Analytical Geometry 2D & 3 D

K1 Level Questions

UNIT I

1. The vertex of the parabola $y^2 – 2x + 6y + 3 = 0$ is at
   A. (-3, 3)
   B. (3, 3)
   C. (-3, 3)
   D. (-3, -3)

2. The length of the latus rectum of the parabola $y^2 = 4px$ is
   A. 4p
   B. 2p
   C. P
   D. -4p

3. The length of the latus rectum of the curve $x^2 = –12y$
   A. 4
   B. 12
   C. 3
   D. -12

4. Find the equation of the directrix of the parabola $y^2 = 6x$.
   A. x = 8
   B. x = 4
   C. x = -8
   D. x = -4

5. The eccentricity of the ellipse $x^2/4 + y^2 / 16 = 1$ is
   A. 0.725
   B. 0.256
   C. 0.689
   D. 0.866

6. The centre of the ellipse $4\times^2 + y^2 – 16x – 6y – 43 = 0$ is at
   A. (2, 3)
   B. (4, -6)
   C. (1, 9)
   D. (-2, -5)

7. The graph y = (x – 1) / (x + 2) is not defined at
   A. 0
   B. 2

C. -2
D. 1

8. $3\times^2 + 2x - 5y + 7 = 0$ determine the curve.
A. Parabola
B. Ellipse
C. Circle
D. Hyperbola

9. Where is the vertex of the parabola $x^2 = 4(y - 2)$
A. (2, 0)
B. (0, 2)
C. (3, 0)
D. (0, 3)

10. Find the equation of the directrix of the parabola $y^2 = 16x$
A. x = 2
B. x = -2
C. x = 4
D. x = -4

UNIT II

1. The SD between the lines $\frac{x-3}{1} = \frac{y-3}{3} = \frac{z-8}{-1}$ and $\frac{x-6}{4} = \frac{y+3}{-3} = \frac{z+7}{2}$ is

A. $\sqrt{30}$
B. $2\sqrt{30}$
C. $3\sqrt{30}$
D. $4\sqrt{30}$

2.The equation of the plane passing through the points(2,6,-6), (3,10,-9) and (5,0,6) is
A.10x+7y+6z-14=0
B. 10x-7y-6z-14=0
C. 10x-7y+6z+14=0
D. 12x-4y+3z+14=0

3. The direction cosines of a line which make equal angles with the axes is
A. $\pm\left(\frac{1}{\sqrt{3}}\right), \pm\left(\frac{1}{\sqrt{3}}\right), \pm\left(\frac{1}{\sqrt{3}}\right)$
B. (1,1,1)
C. $\pm\left(\frac{1}{\sqrt{2}}\right), \pm\left(\frac{1}{\sqrt{2}}\right), \pm\left(\frac{1}{\sqrt{2}}\right)$
D. (1,1/2,1/2)

4. The projection of a directed line segment on the axes is 12, 4, 3 then direction cosine is
A. $\frac{12}{13}, -\frac{4}{13}, \frac{3}{13}$

B. $-\frac{12}{13}, -\frac{4}{13}, \frac{3}{13}$

C. $\frac{12}{13}, \frac{4}{13}, \frac{3}{13}$

D. $\frac{12}{13}, \frac{4}{13}, \frac{-4}{13}$

5. The point of intersection $\frac{x+1}{3} = \frac{y+3}{5} = \frac{z+5}{7}$ and $\frac{x-2}{1} = \frac{y-4}{3} = \frac{z-6}{5}$ is: of the line

A. (1/2,1/2,1/2)

B .(-1/2,1/3,1/2)

C.(1,-1/2,1/2)

D. (1,1,1/2)

6. The length of shortest distance between the two lines $\frac{x+3}{-4} = \frac{y-6}{3} = \frac{z}{2}$ and $\frac{x+2}{-4} = \frac{y}{1} = \frac{z-7}{1}$ is:

A. 7

B.9

C.13

D. 8

7. The image of the point P (1,3,4) in the plane 2x-y+z+3=0 is

A.(3,5,-2)

B.(-3,5,2)

C.(3,-5,2)

D. (3,5,2)

8. The shortest distance between the z-axis and the line, x+y+2z-3 = 0, 2x+3y+4z-4=0

A. 1

B.2

C.3

D. -1

9. The direction cosines of a line are (1/a, 1/a, 1/a) then

A. 0 < a < 1

B. $a = \pm 1/\sqrt{2}$

C. $a = \pm 1/\sqrt{3}$

D. $a = \pm \sqrt{3}$

10.The line through (a, b, c) and parallel to the x axis is

A. $\frac{x-a}{1} = \frac{y-b}{0} = \frac{z-c}{0}$

B. $\frac{x-a}{0} = \frac{y-b}{1} = \frac{z-c}{1}$

C. $\frac{x-a}{0} = \frac{y-b}{0} = \frac{z-c}{1}$

D. $\frac{x-a}{1} = \frac{y-b}{1} = \frac{z-c}{1}$

UNIT III

1. The shortest distance between the lines $\frac{x-1}{2}=\frac{y-2}{3}=\frac{z-3}{4}$ and $\frac{x-2}{3}=\frac{y-4}{4}=\frac{z-5}{5}$ is

a) 1/6

b) $1/\sqrt{6}$

c) 1/3

d) $1/\sqrt{3}$

2. The plane passing the point a,b,c and parallel to the plane x + y +z = 0 is

A. x +y +z = a + b + c

B. x + y + z + (a + b + c) = 0

C. x + y + z + abc = 0

D. ax + by + cz = 0

3. The line $\frac{x-2}{3}=\frac{y-3}{4}=\frac{z-4}{5}$ is parallel to the plane

A. 2x + y – 2z = 0

B.3x + 4y + 5z = 5

C. x +y+z = 2

D. 2x +3y +4z=0

4. The plane which bisects the line joining (2, 3, 4) and (6, 7, 8) at right angles is

A. X + Y +Z= 15

B. X + Y + Z+15 = 0

C. X + Y -Z = 15

D. X – Y + Z + 15 = 0

5. The plane through the line 3x-4y+5z=10, 2x+2y-3z=4and parallel to the line x=2y=3z is

A. X-20y+27z=14

B. X+4y+27z=14

C. X-20y+3z=14

D. X-4y+27z=14

6. The ratio of the line segment joining P (2, 3, 4) and Q (-3, 5, -4) is divided by yz- plane

A. 1:2

B. 2:3

C. 3:2

D. 2:1

7.The image of the point P (1, 3, 4) in the plane 2x – y + z + 3 = 0 is

A. (3, 5, – 2)

B. (– 3, 5, 2)

C. (3, – 5, 2)

D. (3, 5, 2)

8. The line $\frac{x-1}{2}=\frac{y-1}{3}=\frac{z-3}{0}$ and $\frac{x-2}{0}=\frac{y-3}{0}=\frac{z-4}{1}$ are

A. Parallel

B. Perpendicular

C. Skew

D. Coincident

9. The lines $\frac{x-1}{1}=\frac{y-2}{2}=\frac{z-3}{3}$ and $\frac{x}{-2}=\frac{y}{-4}=\frac{z}{-6}$ are

A. Parallel

B. Intersecting

C. Skew

D. Perpendicular

10.The direction cosines of the normal to the x, y plane is

A. (0,0,1)

B. (0,1,0)

C. (1,0,0)

D. (1,1,0)

UNIT IV

1.The centre of the sphere that passes through (0,0,0), (2,0,0),(0,2,0) and (0,0,2) is

A. (1, 0, 0)

B. (0, 1, 0)

C. (0, 0, 1)

D. (1, 1, 1)

2. If (2, 3, 5) is one end of a diameter of the sphere $x^2+y^2+z^2-6x-12y-2z+20=0$, diameter are

A. (4, 3, 5)

B. (4, 3,-3)

C. (4, 9,-3)

D. (4, 3,-9)

3. The centre of the circle $x^2+y^2-2y-4z-11=0, x+2y+2z=15$ is

A. (0, 1, 2)

B. (1, 3,-4)

C. (1,-3, 4)

D. (1, 3, 4)

4. The equation of the plane through P (2, 3,-1) at right angles to O P is

A. 2x + y -z = 14

B.2X + Y -Z+ 14 = 0

C.2X +3Y -Z – 14 = 0

D.2X – 3Y + Z +14 = 0

5. The points (5,2,4), (6,-1,2) and (8,-7,K) are collinear if K is equal to

A. 1

B. -1

C.2

D. -2

6. The fixed point of the cone is called as
   A. Circle
   B. Curve
   C. Sphere
   D. Vertex
7. The constant angle of right circular cone is known as
   A. Vertical
   B. Semi-vertical
   C. Horizontal
   D. Semi-horizontal
8. Equation of right circular cone about z axis, vertex as origin and semi-vertical angle as is?
   A. z tan
   B. tan
   C. 1
   D. 0
9. A function f , , z is said to homogenous of degree iff
   A. f , , z 1
   B. f , , z 0
   C. tx, t , t t^n x, ,
   D. f , , z f , , z
10. Which one of the following is homogenous function in , and z
   A. x
   B. z
   C. z
   D. z

UNIT V

1. Volume of the cone is
   A. –
   B. 1
   C. ?
   D. 0
2. A cone whose equation is of second degree is
   A. Point
   B. Quadratic-cone
   C. Curve
   D. Angular-cone
3. In cone the fixed curve is called as

A. Guiding-curve
B. Fixed line
C. Quadric-cone
D. Right-angular

4. A surface generated by a straight line which is parallel to fixed direction intersect a fixed cure is
   A. Cone
   B. Cylinder
   C. Sphere
   D. Circle
5. A cylinder whose equation is of the second degree is
   A. Curve
   B. Cone
   C. Quadric-cylinder
   D. Constant
6. The equation to the cone with vertex at the origin which pass through z 2 and 4 is
   A. x
   B. z 4
   C. z
   D. 2 $2z$
7. A locus of a straight line which is parallel to a given straight line and touches surface is
   A. Cone
   B. Sphere
   C. Cylinder
   D. Enveloping cylinder
8. Every section of a right circular cone by a plane perpendicular to its axis is a circle.
   A. True
   B. False
9. The straight lines which generate the cylinder called
   A. Circles
   B. Sphere
   C. Generators
   D. Square
10. The equation of cone with vertex at origin and passes through z 2 and 4 is
    A. z 1
    B. x
    C. 0
    D. z 1

Analytical Geometry

K2 Level Questions

UNIT I

1. Find the location of the focus of the parabola $y^2 + 4x - 4y - 8 = 0$.

ANSWER : (2, 2)

2. The equation $25\times^2 + 16y^2 - 150x + 128y + 81 = 0$ has its centre at
ANSWER : (3, -4)
3. Find the major axis of the ellipse $x^2 + 4y^2 - 2x - 8y + 1 = 0$.
ANSWER : 4

4. The length of the latus rectum for the ellipse is equal to $\frac{x^2}{64} + \frac{y^2}{16} = 1$
ANSWER : 4
5. What is the length of the latus rectum of $4\times^2 + 9y^2 + 8x - 32 = 0$?
ANSWER : 2.7
6. Find the eccentricity of the curve $9\times^2 - 4y^2 - 36x + 8y = 4$.
ANSWER : 1.80

7. The semi-transverse axis of the hyperbola is $\frac{x^2}{9} - \frac{y^2}{4} = 1$
ANSWER : 3
8. The focus of the parabola $y^2 = 16x$ is at
ANSWER : (4, 0)

9. The Length of Major axis of the Ellipses is
ANSWER : 2a

10. The semi-conjugate axis of the hyperbola $(x^2/9) - (y^2/4) = 1$ is:
ANSWER : 2

UNIT II

1. The distance between points in space coordinates are (3, 4, 5) and (4, 6, 7) is:
ANSWER: 3
2. What is the equation of the tangent to the curve $9\times^2 + 25y^2 - 225 = 0$ at (0, 3)?
ANSWER: y – 3 = 0
3. What is an equation of the circle with a radius of 5 and centre at (1, −4)?
ANSWER: (x − 1)2 + (y + 4)2 = 25
4. What is an equation of a circle with centre (7, −3) and radius 4?

ANSWER: (x − 7)2 + (y + 3)2 = 4

5. Triangle PQR has angles in the ratio of 2:3:5. Which type of triangle is PQR?

ANSWER: Obtuse

6. The angle between the lines x = 1, y = 2 and y = -1, z = 0 is

ANSWER: 90^0

7. The line $\frac{x-1}{1}=\frac{y-3}{2}=\frac{z-3}{3}$ and $\frac{x}{2}=\frac{y+2}{2}=\frac{z-3}{-2}$ are

ANSWER: Perpendicular

8. The point of intersection of the line $\frac{x+1}{1}=\frac{y+3}{3}=\frac{z-2}{2}$ with the plane 3x + 4y +5z = 5 are

ANSWER: (1,-2,-3)

9. If angles $60^0, 30^0, 90^0$ with x- axis, y- axis, z- axis then direction cosines of r=

ANSWER: $1/2, \sqrt{3}/2, 0$

10. The angle between the lines 2x+3y+z-4=x+y-2z-3=0 and 5x+8y-7z= 10x-2y-2z=0 is

ANSWER: 90^0

UNIT III

1. Centre of the Sphere is

ANSWER: (-u, -v, -w)

2. The Radius of the Sphere is

ANSWER: $\sqrt{u^2+v^2+w^2-d}$

3. When a sphere is cut by a plane through its centre is

ANSWER: Hyperbola

4. The radius of the sphere $2x^2+2y^2+2z^2-4y-8z=22$ is

ANSWER: 4

5. What is the equation of a sphere with centre at (-3, 2, 4) and of radius 6 units?

ANSWER: $x^2 + y^2 + z^2 + 6x - 4y - 8z = 7$

6. The intersection of a sphere and a plane is

ANSWER: Circle

7. What is the radius of the circle $x^2 + y^2 - 6y = 0$?

ANSWER: 3

8. A circle whose equation is $x^2 + y^2 + 4x + 6y - 23 = 0$ has its centre at

ANSWER: (-2, -3)

9. What is the radius of a circle with the equation: $x^2 - 6x + y^2 - 4y - 12 = 0$

ANSWER: 5

10. The diameter of a circle described by $9\times^2 + 9y^2 = 16$ is?

ANSWER: 8/3

UNIT IV

1. How far from the y-axis is the centre of the curve $2\times^2 + 2y^2 + 10x - 6y - 55 = 0$

ANSWER: -2.5

2. If a sphere of constant radius k passes through the origin and meets the triangle ABC is

ANSWER: $x^2 + y^2 + z^2 = k^2$

3. The sphere equation is $x^2+y^2+z^2-6x-2y-4z=11$ then radius is

ANSWER: 5

4. The sphere with centre (1, 2,-3) and radius is 3 then equation is

ANSWER: $x^2+y^2+z^2+2x-4y+6z+5=0$

5. The Sphere is 2x+2y+2z-2x+4y+2z=15 then center is

ANSWER: (-1/2, 1, 1/2)

6. A sphere with surface area (792/7) sq.m has a volume ____

ANSWER: 792/7 Cu.Cm.

7. On decreasing each side of cube by 21%, its surface area decreases by?

ANSWER: 37. 59%

8. Radius of a circle is increased by 6%, determine the increase in area of the circle.

ANSWER: 12.36%

9. The equation of the sphere passing through the point (0,0,0),(a, 0, 0),(0,b,0) and (0,0,c)

ANSWER: $x^2 + y^2 + z^2 - 2ax - 2by - 2cz = 0$

10. If (2, 3, 5) is one end of a diameter of the sphere $x^2 + y^2 + z^2 - 6x - 12y - 2z + 20 = 0$, then the co-ordinates of the other end of the diameter are

ANSWER: (4, 3, 5)

UNIT V:

1. Any homogeneous function f(x, y, z of degree n represent a cone with its vertex at origin.
   ANSWER: **True**
2. The equation of a cone whose vertex is the origin is homogenous.
   ANSWER: **True**
3. The equation of quadratic cone with vertex as origin and intersects a ellipse — —
   1, is
   ANSWER: — $\frac{y}{}$ – $\frac{z}{}$
4. The equation of quadratic cone passing through the , , axes is
   ANSWER: **f yz z y**
5. The direction ratios of the axis are
   ANSWER: **0,0,1**
6. Let – — – be any generator of the cone (, , 0 which is homogeneous, then
   ANSWER: **f**(, ,

7. A general second degree homogenous equation which represents a cone with vertex at the origin is

   ANSWER: **y z fyz z y**

8. Which one of the following is not conic sections

   ANSWER: **Plane**

9. Let origin be vertex of cone. Then the value of constant term of general second degree equation is

   ANSWER: **0**

10. The equation of cone with vertex at origin and passes through 2 and 4

    ANSWER: **y z**

ANALYTICAL GEOMETRY 2D AND 3D

K3 level Questions

Unit 1

1. To obtain the equation of straight line "L" which is such that the foot of perpendicular from the pole "O" to B , where and are constants.
2. To obtain the equation of the circle when the circle passes through the pole "O" and the diameter through "O" is a initial line.
3. The equation of the conic is obtained by closing the focus S and perpendicular from its corresponding directrix as a pole and the initial line respectively.
4. Show that the area the triangle goest , , $_3$ $_3$ is $- \cdot -$ $\sin$ $-$ $_3 \sin$ $_3 -$ $_3$ $\sin$ $-$ reduce but the equation of a straight line throw , $_3$ is $— \sin$ $-$ $— \sin$ $-$ $— \sin$ $-$.
5. If O is a fixed point if a triangle OPQ where such that the angle remain constant is and the vector Q whose are the fixed straight line L and show that the locus of P is a straight line.
6. Show that the angle between the lines $—$ cos $-$ and $—$ cos $-$ is $-$ if .
7. Obtain the equation of a chord joining r , r , on the circle r $2a\ cos$.
8. Equation of chord of conic.
9. Show that the foot of the perpendicular from the pole, the line $-$ $a\ cos$ sin is $\sqrt{}$, where is given by cos $\sqrt{}$ $and \sin$ $\sqrt{}$.
10. Show that r $a\ cos$ sin represents a circle through the pole whose centre is $c,$ $r\ c$ $-\sqrt{a}$ and is given by cos $\sqrt{}$ $\sin$ $\sqrt{}$

Unit 2

1. Show that the following line are coplanar and find the equation of the coplanarity $\frac{}{}$ $\frac{}{3}$ $\frac{3}{4}$, $\frac{}{3}$ $\frac{3}{4}$ $\frac{4}{}$
2. Show that the lines whose equations are $\frac{}{}$ $\frac{}{}$ $\frac{}{3}$, $\frac{}{3}$ $\frac{}{}$ $\frac{3}{}$ intersect and find the equation of line through their point of intersection and perpendicular to the plane formed by them.
3. Show that the following line are coplanar and find point of intersection and equation of plane of coplanarity l $\frac{}{}$ $\frac{}{}$ $\frac{}{3}$ l 2 2 4 5 3 6 0
4. Show that the following line are coplanar and find point of intersection and equation of plane of coplanarity l $\frac{}{}$ $\frac{}{}$ $\frac{}{}$ l -2 2 3 -4 5 8
5. Find the length and equation of the common perpendicular drawn to the following line $\frac{3}{3}$ $\frac{}{}$ $\frac{}{}$, $\frac{}{3}$ $\frac{}{}$ $\frac{}{}$

6. Show that the following line intersect each other and find the common point —— ——

—— —— —— ——

7. Find the length and equation of the common perpendicular drawn to the following line
—— $\frac{}{3}$ $\frac{34}{}$, $\frac{}{4}$ $\frac{}{3}$ ——
8. Find the feet of the common perpendicular drawn to the following lines and find the length
—— $\frac{}{3}$ $\frac{34}{}$, $\frac{}{4}$ $\frac{}{3}$ ——
9. Prove that the lines —— $\frac{}{3}$ $\frac{34}{}$ and $\frac{}{4}$ $\frac{}{3}$ —— are coplanar. Find the point of intersection and the plane passing through them.
10. Find the equation of the line passing through the point (1, 1, 1) and parallel to the line whose equation is —— $\frac{}{3}$ $3z - 1$.

Unit 3

1. Find the equation of the sphere which passes through the point 3,4,2 2,0,5 2,4,5 3,3,1 .
2. Find the equation of the sphere which passes through the point 4, − 1,2 0, − 2,3 1, − 5, − 1 2,0,1 .
3. Find the equation of the sphere which passes through the point 0,1,3 1,2,4 2,3,1 3,0,2 .
4. Find the equation of the sphere through the point 3,4,2 2,0,5 2,4,5 having its centre on the plane − 2 0
5. Find the equation of the sphere through the point 3,4,2 2,0,5 having its centre on the plane − 2 0, 5 − − 2 0
6. Find the equation of the sphere which passes through the point 0,0,0 a, 0,0 0, , 0 0,0, c .
7. Show that the equation of the sphere through the origin and vertices of a tetrahedron whose faces are plane o , o , 0 − − − 1
8. Show that the equation of the sphere to 0,0,0 − a, , c a, − , c a, , − c is
− a c − − − 0
9. Show that the equation of the sphere through the vertices of a tetrahedron whose faces are given by − − 0, − − 0, − − 0 , − − − 1 is −
a c − − − 0
10. Show that the plane 2 2 − 12 touches the sphere − 2 − 4 − 6 5 0 find the point of contact.

Unit 4

1. Find the equation of the right circular cone whose vertex is the origin axis is line − − $\frac{}{3}$ and the semi vertical angle is 30°
2. Find the equation of the right circular cone whose vertex is the origin axis is line
and the semi vertical angle is cos $\frac{}{\sqrt{3}}$
3. Obtain the equation of the circular cone having the line as its axis and the line 2 − 5 3 as generator

4. Obtain the equation of the circular cone having the line as its axis and the line 2 − 3 as generator
5. Find the equation of the right circular cone whose vertex is 1,2,3 axis is line − 1 − 2 − 3 and one of whose generators has d.r's 1,0, − 2
6. Obtain the equation of the circular cone passing through the point 2,2,1 and having the point 1,2,3 as its vertex and line − 1 − 2 − 3 as its axis
7. Find the equation of the quadratic cone through the , , axis and lines through the origin with d.r's 2,4,1 3,3,1
8. Find the equation of the quadratic cone through the co ordinate axis and line6 3 2 *and* .
9. Show that the equation of the quadratic cone through the common generator of the cone *s* 3 3 0 *and s* 2 − 4 0 *and* *lin* *is* 3 − 2 − 2 0
10. If *a* *c* 2 2 2 0 represents a right circular cone show that its axis is .find the semi vertical angle.

Unit 5

1. find the equation of the right circular cylinder whose base radius is r at the axis is
2. show that the equation of the right circular cylinder whose axis is the line − − 2 and the radius whose guiding circle is 3 is 5 4 4 − 10 − 20 − 20 0
3. find the equation of right circular cylinder whose radius is 2 and whose axis passes through 1,2,3 has $d.r\ s$ 2, − 3,6
4. to obtain the equation of the cone whose vertex is , , and which envelopes the sphere − a
5. Show that the plane 0 intersects cone with the vertex 2,4,1 which envelopes the sphere 11 along the rectangular hyberbola.
6. Show that the equation of the cone with vertex is 0,0,0 which envelopes the sphere 2 2 2 0 is − 2 2 2 =0.
7. find the equation of the enveloping cone of the sphere 2 − 2 − 2 0 with its vertex at 1,1,1
8. Find the angle between the lines of intersection of the cone 2xy – 2yz +zx = 0 and the plane x + y – z = 0.
9. Find the equation of the quadratic cone through the co ordinate axis and line6 3 2 *and* .
10. Show that the plane z = 0 intersects the cone with vertex (2, 4, 1) which envelopes the sphere $x^2 + y^2 + z^2 = 11$, along a rectangular hyperbola.

ANALYTICAL GEOMETRY 2D AND 3D

K4 Level Questions

Unit 1

1. Find the condition the line $\frac{l}{r}$ $a\ cos$ s n touches the circle $\frac{l}{r}$ 1 cos .
2. Show that in a conic the semi latus section is the harmonic mean between the segments of the focal chord.
3. Derive the relationship between polar coordinates and Cartesian coordinates.
4. Find the equation of distance between two points (r_1, θ_1) and (r_2, θ_2).
5. Discuss the cases when tracing the conic $\frac{l}{r} = 1 + e \cos\theta$.
6. Trace the curve $\frac{10}{r} = 3\cos\theta + 4\sin\theta + 5$.

Unit 2

1. Prove that the lines —— $\frac{}{3}$ $\frac{34}{10}$ and $\frac{}{4}$ $\frac{}{3}$ —— are coplanar. Find the point of intersection and the plane passing through them.
2. Find the S.D. and equation of the shortest distance between the lines:

   $\frac{3}{3}$ $\frac{}{1}$ $\frac{3}{1}$ and $\frac{3}{3}$ —— $\frac{}{4}$.
3. Find the equation of the line passing through the point (1, 1, 1) and parallel to the line whose equation is —— $\frac{1}{3}$ 3z − 1.
4. Find the dr's of the line perpendicular to the lines x − − z and − — $\frac{}{3}$.
5. Show that the following line are coplanar and find point of intersection and equation of plane of coplanarity l_1 $\frac{1}{}$ $\frac{}{1}$ $\frac{}{3}$ l 2 2 4 5 3 6 0

Unit 3

1. Show that in the following cases the plane touches the sphere and find the point of contact
   i. 2 − 2 16 0, 2 − 4 2 3
   ii. 2 − − 2 16, − 4 2 2 3
2. Find the equation of the plane which passes through the line − 4 − 0 , − 6 0 *and* �*rou* � � *sp*� *r* 9.
3. Find the equation of the plane which touching the sphere sphere 6 − 2 1 0 and passes through the line 16, 2 − 3 30 0.
4. Find the centre and radius of the circle of the intersection of the plane 2 − 2 27 *and* � *sp*� *r* 225.

5. Find the centre and radius of the circle of the intersection of the plane 2 2 9 *and* sp r 25.
6. Find the centre and radius of the circle of the intersection of the sphere − 2 − 4 − 11 0 *and* plan 2 2 15
7. Find the centre and radius of the circle of the intersection of the sphere − 2 − 4 − 6 − 2 0 *and* plan 2 2 20
8. Find the equation of the circle lies on the sphere 25 and has the centre at 1,2,3 .
9. Find the equation of the circle lies on the sphere − 4 − 4 − 4 4 and has the centre at 3,3,3 .
10. Find the equation of the tangent plane at the origin to the sphere 8 − 6 4 0
11. If the Sphere is 2x+2y+2z-2x+4y+2z=15 then find the center of the Sphere

Unit 4

1. Show that the angle between the lines of intersect of the cone − 5 =0 and the plane − 0 60°.
2. Find the angle between the lines of intersection of the cone 2 − 2 =0 and the plane − 0 .
3. Find the angle between the lines of intersection of the cone 6 − 2 3 =0 and the plane 0 .
4. Find the equation of lines of intersection of the cone 4 − 3 =0 and the plane 2 − 0
5. Find the equation of the cone whose vertex is the point (1, 1, 0) and whose guiding curve is $x^2 + z^2 = 4$, $y = 0$.

Unit 5

1. If $ax^2 + by^2 + cz^2+2fyz+2gzx+2hxy=0$ represents a right circular cone, show that its axis is fx=gy=hz and also find the semi vertical angle.
2. Find the equation of right circular cylinder whose radius is 2 and whose axis passes through (1, 2, 3) and has dr’s 2, -3, 6.
3. Show that the plane z = 0 intersects the cone with vertex (2, 4, 1) which envelopes the sphere $x^2 + y^2 + z^2 = 11$, along a rectangular hyperbola.
4. Find the equation of the right circular cone whose vertex is the origin, axis is the line $\frac{}{1}$ − $\frac{}{3}$ and semi vertical angle is 30^0.
5. to obtain the equation of the cone whose vertex is $_1$ $_1$, $_1$, $_1$ and which envelopes the sphere − a