence or absence of classes of errors.

iii) execute all loops at their boundaries and within their operational bounds.

a) i and ii

b) ii and iii

c) i and iii

d) All i, ii and iii

7. is black-box testing method that divides the input domain of a program into classes of data from which test cases can be derived.

a) Condition testing

b) Graph-based testing

c) Equivalence partitioning

d) loop testing

8. is the first step in black-box testing in order to understand the objects that are modeled in software and the relationships that connect these objects.

a) Condition testing

b) Graph-based testing

c) Comparison testing

d) loop testing

9. Boundary value analysis is a test design technique that complements

a) Condition testing

b) Graph-based testing

c) Equivalence partitioning

d) loop testing

10. The independent versions from the basis of a black-box testing technique are called

- a) Condition testing
- b) Graph-based testing
- c) Comparison testing**
- d) loop testing

11. The of documentation testing is the review and inspection, which examines the document for editorial clarity.

- a) First phase**
- b) second phase
- c) third phase
- d) fourth phase

12. The of documentation testing is the live test, which uses the documentation in conjunction with the use of the actual program.

- a) First phase
- b) second phase**
- c) third phase
- d) Fourth phase

13. A for documentation can be approached using techniques that are analogous to many of the black-box testing methods.

- a) loop test
- b) live test**
- c) comparison test
- d) review and inspection

14. can be used to define various classes and input and associated interactions.

- a) Equivalence partitioning and graph based testing
- b) Equivalence partitioning and boundary value analysis**
- c) condition testing and equivalence partitioning
- d) graph based testing and boundary value analysis

15. The in the testing of real-time software is to test each task independently.

a) First step

b) second step

c) Third step

d) Fourth step

16. tests are designed to validate functional requirements without regard to the internal working of program.

a) White-box test

b) Control structure test

c) Black-box test

d) Gray-box test

17. divides the input domain into classes of data that are likely to exercise specific software function.

a) Boundary value analysis

b) Graph-based testing

c) Equivalence partitioning

d) loop testing

18. probes the programs ability to handle data at the limits of acceptability.

a) Boundary value analysis

b) Graph-based testing

c) Equivalence partitioning

d) loop testing

19. In, test cases are derived to ensure that all statements in the program have been executed at least once during testing and that all logical conditions have been exercised.

a) White-box testing

b) Control structure testing

c) Black-box testing

d) Gray-box testing

20. In, once errors in individual tasks and in system behavior have been isolated, testing shifts to time related errors.

a) Task testing

- b) Inter task testing
- c) Behavioral testing
- d) System testing

16 UCT 519 – Software Engineering

K2 Questions

UNIT - I

1. Define software.
2. What is system software?
3. Define Real Time software.
4. What is embedded software?
5. What layer is the foundation for software engineering?
6. How many levels are there in software process framework?
7. How many levels in waterfall model?
8. Which model emphasizes an extremely short development cycle?
9. How many task regions a spiral model contains?
10. Define planning.

UNIT - II

1. Define Database in computer based system.
2. Define Documentation in computer based system.
3. What is Constraint in system modeling?
4. What is Assumption in system modeling?
5. What is the first phase of requirement engineering?
6. What is a requirement specification?
7. Write the full form of QFD.
8. Define Elicitation.
9. What is meant by Requirement Analysis?
10. What is Requirement Engineering?

UNIT - III

1. What is the Core element of Analysis model?
2. Write the full form of DFD.
3. What is the full form of STD?
4. Define Data object.
5. What is an Attribute?

6. Define Cardinality.
7. Define Modality.
8. What is an ER Diagram?
9. Define CFD in flow oriented modeling.
10. What does a round symbol represents in DFD?

UNIT - IV

1. Define interface design.
2. What is meant by Abstraction?
3. Define Refinement.
4. Define Functional independence.
5. Define Cohesion.
6. Define Coupling.
7. What is meant by Control coupling?
8. Define transform flow?
9. What is Transaction flow?
10. Define Transform mapping?

UNIT - V

1. Define Software Testing.
2. Define Verification.
3. Define Validation.
4. What is Top – down integration?
5. What is Breadth – First integration?
6. Define Alpha Testing.
7. Define Beta Testing.
8. What is another name of White – box Testing?
9. What is the formula for calculating Cyclomatic complexity?
10. Define Cyclomatic Complexity.

16UCT519 – Software Engineering

K3 Questions

UNIT - I

1. Write short notes on Software characteristics.
2. List some of the software myths and realities.
3. Write about Software Engineering Layers.
4. Analyze about Software process framework.
5. Brief write about waterfall model with a neat diagram.
6. What is meant by prototyping model? Explain.
7. Write any 2 stages in RAD model.
8. What are the six task regions of spiral model?
9. Write about Unified process.
10. Give an outline on CMMI model.

UNIT – II

1. Write short notes on Computer based systems.
2. Give a detailed account on system Engineering Hierarchy.
3. Write short notes on system modeling.
4. Briefly write about Inception and Elicitation.
5. Write short note on Elaboration and Negotiation.
6. Write about the initiation of requirement engineering process.
7. What is meant by Requirement Analysis? Explain.
8. Write about Development use cases for Safe Home project.
9. Write some Analysis principles.
10. Draw the activity Diagram for Safe Home security function.

UNIT – III

1. Write short notes on the elements of Analysis model.
2. What is meant by Data object, Attributes and relationships? Explain.
3. Write short notes on Cardinality and modality with example.
4. Draw the context flow Diagram for Safe Home security function.
5. Draw level 1 DFD for Safe Home security function.

6. Draw the class – based diagram for floor plan.
7. Write short notes on Behaviour modeling.
8. Draw an ER diagram for representing relationship.
9. Write short notes on Scenario based modeling.
10. Draw state diagrams for a Behavioural model.

UNIT – IV

1. Write short notes on Design process.
2. Briefly write about Design Quality.
3. Write some of the Design principles.
4. Give an outline on Modularity.
5. Briefly write about Software Architecture.
6. Give short notes on Data – flow architecture?
7. What is meant by Data – flow architecture? Explain with diagram.
8. Write short notes on Call and return architecture.
9. Write short notes on Transform flow with a neat diagram.
10. What is Transaction flow? Explain.

UNIT – V

1. Write short notes on Software Testing strategy.
2. Give an outline on unit Test considerations.
3. Write about Bottom – up integration Testing.
4. Briefly write the concept of Regression Testing and smoke Testing.
5. Write short notes on Debugging process.
6. Write some of the Testing objectives and principles.
7. Write about condition testing with an example.
8. What is Black Box Testing? Explain.
9. Give short notes on Equivalence partitioning.
10. Write short notes on Security Testing.

16UCT519 – Software Engineering

K4 & K5 Questions

UNIT-I

1. Explain in detail the type of softwares.
2. Explain in detail about the RAD model.
3. With neat diagram, explain Increment model.
4. Write a detailed note on Spiral model.
5. Write in detail about the Concurrent Development model.

UNIT-II

1. Explain in detail about the Requirement Engineering tasks.
2. Write in detail about the Requirement Elicitation for software.
3. Briefly explain about Functional models in Modeling.
4. Give a detailed account on Eliciting Requirements.
5. Write in detail – Building the Analysis model.

UNIT-III

1. Write in detail about Requirement Analysis.
2. Give a detailed account on Analysis modeling approaches.
3. Write about Data modeling concepts in detail.
4. What is meant by Object Oriented Analysis?
5. Explain in detail about Class based modelling.

UNIT-IV

1. Write in detail about Design concepts.
2. Give a detailed view on Design principles.
3. Write in detail about Layered architecture.
4. What are the design steps involved in Transform mapping? Explain.

UNIT-V

1. Explain in detail about unit Test procedures.
2. Write in detail about system Testing.
3. Give a detailed view on Debugging Approaches.
4. Explain about Flow graph notation in Basis path Testing.
5. Write in detail about Cyclomatic complexity metric.

