UG DEPARTMENT OF COMPUTER APPLICAIONS
18 UBC 102- FUNDAMENTALS OF DIGITAL COMPUTER

UNIT I

1. Any signed negative binary number is recognised by its
a) MSB
b) LSB
c) Bits
d) Nibble

2. The parameter through which 16 distinct values can be represented is known as:
a) Bit
b) Byte
c) Nibble
d) Word

3. If the decimal number is a fraction then its binary equivalent is obtained by _____ the number continuously by 2.
a) Dividing
b) Multiplying
c) Adding
d) Subtracting

4. The representation of octal number (532.2)8 in decimal is :
a) (346.25)10
b) (532.864)10
c) (340.67)10
d) (531.668)10

5. The decimal equivalent of the binary number (1011.011)2 is
a) (11.375)10
b) (10.123)10
c) (11.175)10
d) (9.23)10

6. An important drawback of binary system is
a) It requires very large string of 1's and 0's to represent a decimal number
b) It requires sparingly small string of 1's and 0's to represent a decimal number
c) It requires large string of 1's and small string of 0's to represent a decimal number
d) None of the Mentioned

7. The decimal equivalent of the octal number (645)8 is _____
a) (450)10
b) (451)10
c) (421)10
d) (501)10

8. The largest two digit hexadecimal number is _____
a) (FE)16
b) (FD)16
c) (FF)16
d) (EF)16

9. Representation of hexadecimal number (6DE)H in decimal :
a) $6 * 16^2 + 13 * 16^1 + 14 * 16^0$
b) $6 * 16^2 + 12 * 16^1 + 13 * 16^0$
c) $6 * 16^2 + 11 * 16^1 + 14 * 16^0$
d) $6 * 16^2 + 14 * 16^1 + 15 * 16^0$

10. The quantity of double word is
a) 16 bits
b) 32 bits
c) 64 bits
d) 8 bits

UNIT II

11. Electronic circuits that operate on one or more input signals to produce standard output _____
a) Series circuits
b) Parallel Circuits
c) Logic Signals
d) Logic Gates

12. Logic Gates are the building blocks of all circuits in a computer.
a) True
b) False

13. A _____ gate gives the output as 1 only if all the inputs signals are 1.
a) AND
b) OR
c) EXOR
d) NOR

14. The boolean expression of an OR gate is _____
a) A.B
b) A'B+AB'
c) A+B
d) A'B'

15. The gate which is used to reverse the output obtained is _____
a) NOR
b) NAND
c) EXOR

d) NOT

16. Which of the following gate will give a 0 when both of its inputs are 1?
a) AND
b) OR
c) NAND
d) EXOR

17. When logic gates are connected to form a gating/logic network it is called as a _____ logic circuit.
a) combinational
b) sequential
c) systematic
d) hardwired

18. The universal gate that can be used to implement any Boolean expression is _____
a) NAND
b) EXOR
c) OR
d) AND

19. The gate which is called an inverter is called _____
a) NOR
b) NAND
c) EXOR
d) NOT

20. The expression of an EXOR gate is _____
a) A'B+AB'
b) AB+A'B'
c) A+A.B
d) A'+B'

UNIT III

21. 3x8 decoder will have
A. 3inputs
B. 4inputs
C. 5inputs
D. 6inputs

22. In design procedure first step is to
A. make map
B. make chart
C. make table
D. make graph
23. 3x8 decoder will have

A. 4outputs
B. 5outputs
C. 6outputs
D. 8outputs

24. Half adder circuits requires two binary
A. Inputs
B. Outputs
C. Digits
D. Both a and b

25. Most significant bit of arithmetic addition is called
A. overflow
B. carry
C. output
D. zero bit

26. Two bit addition is done by
A. ripple carry adder
B. carry sum adder
C. full adder
D. half adder

27. A circuit that converts n inputs to 2^n outputs is called
A. encoder
B. decoder
C. comparator
D. carry look ahead

28. Encoders are made by three
A. AND gate
B. OR gate
C. NAND gate
D. XOR gate

29. Decoder is a
A. combinational circuit
B. sequential circuit
C. complex circuit
D. gate

30. IC decoders are made with
A. AND gate
B. OR gate
C. NAND gate
D. XOR gate

UNIT IV

31. In a J-K flip-flop, if J=K the resulting flip-flop is referred to as
a) D flip-flop
b) T flip-flop
c) S-R flip-flop
d) None of the Mentioned

32. The only difference between a combinational circuit and a flip-flop is that
a) The flip-flop requires previous state
b) The flip-flop requires next state
c) The flip-flop requires a clock pulse
d) None of the Mentioned

33. How many stable states a combinational circuits have?
a) 3
b) 4
c) 2
d) 5

34. The flip-flop is only activated by
a) Positive edge trigger
b) Negative edge trigger
c) Either positive or Negative edge trigger
d) None of the Mentioned

35. The flip-flops which has not any invalid states are
a) S-R, J-K, D
b) S-R, J-K, T
c) J-K, D, S-R
d) J-K, D, T

36. A register is defined as
a) The group of latches for storing one bit of information
b) The group of latches for storing n-bit of information
c) The group of flip-flops suitable for storing one bit of information
d) The group of flip-flops suitable for storing binary information

37. The register is a type of
a) Combinational circuit
b) Sequential circuit
c) CPU
d) Latches
38. How many types of registers are?
a) 2
b) 3

c) 4
d) 5

39. A register that is used to store binary information is called
a) Data register
b) Binary register
c) Shift register
d) None of the Mentioned

40. In D register, ‘D’ stands for
a) Delay
b) Decrement
c) Data
d) Decay

UNIT V

41. Joysticks typically have a button on _____that is used to select the option pointed by the cursor.
A.Bottom B.Left **C.Right** D.Top

42. Which of the following groups consists of only input devices?
A.Mouse, Keyboard, Monitor
B.Mouse, Keyboard, Printer
C.Mouse, Keyboard, Plotter
D.Mouse, Keyboard, Scanner

43. The OCR recognises the _____ of the characters with the help of light source.
A.size
B.shape
C.colour
D.used ink

44. Which of the following produces high-quality output?
A.Impact printer
B.Non-impact printer
C.Plotter
D.Both '1' and '2'

45. Which of the following is not an output device?
A.Plotter
B.Printer
C.Scanner
D.Monitor

46. Laser printers belong to
A.line printer
B.page printer

C.band printer
D.dot matrix printer

47. Information that comes from an external source and is fed into computer software is called ____

A.Input
B.Output
C.Throughput
D.Reports

48. The most widely used input device is the ____
A.Mouse
B.Keyboard
C.Modem
D.Monitor

49. The term used to define all input and output devices in a computer system is ___
A.Monitor
B.Software
C.Shared resources
D.Hardware

50. The most common method of entering text and numerical data into a computer system is through the use of a ____
A.Plotter
B.Scanner
C.Printer
D.Keyboard

5 MARKS

UNIT I

1. Analyze characteristics of Number System with proper example.
2. Classify a short not on ASCII.
3. Examine Hamming Code using proper example.
4. List out the BCD code with an example.

UNIT II

1. Categorize the diagram how NOR and NAND Gates are Universal Gate.
2. Examine De Morgan's theorem using example.
3. Analyze Identity, Complementation, Commutative, Associative and Distributive Laws with example.
4. Illustrate the logic circuit for Y = AB' + AB. Next simplify this Boolean equation and the corresponding circuit.

UNIT III

1. Examine the steps to implement or design combinational logic circuit.
2. List out the BCD Adder with proper logic circuit diagram.
3. Explain full adder with proper logic circuit diagram.
4. Discuss about half subtractor with proper logic circuit diagram.

UNIT IV

1. Draw a logic diagram of 8 X 1 lines multiplexer with enable HIGH line with its truth table.
2. Write a note on application of multiplexer.
3. Differentiate between UP, DOWN and UP/DOWN counter.
4. Explain 3-to-8 line decoder in brief with necessary logic diagram.

UNIT V

1. Illustrate punched tapes
2. Discuss about card readers
3. Discuss about terminal? Explain.
4. Give the example of alphanumeric codes.

10 MARKS

UNIT I

1. Convert the following number into binary numbers to octal and then to decimal.
a) 11011100.101010
b) 01010011.010101
c) 10110011

2. What is parity bit? Define even and odd parity. What is the limitation of parity code when it comes to detection and correction of bit errors?

3. Consider an arbitrary number system having the independent digit as X,Y,Z. What is the radix of this number system? List the numbers that you can represent using this number system with 3 digits.

4. Convert 356(16) to decimal, Convert 2AF(16) to decimal, Convert 11010110(2) to octal equivalent

UNIT II

1. Obtain the simplified expression in sum of products for the following Boolean functions:
a) xy + x'y'z' + x'yz'
b) A'B + BC' + B'C'
c) a'b' + bc + a'bc'
d) xy'z + xyz' + x'yz + xyz

2. Convert the following sum-of-products Boolean expression into product-of-sums and vice versa.
a) (A + B + C') · (A + B'+ C) · (A' + B + C) · (A' + B' + C')
b) A · B + A' · B'
c) A' · B'·C' + A' · B · C+ A · B · C' + A · B' · C
d) (A + B') · (B' + C) · (B' + D)

3. Simplify the following Boolean expressions:
a) A · B · C + A · B · C' + A · B' · C+ A · B'· C' + A' · B · C + A' · B · C' + A'· B'· C' + A'· B'· C
b) (A' + B + C') · (A' + B + C) · (C + D) · (C + D + E)

4. Simplify the Boolean expression using Karnaugh map method.
a) F = X'YZ + X'YZ' + XY'Z' + XY'Z
b) F = X'YZ + XY'Z' + XYZ + XYZ'

UNIT III

1. Design a combinational circuit that converts a decimal digit from the 2,4,2,1 code to the 8, 4,-2,-1 code.
2. Give different implementations of half adder logic circuit.
3. Show the different implementation of half subtractor and full subtractor.
4. Explain 4 X 4 bit multiplier using proper logic circuit diagram.

UNIT IV

1. Explain the Master-Slave Flip-Flop. How it overcome the race condition of J-K flip-flop. Use proper logic diagram.
2. Differentiate level-triggered and edge-triggered flip-flops.
3. Explain Clocked R-S flip-flop using proper logic diagrams and truth tables.
4. What is a clocked J-K flip flop? What improvement does it have over a clocked R-S flip flop?

UNIT V

1. Examine error detecting codes with example.
2. Examine MICR in detail.
3. Discuss about Offline operations
4. How to make character recognition in a system.