Sr. No.	**FYBSc Mathematics Paper III** **MTH 103 (A): Co-ordinate Geometry** **Questions Bank**	Answer
1)	The equation $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents an ellipse if $\Delta \neq 0$ and ---------- A))$h^2 - ab > 0$ B) $h^2 - ab < 0$ C) $h^2 - ab = 0$ D) $h = 0, a = b$	**B**
2)	The equation $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a hyperbola if $\Delta \neq 0$ and ---------- A)$h^2 - ab < 0$ B) $h^2 - ab = 0$ C)$h^2 - ab > 0$ D) $h = 0, a = b$	**C**
3)	The general equation of second degree $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a parabola if $\Delta \neq 0$ and ---------- A)$h^2 - ab < 0$ B) $h^2 - ab = 0$ C)$h^2 - ab > 0$ D) $h = 0, a = b$	**B**
4)	The general equation of second degree $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a circle if $\Delta \neq 0$ and ---------- A)$h^2 - ab < 0$ B) $h^2 - ab > 0$ C) $h^2 - ab = 0$ D) $a = b \text{ and } h = 0$	**D**
5)	Two spheres with centres at $C_1 \text{ and } C_2$ having radii $r_1 \text{ and } r_2$ respectively are non-intersecting if ---------- A)$c_1c_2 < r_1 + r_2$ B) $c_1c_2 = r_1 + r_2$ C) $c_1c_2 > r_1 + r_2$ D) $(r_1 + r_2c_1c_2)^2 = r^2 + r_2^2$	**C**
6)	Two spheres with centres at $C_1 \text{ and } C_2$ having radii $r_1 \text{ and } r_2$ respectively touch each other externally if ---------- A)$c_1c_2 < r_1 + r_2$ B) $c_1c_2 = r_1 + r_2$ C) $c_1c_2 > r_1 + r_2$ D) $(c_1c_2)^2 = r_1^2 + r_2^2$	**B**
7)	Two spheres with centres at $C_1 \text{ and } C_2$ having radii $r_1 \text{ and } r_2$ respectively touch each other orthogonally if ---------- A)$c_1c_2 = r_1 + r_2$ B) $(c_1c_2)^2 = r_1^2 + r_2^2$ C) $c_1c_2 > r_1 + r_2$ D) None of these	**B**
8)	Choose the correct option .Every homogeneous equation of second order in x, y, z represents -------- A)Cone B)Right circular cylinder C)Ellipsoid D)Hyperboloid of one sheet	**A**
9)	The equation of a cone with vertex at origin is --------- A)Linear B)Cubic C)homogeneous D)non homogeneous	**C**
10)	The general equation of the cone which passes through the co-ordinate axes is- A)$ax + by + c = 0$ B)$fyz + gzx + gxy = 0$ C)$x^2 + y^2 + 2gx + 2fy + c = 0$ D) $fyz + gzx + hxy = 0$	**B**
11	Determine nature of conic is $14x^2 - 4xy + 11y^2 - 44x - 58y + 71 = 0$ given by A)Parabola B)Ellipse C)Hyperbola D)None of these	**B**

12	Determine nature of conic is $3x^2 - 10xy + 3y^2 + 14x - 2y + 3 = 0$ given by A)Parabola B)Ellipse C)Hyperbola D)None of these	**C**
13	Determine nature of conic is $5x^2 + 6xy + 5y^2 - 10x - 6y - 3 = 0$ given by A)Parabola B)Ellipse C)Hyperbola D)None of these	**B**
14	Determine nature of conic is $555x^2 - 30xy + 39y^2 - 40x - 24y - 464 = 0$ given by A)Parabola B)Ellipse C)Hyperbola D)None of these	**B**
15	Determine nature of conic is $8x^2 - 24xy + 15y^2 - 48x - 487 = 0$ given by A)Parabola B)Ellipse C)Hyperbola D)None of these	**C**
16	Determine nature of conic is $536x^2 + 24xy + 29y^2 - 10x - 6y - 3 = 0$ given by A)Parabola B)Ellipse C)Hyperbola D)None of these	**B**
17	Determine nature of conic is $5x^2 - 6xy + 5y^2 - 10x - 6y - 3 = 0$ given by A)Parabola B)Ellipse C)Hyperbola D)None of these	**B**
18	True or false .Distance Between Two points P(x_1, y_1, z_1) and Q(x_2, y_2, z_2) is given by $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$ A)True B)False	**A**
19	True or false .Relation between direction cosines: $l^2 + m^2 + n^2 = 2$ A)True B)False	**B**
20	True or False . If a, b and c any numbers such that they are proportional to l, m and n respectively then a, b and c are called as direction ratios. A)True B)False	**A**
21	True or false .If l_1, m_1, n_1 and l_2, m_2, n_2 are direction cosines of any two lines making an angle θ . then $\cos\theta = l_1l_2 + m_1m_2 + n_1n_2$ A)True B)False	**A**
22	True or false .Relation between direction cosines: $l^2 + m^2 + n^2 = 1$ A)True B)False	**A**
23	If l_1, m_1, n_1 and l_2, m_2, n_2 are direction cosines of any two lines making an angle θ . then value of $\cos\theta$ is given by .. A)$l_1l_2 + m_1m_2$ B) $l_1l_2 + m_1m_2 + n_1n_2$ C)1 D) 0	**B**
24	True or false .General Equation of a Plane is $ax + by + cz + d = 0$, where a, b c are the direction ratios of the normal to the plane	**A**

	A)True B)False	
25	True or false .General Equation of a Plane is $ax^2 + by + cz + d = 0$, where a, b c are the direction ratios of the normal to the plane A)True B)False	**B**
26	True or false. In Intercept Form of Plane is $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=1$ where a, b, c are the intercepts made with X, Y and Z-axis respectively. A)True B)False	**A**
27	True or false. In Intercept Form of Plane is $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=0$ where a, b, c are the intercepts made with X, Y and Z-axis respectively. A)True B)False	**B**
30	True or false. In Normal Form of Plane $\boldsymbol{lx + my + nz = p}$ where l, m, n are the direction cosines of the normal to the plane and p perpendicular from the origin to the plane. A)True B)False	**A**
31	True or false. In Normal Form of Plane $\boldsymbol{lx + my + nz = p}$where l, m, n are not the direction cosines of the normal to the plane and p perpendicular from the origin to the plane. A)True B)False	**B**
32	True or false. Equation of the plane through the point(x_1, y_1, z_1) is given by $a(x-x_1)+b(y-y_1)+c(z-z_1)=0$ where a, b c are the direction ratios of the normal to the plane. A)True B)False	**A**
33	True or false. Equation of the plane through the point(x_1, y_1, z_1) is given by $a(x-x_1)^2+b(y-y_1)+c(z-z_1)=0$ where a, b c are the direction ratios of the normal to the plane. A)True B)False	**B**
34	True or false. Equation of the plane through the point(x_1, y_1, z_1) is given by $a(x-x_1)^2+b(y-y_1)^2+c(z-z_1)=0$ where a, b c are the direction ratios of the normal to the plane. A)True B)False	**B**

35	True or false. The length of perpendicular p from the point (x_1, y_1, z_1) to the plane $ax+by+cz+d=0$ is given by $p=\frac{ax_1+by_1+cz_1+d}{\sqrt{a^2+b^2+c^2}}$. A)True B)False	**A**
36	True or false. The length of perpendicular p from the point (x_1, y_1, z_1) to the plane $ax+by+cz+d=0$ is given by $p=\frac{ax_1+by_1+cz_1+d}{\sqrt{a+b+c}}$. A)True B)False	**B**
37	True or false. The length of perpendicular p from the point (x_1, y_1, z_1) to the plane $ax+by+cz+d=0$ is given by $p=\frac{ax_1+by_1+cz_1+d}{\sqrt{a+b+c-d}}$. A)True B)False	**B**
38	True or false. The length of perpendicular p from the point (x_1, y_1, z_1) to the plane $ax+by+cz+d=0$ is given by $p=\frac{ax_1+by_1+cz_1}{\sqrt{a^2+b^2+c^2}}$. A)True B)False	**B**
39	True or false. .In Two Point Form , Equation of a straight line passing through (x_1, y_1, z_1), (x_2, y_2, z_2) is given by $\frac{x-x_1}{x_1-x_2}=\frac{y-y_1}{y_2-y_1}=\frac{z-z_1}{z_2-z_1}$ A)True B)False	**B**
40	True or false. .In Two Point Form , Equation of a straight line passing through (x_1, y_1, z_1), (x_2, y_2, z_2) is given by $\frac{x-x_1}{x_2-x_1}=\frac{y-y_1}{y_2-y_1}=\frac{z-z_1}{z_2-z_1}$ A)True B)False	**A**
41	True or false. .In Two Point Form , Equation of a straight line passing through (x_1, y_1, z_1), (x_2, y_2, z_2) is given by $\frac{x-x_1}{x_2-x_1}=\frac{y-y_1}{y_2-y_1}=\frac{z-z_1}{z_1-z_2}$ A)True B)False	**B**
42	True or false. .In Two Point Form , Equation of a straight line passing through (x_1, y_1, z_1), (x_2, y_2, z_2) is given by $\frac{x-x_1}{x_1-x_2}=\frac{y-y_1}{y_1-y_2}=\frac{z-z_1}{z_1-z_2}$ A)True B)False	**A**

43	True or false. .In Two Point Form , Equation of a straight line passing through (x_1, y_1, z_1), (x_2, y_2, z_2) is given by $\frac{x-x_1}{x_2-x_1} = \frac{y-y_1}{y_1-y_2} = \frac{z-z_1}{z_1-z_2}$ A)True B)False	**B**
44	True or false. .In One Point Form , Equation of a straight line $\frac{x-x_1}{a} = \frac{y-y_1}{b} = \frac{z-z_1}{c}$ where a, b,c are the direction ratios of the line. A)True B)False	**A**
45	True or false. .In One Point Form , Equation of a straight line $\frac{x-x_1}{a} = \frac{y_1-y}{b} = \frac{z-z_1}{c}$ where a, b,c are the direction ratios of the line. A)True B)False	**B**
46	True or false. Equation of a sphere with centre at C(a, b, c) and Radius "r" is given by $(x-a)^2 + (y-b)^2 + (z-c)^2 = r^2$. A)True B)False	**A**
47	True or false. Equation of a sphere with centre at C(a, b, c) and Radius "r" is given by $(x-a)^2 + (y-b)^2 + (z-c)^2 = r$. A)True B)False	**B**
48	True or false. Equation of a sphere with centre at C(a, b, c) and Radius "r" is given by $(x-a)^3 + (y-b)^2 + (z-c)^2 = r^2$. A)True B)False	**B**
49	True or false. Equation of a sphere with centre at C(a, b, c) and Radius "r" is given by $(x-a) + (y-b) + (z-c)^2 = r^2$. A)True B)False	**B**
50	True or false. Equation of a sphere with centre at C(a, b, c) and Radius "r" is given by $(x-a) + (y-b) + (z-c) = r^2$. A)True B)False	**B**
51	True or false. In General equation of a sphere $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ its centre is given by $(-u, -v, -w)$. A)True B)False	**A**

52	True or false. In General equation of a sphere $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ its centre is given by (u, v, w). A)True B)False	**B**
53	True or false. In General equation of a sphere $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ its centre is given by $(u, -v, -w)$. A)True B)False	**B**
54	True or false. In General equation of a sphere $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ its radius is given by $\sqrt{u^2 + v^2 + w^2 - d}$ A)True B)False	**A**
55	True or false. In General equation of a sphere $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ its radius is given by $\sqrt{u^2 + v^2 + w^2}$ A)True B)False	**B**
56	True or false. In General equation of a sphere $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ its radius is given by $\sqrt{u^2 + v^2 - d}$ A)True B)False	**B**
57	True or false. In Diameter form, Equation of a sphere whose end points of diameter are $A(x_1, y_1, z_1)$, $B(x_2, y_2, z_2)$ is given by $(x - x_1)(x - x_2) + (y - y_1)(y - y_2) + (z - z_1)(z - z_2) = 0$ A)True B)False	**A**
58	True or false. In Diameter form, Equation of a sphere whose end points of diameter are $A(x_1, y_1, z_1)$, $B(x_2, y_2, z_2)$ is given by $(x - x_1)(x - x_2) + (y - y_1)(y - y_2) + (z - z_1)(z - z_2) = 1$ A)True B)False	**B**

59	True or false. Equation of a sphere passing through the four points (x_1, y_1, z_1), (x_2, y_2, z_2), (x_3, y_3, z_3) and (x_4, y_4, z_4). $\begin{vmatrix} x^2+y^2+z^2 & x & y & z & 1 \\ {x_1}^2+{y_1}^2+{z_1}^2 & x_1 & y_1 & z_1 & 1 \\ {x_2}^2+{y_2}^2+{z_2}^2 & x_2 & y_2 & z_2 & 1 \\ {x_3}^2+{y_3}^2+{z_3}^2 & x_3 & y_3 & z_3 & 1 \\ {x_4}^2+{y_4}^2+{z_4}^2 & x_4 & y_4 & z_4 & 1 \end{vmatrix} = 0.$ A)True B)False	**A**
60	True or false. Equation of a sphere passing through the four points (x_1, y_1, z_1), (x_2, y_2, z_2), (x_3, y_3, z_3) and (x_4, y_4, z_4). $\begin{vmatrix} x^2+y^2+z^2 & x & y & z & 1 \\ {x_1}^2+{y_1}^2+{z_1}^2 & x_1 & y_1 & z_1 & 1 \\ {x_2}^2+{y_2}^2+{z_2}^2 & x_2 & y_2 & z_2 & 1 \\ {x_3}^2+{y_3}^2+{z_3}^2 & x_3 & y_3 & z_3 & 1 \\ {x_4}^2+{y_4}^2+{z_4}^2 & x_4 & y_4 & z_4 & 1 \end{vmatrix} = 1.$ A)True B)False	**B**
61	True or false. Equation of a sphere passing through the four points (x_1, y_1, z_1), (x_2, y_2, z_2), (x_3, y_3, z_3) and (x_4, y_4, z_4). $\begin{vmatrix} x^2+y^2+z^2 & x & y & z & xy \\ {x_1}^2+{y_1}^2+{z_1}^2 & x_1 & y_1 & z_1 & 1 \\ {x_2}^2+{y_2}^2+{z_2}^2 & x_2 & y_2 & z_2 & 1 \\ {x_3}^2+{y_3}^2+{z_3}^2 & x_3 & y_3 & z_3 & 1 \\ {x_4}^2+{y_4}^2+{z_4}^2 & x_4 & y_4 & z_4 & 1 \end{vmatrix} = 0.$ A)True B)False	**B**
62	True or false. The equation of a tangent Plane at (x_1, y_1, z_1) for the sphere $x^2+y^2+z^2+2ux+2vy+2wz+d=0$is given by $xx_1+yy_1+zz_1+u(x+x_1)+v(y+y_1)+w(z+z_1)+d=0$ A)True B)False	**A**
63	True or false. The section of a sphere by a plane is circle therefore	**A**

	S = $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ and P = $ax + by + cz + d = 0$ together represents the circle. A)True B)False	
64	True or false. The equation of a tangent Plane at (x_1, y_1, z_1) for the sphere $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$is given by $xx_1 + yy_1 + zz_1 + u(x + x_1) + v(y + y_1) + w(z + z_1) = 0$ A)True B)False	**B**
65	True or false. S = $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ and P = $ax + by + cz + d = 0$ together represents the Sphere. A)True B)False	**B**
66	True or false. S = $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ and P = $ax + by + cz + d = 0$ together represents the Cone. A)True B)False	**B**
67	True or false. S = $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ and P = $ax + by + cz + d = 0$ together represents the Right circular Cylinder . A)True B)False	**B**
68	True or false. S = $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ and P = $ax + by + cz + d = 0$ together represents the Enveloping Cylinder . A)True B)False	**B**
69	True or false. S = $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ and P = $ax + by + cz + d = 0$ together represents the Right Circular Cone. A)True B)False	**B**
70	True or false.	**B**

	S = $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ and P = $ax + by + cz + d = 0$ together represents the Enveloping Cone. A)True B)False	
71	When the origin is shifted to (1,2) direction of axes remaining same ,new coordinate of (7,5) will be …. A)(6,3) B)(1,2) C)(0,0) D)(70,50)	**A**
72	When the origin is shifted to (1,2) direction of axes remaining same ,new coordinate of (0,5) will be …. A)(6,3) B)(-1,3) C)(0,0) D)(70,50)	**B**
73	True or false. To shift the coordinates of origin to (h,k) replace x by (x+h) and y by (y+k) in the given equation of the curve and get the new equation of curve. A)True B)False	**A**
74	In conic section ,The fixed point in the plane is called …. A)Focus B)Directrix C)Eccentricity D)Parabola	**A**
75	In conic section ,The fixed st. line in the plane is called …. A)Focus B)Directrix C)Eccentricity D)Parabola	**B**
76	Choose the correct option .The radius of sphere $x^2 + y^2 + z^2 + 4x - 6y - 8z - 2 = 0$ A)31 B)$\sqrt{31}$ C)24 D)None of these	**B**
77	Choose the correct option .The coordinates of centre of sphere $x^2 + y^2 + z^2 + 4x - 6y - 8z - 2 = 0$ A)(-2,3,4) B) (2,3,4) C)(0,0,0) D)None of these	**A**
78	Fixed line is called the … of right circular cone. A)Semi vertical angle B) Axis C) generator D)None of these	**B**
79	Constant angle is called the … of right circular cone. A)Semi vertical angle B) Axis C) generator D)None of these	**A**
80	Drs of generators of right circular cylinder whose axis is parallel to Z axis. A)1,1,1 B)1,2,1 C)0,0,1 D) None of these	**C**
81	Drs of generators of right circular cylinder whose axis having equation is x=y=z A)1,1,1 B)1,2,1 C)-1,-2,1 D) None of these	**A**
82	The section of a right circular cone by plane perpendicular to axis is a….. A)parabola B)Hyperbola C)Circle D) None of these	**C**
83	Drs of generators of right circular cylinder whose axis is parallel to X axis. A)1,0,1 B)1,0,0 C)0,0,1 D) None of these	**B**
84	Drs of generators of right circular cylinder whose axis is parallel to Y axis. A)1,0,1 B)1,0,0 C)0,1,0 D) None of these	**C**

85	The section of a right circular cylinder by plane perpendicular to axis is a….. A)parabola B)Hyperbola C)Circle D) None of these	**C**
86	True or false. Enveloping cylinder of the sphere is always right circular cylinder A)True B)False	**A**
87	Radius of enveloping cylinder of the sphere $x^2 + y^2 + z^2 = 9$ is … A)3 B)4 C)5 D) None of these	**A**
88	Radius of enveloping cylinder of the sphere $x^2 + y^2 + z^2 = 25$ is … A)3 B)4 C)5 D) None of these	**C**
89	Drs of generators of right circular cylinder whose axis having equation is $\frac{x-1}{2} = \frac{y-4}{5} = \frac{z-6}{7}$ A)2,5,-7 B)2,5,7 C) 1,4,6 D) None of these	**B**
90	Drs of generators of right circular cylinder whose axis having equation is $\frac{x-1}{22} = \frac{y-4}{55} = \frac{z-6}{77}$ A)2,5,-7 B)2,5,7 C) 1,4,6 D) None of these	**B**
91	Tangent Plane to the sphere $x^2 + y^2 + z^2 = 25$ at (1,2,3) is given by … A)x+2y+3z=25 B)x+y+z=25 C)x+2y+3z=0 D) None of these	**A**
92	Tangent Plane to the sphere $x^2 + y^2 + z^2 - 4x + 2y - 4 = 0$ at (4,-2,2) is given by … A)x+2y+3z=25 B)2x-y+2z-14=0 C)x+2y+3z=0 D) None of these	**B**
93	Tangent Plane to the sphere $x^2 + y^2 + z^2 - 2x - 4y + 2z - 3 = 0$ at (-1,4,-2) is given by … A)x+2y+3z=25 B)2x-2y+z+12=0 C)x+2y+3z=0 D) None of these	**B**
94	Choose the correct option .The radius of sphere $x^2 + y^2 + z^2 + 2x - 2y - 4z - 19 = 0$ A)5 B)$\sqrt{31}$ C)24 D)None of these	**A**
95	Choose the correct option .The Centre of sphere $x^2 + y^2 + z^2 + 2x - 2y - 4z - 19 = 0$ A)(5,0,0) B)(2,2,4) C) (-1,1,2) D)None of these	**C**
96	Choose the correct option .The radius of sphere $x^2 + y^2 + z^2 + 4x - 6y + 2z - 10 = 0$ A)31 B)$\sqrt{24}$ C)24 D)None of these	**B**
97	Choose the correct option .The radius of sphere $x^2 + y^2 + z^2 + 4x - 6y + 2z - 10 = 0$ A)(5,0,0) B)(2,2,4) C) (-2,3,,1) D)None of these	**C**
98	Drs of normal to the plane having equation 2x-y+2z-14=0 at point (4,-2,2) is A)(5,0,0) B)(2,-1,2) C) (-2,3,,1) D)None of these	**B**

99	Drs of normal to the plane having equation 3x-y+12z-14=0 at point (4,-2,2) is A)(5,0,0) B)(3,-1,12) C) (-2,3,,1) D)None of these	**B**
100	Coordinates of the point $(\sqrt{3}, 1)$ after the axes have been rotated through angle $\frac{\pi}{6}$ A)(2,0) B(3.0) C) $(\sqrt{3}, 1)$ D)None of these	**A**