**Points, Direction Cosines and Direction Ratios**

**Type – 1**

**Choose the most appropriate option (a, b, c or d).**

Q 1. A line makes angles α, β, γ with the positive directions of the axes of reference. The value of cos 2α + cos 2β + cos 2γ is

(a) 1 (b) 2 (c) -1 (d) 0

Q 2. If a line makes angles of 60° and 45° with the positive directions of the x-axis and y-axis respectively then the acute angle between the line and the z-axis is

(a) 60° (b) 45° (c) 75° (d) 15°

Q 3. If θ is an angle given by cos θ = where a, B, y are the angles made by a line with the positive directions of the axes of reference then the measure of θ is

(a)  (b)  (c)  (d) 

Q 4. If the direction cosines of the line joining the origin and a point at unit distance from the origin are,λ then the point has coordinates

(a)  (b)  (c)  (d) none of these

Q 5. The direction ratios of two parallel lines are 4, -3, -1 and λ + μ, 1 + μ, 2. The value of the pair (λ,μ) is

(a) (1,7) (b) (-1,-7) (c) (7,1) (d) no fixed value

Q 6. The direction ratios of two perpendicular lines are 1, -3, 5 and λ, 1 + λ, 2 + λ. Then λ is

(a)  (b)  (c)  (d) 

Q 7. The direction cosines of the line joining the points (2, 3, -1) and (3, -2, 1)

(a) –1, 5, –2 (b)  (c)  (d)

Q 8. If A = (1,2,3), B = (-2, 4, λ) and ∠AOB = π/2 where O is the origin then λ is

(a) 6 (b) -6 (c) 0 (d) -2

Q 9. Let A = (2,3, -1), B = (1, -1, 2). A point C on the y-axis such that AB ⊥ BC has the coordinates

(a)  (b)  (c)  (d) 

Q 10. If the points A(1, 2, -1), B(2, 6,2) and C(λ, -2, -A) are collinear then λ is

(a) 0 (b) 2 (c) -2 (d) 1

Q 11. If A = (1,1,1), B = (2, -1,3), C = (0, 4, -2), D = (1, 2, X) and AB, AC and AD are coplanar then λ is

(a) 1 (b) 0 (c) -1 (d) 3

Q 12. The angle between the lines joining the points (1, 0, -3), (2, -1, 2), and (1,1,11,(3,2,0) is

(a) cos-1 (b) 90o (c) 0o (d) cos-1 

Q 13. The angle between the lines joining the points (1,1,0), (-3, - + 1, 3), and (0,-1, 0), (-1, - 1,λ) is cos-1.If X is an integer then its value is

(a) 1 (b) 0 (c) -1 (d) 2

Q 14. Lr, mr, nr; r = 1,2,3; are the direction cosines of -three mutually perpendicular lines. The direction cosines of the line equally inclined to

(a) I1 +I2 + I3, m1 + m2 + m3, n1 + n2 + n3

(b) 

(c) 

(d) 

Q 15. Let A = (1,2, 2), B = (2,3,6) and C = (3, 4,12). The direction cosines of a line equally inclined with OA, OB and OC where O is the origin, are

(a) s (b)  (c)  (d) 

Q 16. The angle between the lines whose direction cosines satisfy the equations

I + m + n = 0 and I2 = m2 + n2 is

(a)  (b)  (c)  (d) 

Q 17. The angle between two lines whose direction cosines satisfy the equations n= l + m and m = 2l + 3n is

(a) 0° (b) 90° (c) 60° (d) none of these

Q 18. The value of λ for which the triangle ABC whose vertices are .4(6,10,10), B(1, 0, -5) and C(6, -10, λ) is right-angled at B, is

(a) 0 (b) 30 (c)  (d) 

Q 19. Let A = (1,2, 3), B = (-1, -2, -1), C= (2,3, 2) and D = (4, 7, 6). Then ABCD

(a) rectangle (b) square (c) parallelogram (d) none of these

Q 20. The points (0,0, 0), (0, 2, 0), (1, 0, 0), (0, 0,4) are

(a) coplanar (b) vertices of a parallelogram

(c) vertices of a rectangle (d) on a sphere

Q 21. If A = (5, -1,1), B = (7, -4, 7), C = (1, -6,10), D = (-1, -3,4) then ABCD is a

(a) square (b) rectangle (c) rhombus (d) none of these

Q 22. If A = (0,0, 2), B = )and

D = 

then BCD is a

(a) rhombus (b) square (c) parallelogram (d) none of these

Q 23. If the vertices of a triangle are (-1, 6, -A), (2,1,1) and (5,-1, 0) then the centroid of the triangle is

(a) (6,6,-3) (b) (2,2,-1) (c)  (d) none of these

Q 24. If two vertices of a triangle ABC are A(-1, 2,4) and B(2, -3, 0), and the centroid is (2,0, 2) then the vertex C has the coordinates

(a) (5,1,2) (b)  (c)  (d) none of these

Q 25. Four vertices of a tetrahedron are (0, 0, 0), (4, 0, 0), (0, -8, 0) and (0, 0,12). . Its centroid has the coordinates

(a)  (b) (2,-4,6) (c) (1,-2,3) (d) none of these

Q 26. Three vertices of a tetrahedron are (0, 0, 0), (6, -5, -1) and (-4,1, 3). If the centroid of the tetrahedron be (1, -2,5) then the fourth vertex is

(a) (2, -4,18) (b) (2,-4,-18) (c)  (d) none of these

Q 27. The points A(1, 2, -1), B(2,5, -2), C(4, 4, -3) and D(3,1, -2) are

(a) collinear (b) vertices of a rectangle

(c) vertices of a square (d) vertices of a rhombus

Q 28. The projection of a line segment on the axes of reference are 3, 4 and 12 respectively. The length of the line segment is

(a) 19 (b)  (c) 5 (d) 13

Q 29. ABC is a triangle where A = (2,3,5), 8 = (-1,3, 2) and C = (λ, 5, μ). If the median through A is equally inclined with the axes then

(a) λ = 14,μ = 20 (b) λ = 7,μ = 10 (c) λ= μ = 5 (d) λ. = 10, μ = 7

Q 30. The volume of the tetrahedron whose vertices are (0,1,2), (4,3,6), (2,3,2) and (3,0,1) is (in unit3)

(a) 0 (b) 1 (c) 6 (d) 3

Q 31. If (1,-1,0), (-2,1,8) and (-1,2,7) are three consecutive vertices of a parallelogram then the fourth vertex is

(a) (2,0,-1) (b) (1,0,-1) (c) (1,-2,0) (d) (0,-2,1)

Q 32. Let Pr(xr,yr, z,); r-1,2,3; be three points where x1, x2, x3, y1, y2, y3 and z1, z2, z3 are each in GP with the same common ratio. Then P1, P2, P3 are

(a) coplanar points (b) collinear points

(c) vertices of an equilateral triangle (d) none of these

**Type 2**

**Choose the correct options. One or more options may be cornet.**

Q 33. A point Q at a distance 3 from the point P(1,1,1) lying on the line joining the points A(0, -1,3) and P, has the coodinates

(a) (2,3,-1) (b) (4,7,-5) (c) (0,-1,3) (d) (-2,-5,7)

Q 34. If A = (2, -3, 7), B = (-1,4, -5) and P is a point on the line AB such that AP:BP = 3:2 then P has the coordinates

(a)  (b)  (c)  (d) (– 7, 18, – 29)

Q 35. If the direction ratios of a line are 1 + X, 1 - X, 2, and it makes an angle of 60° with the y-axis then λ is

(a) 1 +  (b) 2+ (c)  (c) 1 –  (d) 2 – 

**Answers**

1c 2a 3d 4a 5b 6a 7b 8d 9c 10a

11b 12d 13b 14c 15d 16c 17a 18a 19c 20d

21c 22d 23b 24a 25c 26a 27b 28d 29b 30c

31a 32b 33ac 34bd 35bd