	The Bodwad Sarvajanik Co-Op. Education Society Ltd., Bodwad **Arts, Commerce and Science College Bodwad** **<u>Question Bank</u>** **Class:-SYBSc** **Sem:-IV** **Subject: Vector Calculus** **Paper Name:- MTH 404**	
Sr.No.	Questions	Ans
1	If a, b, c are the direction ratios of the normal then equation of normal passing through $P(x_1, y_1, z_1)$ is ……….. a) $\frac{x}{a} = \frac{y}{b} = \frac{z}{c}$ b) x, y, z c) $\frac{x-x_1}{a} = \frac{y-y_1}{b} = \frac{z-z_1}{c}$ d) $ax = bx + c$	**C**
2	Equation of tangent plane to the surface at $P(x_1, y_1, z_1)$ is a ……….. of direction ratios a, b, c. a) $a(x - x_1) + b(y - y_1) + c(z - z_1) = 0$ b) $ax + by + cz = 0$ c) $x + y + z = a + b + c$ d) $a(x - x_1) + c = 0$	**A**
3	Let $\hat{n}$ be the unit normal (outward) at P to the level surface $\varphi(x, y, z) = c$. Then $\hat{n} =$ ……….. at P. a) $\nabla\varphi$ b) $\frac{\nabla\varphi}{\lvert\nabla\varphi\rvert}$ c) 0 d) $\lvert\nabla\varphi\rvert$	**B**
4	If $\varphi = xyz^2$, then $\nabla\varphi =$ ……….	

	a) $\nabla\varphi = yz^2\bar{i} + xz^2\bar{j} + 2xyz\bar{k}$ b) $\nabla\varphi = x\bar{i} + y\bar{j} + z\bar{k}$ c) $\nabla\varphi = \bar{i} + \bar{j} + \bar{k}$ d) $z^2x\bar{j} + y\bar{i} + zxy\bar{k}$	**A**
5	The divergence of a vector point function is ……….. point function. a) Scalar b) Vector c) Both (a) and (b) d) None of these	**A**
6	If $\overline{V} = (x^2 + y)\bar{i} + (y^2 + x)\bar{j} + (z^2 + xy)\bar{k}$ then $\text{div}.\overline{V} =$ ……… a) $y\bar{i} + z\bar{j} + x\bar{k}$ b) $2x\bar{i} + 2y\bar{j} + 2z\bar{k}$ c) $2x + 2y + 2z$ d) 0	**C**
7	A vector point function $\overline{V}$ is said to be solenoidal if ………… a) $\text{div}.\overline{V} = 0$ b) $\text{div}.\overline{V} = 1$ c) $\text{div} \times \overline{V} = 0$ d) $\overline{V} = 0$	**A**
8	A scalar point function which satisfies laplace's equation is called ………. a) Vector function b) Harmonic function c) Scalar function d) None of these	**B**

9	A vector point function $\overline{V}$ is said to be an irrotational if ……….. a) $\text{Curl}\,\overline{V} = 0$ b) $\overline{\nabla} \times \overline{0} = 0$ c) $\nabla \times \overline{V} = 0$ d) Both (a) and (c)	**D**
10	$\text{div}\,(\overline{u} \times \overline{v}) = \ldots\ldots\ldots$ a) $\overline{v}.\,\text{curl}\,\overline{u} - \text{curl}\,\overline{v}.\overline{u}$ b) 0 c) $\text{div}\,\overline{u} + \text{div}\,\overline{v}$ d) 2	**A**
11	If $\overline{r} = x\overline{i} + y\overline{j} + z\overline{k}$ then $\text{div}.\overline{r} = \ldots\ldots\ldots$ a) 1 b) $x + y + z$ c) 3 d) $x\overline{i} + y\overline{j} + z\overline{k}$	**C**
12	$\text{div}\,(\overline{u} \times \overline{v}) = \ldots\ldots\ldots$ a) $\overline{v}.\,\text{curl}\,\overline{u} - \text{curl}\,\overline{v}.\overline{u}$ b) 0 c) $\text{div}\,\overline{u} + \text{div}\,\overline{v}$ d) 2	**A**
13	If $\hat{u}$ is a unit vector in the direction perpendicular to $\overline{A}$ then which of the following is not true. a) $\lvert\hat{u}\rvert = 1$ b) $\overline{A} \cdot \hat{u} = \hat{u} \cdot \overline{A}$ c) $\overline{A} \cdot \hat{u} = 0$ d) $\lvert\overline{A}\rvert = \lvert\hat{u}\rvert = 1$	**D**
14	If $\overline{B}$ and $\overline{A}$ are sides of a parallelogram then its area is a) $\lvert\overline{A} \times \overline{B}\rvert$ b) $\overline{A} \cdot \overline{B}$ c) $\lvert\overline{A}\rvert\lvert\overline{B}\rvert$ d) $\frac{1}{\lvert\overline{A}\times\overline{B}\rvert}$	**B**
15	If $\overline{A} = 2i - j + 3k, \overline{B} = i + j - k$ and $\overline{C} = 3j - 5k$ then	**B**

	a) $\overline{A}$ and $\overline{B}$ are perpendicular b) $\overline{A}, \overline{B}$ and $\overline{C}$ are co-planar c) $\overline{A} \times \overline{B} = \overline{C}$ d) $\overline{B} \times \overline{C} = \overline{A}$	
16	If $\overline{A}, \overline{B}, \overline{C}$ are three vectors, then which of the following is not true. a) $\overline{A} \times (\overline{B} \times \overline{C}) = (\overline{C} \times \overline{B}) \times \overline{A}$ b) $\overline{A} \times (\overline{B} \times \overline{C}) = -\overline{A} \times (\overline{C} \times \overline{B})$ c) $\overline{A} \times (\overline{B} \times \overline{C}) = \overline{B} \times (\overline{A} \times \overline{C})$ d) $\overline{B} \times (\overline{A} \times \overline{C}) = (\overline{B} \cdot \overline{C})\overline{A} - (\overline{B} \cdot \overline{A})\overline{C}$	**C**
17	If $\overline{A}, \overline{B}, \overline{C}$ and $\overline{D}$ are four vectors, then Lagrange's identity is a) $(\overline{A} \times \overline{C}) \cdot (\overline{B} \times \overline{D}) = \begin{vmatrix} \overline{A} \cdot \overline{B} & \overline{C} \cdot \overline{B} \\ \overline{A} \cdot \overline{D} & \overline{C} \cdot \overline{D} \end{vmatrix}$ b) $(\overline{A} \times \overline{C}) \cdot (\overline{B} \times \overline{D}) = (\overline{A} \times \overline{C} \cdot \overline{B}) + (\overline{A} \times \overline{C} \cdot \overline{D})$ c) $(\overline{A} \times \overline{C}) \cdot (\overline{B} \times \overline{D}) = (\overline{A} \times \overline{C} \cdot \overline{D}) + (\overline{A} \times \overline{B} \cdot \overline{C})$ d) $(\overline{A} \times \overline{B}) \cdot (\overline{C} \times \overline{D}) = \begin{vmatrix} \overline{A} \cdot \overline{B} & \overline{C} \cdot \overline{B} \\ \overline{A} \cdot \overline{D} & \overline{C} \cdot \overline{D} \end{vmatrix}$	**A**
18	If $\overline{A} = i + 2j - 3k, \overline{B} = 2i - j + k$ then the unit vector perpendicular to both $\overline{A}$ and $\overline{B}$ is a) $\frac{-1}{\sqrt{75}}(i + 7j + 5k)$ b) $-i = 7j - 5k$ c) $\frac{\overline{A}}{\lvert\overline{A}\rvert}$ and $\frac{\overline{B}}{\lvert\overline{B}\rvert}$ d) None of these	**A**
19	True or False. The cross product of two unit vectors is a unit vector. a) True b) False	**B**
20	If $\hat{u}$ is a unit vector in the direction perpendicular to $\overline{A}$ then which of the following is not true. a) $\lvert\hat{u}\rvert = 1$ b) $\overline{A} \cdot \hat{u} = \hat{u} \cdot \overline{A}$ c) $\overline{A} \cdot \hat{u} = 0$ d) $\lvert\overline{A}\rvert = \lvert\hat{u}\rvert = 1$	**D**
21	If $\overline{a}, \overline{b}, \overline{c}$ and $\overline{a}', \overline{b}', \overline{c}'$ are reciprocal system of vectors then which of the following is not true. a) $\overline{a} \cdot \overline{a}' + \overline{b} \cdot \overline{b}' = 2$ b) $\overline{b} \cdot \overline{a}' = 0$ c) $\overline{c} \cdot \overline{a}' = 0$ d) $\overline{a} \cdot \overline{a}' = 0$	**D**
22	If $\overline{A} = i - 2j - 3k, \overline{B} = 2i + j - k$ and $\overline{C} = i + 4j - 2k$ then the value of $(\overline{A} \times \overline{B}) \times (\overline{B} \times \overline{C})$ is a) $i + j + k$ b) $20i - 25j + 10k$ c) $i - 5j + 2k$ d) $20i + 25j + 10k$	**B**
23	For the vectors i, j, k which of the following is true. a) $i \cdot j = k$ b) i, j, k are self reciprocal. c) $j \times k = -i$ d) i, j, k are co-planar.	**B**
24	If $\overline{u(t)}$ is a vector function such that $\overline{u} \cdot \frac{d\overline{u}}{dt} = 0$ and $\overline{u} \times \frac{d\overline{u}}{dt} = \overline{0}$, then which of the following is not true. a) $\overline{u(t)}$ is of constant direction. b) $\lvert\overline{u(t)}\rvert$ = constant c) $\overline{u(t)}$ is a constant function. d) $\overline{u(t_1)} \neq \overline{u(t_2)}$ for some $t_1 \neq t_2$.	**D**

25	If $\overline{r(t)} = a\cos ti + a\sin tj + btk$ then $\left|\frac{d\overline{r}}{dt} \times \frac{d^2\overline{r}}{dt^2}\right| = ?$ a) $a^2(a^2+b^2)$ b) $a\sqrt{a^2+b^2}$ c) $a(a+b)$ d) 1	**B**
26	If $\overline{u(t)} = x\cos yi + x\sin yj + ae^{my}k$ then the value of $\frac{\partial^2\overline{u}}{\partial y\,\partial x}$ at $(1,0)$ is a) $-i$ b) $-i-j$ c) j d) $i+j$	**C**
27	True or false. The function $\overline{u(t)} = \|t\|i + t^2j$ is differentiable at $t = 2$. a) True b) False	**A**
28	If $\overline{r(t)} = \overline{a}e^{2t} + \overline{b}e^{3t}$, where $\overline{a}$ and $\overline{b}$ are constant vectors then $\frac{d^2\overline{r}}{dt^2} - 5\frac{d\overline{r}}{dt} + 6\overline{r} = ?$ a) 12 b) 1 c) -1 d) 0	**D**
29	If $\overline{r(t)} = xi + yj + zk$ then the value of $\overline{r} \cdot (\frac{\partial\overline{r}}{\partial x} + \frac{\partial\overline{r}}{\partial y} + \frac{\partial\overline{r}}{\partial z})$ is a) $\overline{r}$ b) 0 c) $\overline{0}$ d) $x+y+z$	**D**
30	If $\overline{u(t)}$ is a vector function such that $\overline{u} \cdot \frac{d\overline{u}}{dt} = 0$ and $\overline{u} \times \frac{d\overline{u}}{dt} = \overline{0}$, then which of the following is not true. a) $\overline{u(t)}$ is of constant direction. b) $\|\overline{u(t)}\| =$ constant c) $\overline{u(t)}$ is a constant function. d) $\overline{u(t_1)} \neq \overline{u(t_2)}$ for some $t_1 \neq t_2$.	**D**
31	The curvature of the curve $\overline{r(t)} = 3\cos ti + 3\sin tj + 4tk$ is a) $\frac{25}{3}$ b) $\frac{3}{25}$ c) $\frac{-3}{25}$ d) None of these.	**B**
32	If a particle moves along the curve $\overline{r(t)} = \cos ti + \sin tj$ then the tangential and normal components of acceleration are ⋯ respectively. a) 0 and 1 b) 1 and 0 c) 0 and 0 d) 1 and 1	**A**
33	The cosine of the angle between the tangents to the curve $\overline{r(t)} = t^2i + 2tj - \frac{1}{2}tk$ at $t = 1$ and $t = 3$ is a) $\frac{11}{12}$ b) $\frac{11}{15}$ c) $\frac{11}{21}$ d) $\frac{11}{32}$	**C**
34	If $\overline{A} = 3i - 5j + k$ and $\overline{B} = -i + j + k$, then $\overline{A} \cdot \overline{B} =$ a) 1 b) -7 c) 7 d) 5	**b**
35	A non-constant vector function $\overline{u}\ (t)$ is of constant direction iff. $\overline{u} \times \frac{d\overline{u}}{dt} = ----$ a)not equal to zero b)one c)$\overline{u}$	**A**

	d)zero	
36	If $\bar{A} = 5t^2\bar{\imath} + t\bar{\jmath} + t^3\,\bar{k}$ then $\frac{d\bar{A}}{dt} = ---$ a) $5t\bar{\imath} + \bar{\jmath} - 3t^2\,\bar{k}$ b) $10t\bar{\imath} + \bar{\jmath} - 3\,t^2\,\bar{k}$ c) $\bar{\imath} + \bar{\jmath} + \bar{k}$ $t^2\bar{\imath} + t\bar{\jmath} + t^2\,\bar{k}$	**B**
37	If $\bar{u}\ and\ \bar{v}$ are vector functions then $\frac{\partial}{\partial x}(\bar{u} \times \bar{v}) ---$ a)$\frac{\partial \bar{u}}{\partial x} + \frac{\partial \bar{v}}{\partial x}$ b)$\frac{\partial \bar{u}}{\partial x} \cdot \frac{\partial \bar{v}}{\partial x}$ c)$\bar{u} \times \frac{\partial \bar{v}}{\partial x} + \frac{\partial \bar{u}}{\partial x} \times \bar{v}$ d)None of these	**C**
38	$\bar{f} = (y^2 - z^2 + 3yz - 2x)\,\bar{\imath} + (3xz + 2xy)\,\bar{\jmath} + (3xy - 2xz + 2z)\bar{k}$ is solenoidal A)True B)False	**A**
39	If $\bar{r} = \sin t\,\bar{\imath} + \cos t\,\bar{\jmath} + t\,\bar{k}$ find $\frac{\partial \bar{r}}{\partial t}$ a) $\frac{\partial \bar{r}}{\partial x} = \cos t\,\bar{\imath} + \sin t\,\bar{\jmath} + t\,\bar{k}$ b) $\frac{\partial \bar{r}}{\partial x} = \bar{\imath} + \bar{\jmath} + \bar{k}$ c) $\frac{\partial \bar{r}}{\partial x} = \cos t\,\bar{\imath} - \sin t\,\bar{\jmath} + \bar{k}$ $d)None$ of these	**C**
40	If $\bar{f} = (y + \sin z)\,\bar{\imath} + x\,\bar{\jmath} + x\cos z\,\bar{k}$ is irrotational A)True B)False	**A**
41	The vector point function $\bar{u} = 3y^4z^2\bar{\imath} + 4x^3z^2\bar{\jmath} - 3x^2y^2\bar{k}$ is solenoidal A)True B)False	**B**
42	Vector $\bar{u} = (2x^2 + 8xy^2z)\bar{\imath} + (3x^3y - 3xy)\bar{\jmath} - (4y^2z^2 + 2x^3z)\bar{k}$ is not solenoidal A)True B)False	**A**
43	The vector point function $\bar{f} = (4xy - z^3)\bar{\imath} + (2)x^2\bar{\jmath} + (-3)xz^2\bar{k}$ is irrotational A)True B)False	**A**
44	Vector point function $\bar{a} = (6xy + z^3)\bar{\imath} + (3x^2 - z)\bar{\jmath} + (3xz^2 - y)\bar{k}$ is irrotational A)True B)False	**B**

45	If $\bar{u}$ and $\bar{v}$ are irrotational, then $\bar{u} \times \bar{v}$ is solenoidal A)True B)False	**A**
46	$\bar{f} = (y^2 - z^2 + 3yz - 2x)\,\bar{\imath} + (3xz + 2xy)\,\bar{\jmath} + (3xy - 2xz + 2z)\bar{k}$ is irrotational A)True B)False	**A**
47	$\bar{f} = (y^2 - z^2 + 3yz - 2x)\,\bar{\imath} + (3xz + 2xy)\,\bar{\jmath} + (3xy - 2xz + 2z)\bar{k}$ is solenoidal A)True B)False	**A**
48	If $\bar{r} = x\cos y\ \bar{\imath} + x\ siny\bar{\jmath} + a\ e^{my}\ \bar{k}$ then$\frac{\partial \bar{r}}{\partial x} = --$ a) $\cos y\ \bar{\imath} + siny\bar{\jmath}$ b) $\cos y\ \bar{\imath} + siny\bar{\jmath} + e^{my}\ \bar{k}$ c) $x\bar{\imath} + x\bar{\jmath} + a\ \bar{k}$ $d)$ $\bar{\imath} + \bar{\jmath} + \bar{k}$	**A**
49	A non-constant vector function $\bar{u}\ (t)$ is of constant direction iff. $\bar{u} \times \frac{d\bar{u}}{dt} = ----$ a)not equal to zero b)one c)$\bar{u}$ d)zero	**A**
50	If $\bar{A} = 5t^2\bar{\imath} + t\bar{\jmath} + t^3\ \bar{k}$ then $\frac{d\bar{A}}{dt} = ---$ d) $5t\bar{\imath} + \bar{\jmath} - 3t^2\ \bar{k}$ e) $10t\bar{\imath} + \bar{\jmath} - 3\ t^2\ \bar{k}$ f) $\bar{\imath} + \bar{\jmath} + \bar{k}$ $t^2\bar{\imath} + t\bar{\jmath} + t^2\ \bar{k}$	**B**
51	If $\bar{u}$ and $\bar{v}$ are vector functions then $\frac{\partial}{\partial x}(\bar{u} \times \bar{v}) ---$ a)$\frac{\partial \bar{u}}{\partial x} + \frac{\partial \bar{v}}{\partial x}$	**C**

	b)$\frac{\partial \bar{u}}{\partial x} \cdot \frac{\partial \bar{v}}{\partial x}$ c)$\bar{u} \times \frac{\partial \bar{v}}{\partial x} + \frac{\partial \bar{u}}{\partial x} \times \bar{v}$ d)None of these	
52	$\bar{f} = (x^2 - y^2 + x)\,\bar{\imath} - (2xy + y)\,\bar{\jmath}$ $\quad is$ irrotational A)True B)False	**A**
53	$\bar{f} = (y^2)\bar{\imath} + (2xy)\bar{\jmath} - z^2\bar{k}$ is irrotational A)True B)False	**A**
54	$\bar{f} = (x^2 + xy^2)\,\bar{\imath} + (y^2 + x^2y)\,\bar{\jmath}$ $\quad is$ irrotational A)True B)False	**A**
55	$\bar{f} = (2xyz)\,\bar{\imath} + (x^2z + 2y)\,\bar{\jmath} + (x^2y)\bar{k}$ is irrotational A)True B)False	**A**
56	$\bar{f} = (y + z)\,\bar{\imath} + (z + x)\,\bar{\jmath} + (x + y)\bar{k}$ is irrotational A)True B)False	**A**
57	If $\bar{f} = (y\hat{}2 + \sin z)\,\bar{\imath} - x\hat{}2\,\bar{\jmath} + x\ \cos z\ \bar{k}$ is irrotational A)True B)False	**B**
58	If $\bar{r} = \sin t\,\bar{\imath} + \cos t\,\bar{\jmath} + t\,\bar{k}$ find $\frac{\partial \bar{r}}{\partial x}$ $a)\frac{\partial \bar{r}}{\partial x} = \cos t\,\bar{\imath} + sin\,t\,\bar{\jmath} + t\,\bar{k}$ $b)\frac{\partial \bar{r}}{\partial x} = \bar{\imath} + \bar{\jmath} + \bar{k}$ $c)\frac{\partial \bar{r}}{\partial x} = \cos t\,\bar{\imath} - sin\,t\,\bar{\jmath} + \bar{k}$ d)None of these	**C**
59	A particle moves along a curve $\bar{r} = e^t\bar{\imath} + e^{-t}\bar{\jmath} + \sqrt{2}\,t\,\bar{k}$,find velocity a)$\bar{v} = 1\,\bar{\imath} + 2\bar{\jmath} + \sqrt{2}\,\bar{k}$ b)$\bar{v} = e^t\bar{\imath} - e^{-t}\bar{\jmath} + \sqrt{2}\,\bar{k}$ c) $\bar{v} = e^t\bar{\imath} + e^{-t}\bar{\jmath} + \sqrt{2}\,\bar{k}$	**B**

	d) $\bar{v} = e^t \bar{\imath} + \bar{\jmath} + \bar{k}$	
60	Tangential component of acceleration ----, if $\bar{r}$ be the position vector of a particle at time t a)$\frac{d^2\bar{r}}{dt^2} \cdot \hat{T}$ b) $\frac{d\bar{r}}{dt} \cdot \bar{T}$ c)$\left\|\frac{d\bar{T}}{ds}\right\|$ d)$\bar{v} \cdot \bar{r}$	**A**
61	Let $\varphi(x, y, z)$ be scalar point function then grad φ is defined as a)$\nabla \varphi = \frac{d\varphi}{dx} \bar{\imath} + \frac{d\varphi}{dy} \bar{\jmath} + \bar{k}$ b)$\nabla \varphi = \varphi' \bar{\imath} + \varphi' \bar{\jmath} + \varphi' \bar{k}$ c) $\nabla\varphi = \frac{d\varphi}{dx} \bar{\imath} + \frac{d\varphi}{dy} \bar{\jmath} + \frac{d\varphi}{dz} \bar{k}$ d)None	**C**
62	$\nabla \varphi$ is a vector whose components at (x, y, z) along axes of x, y, z are ------ respectively a) $\frac{d\varphi}{dx} + \frac{d\varphi}{dy} + \frac{d\varphi}{dz}$ b) $\frac{d\varphi}{dy} + \frac{d\varphi}{dz} + \frac{d\varphi}{dx}$ c) $\frac{d\varphi}{dx} + \frac{d\varphi}{dz} + 0$ $\frac{d\varphi}{dx} + \frac{d\varphi}{dy}$	**A**
63	The gradient of a scalar point function is a ----- function a)scalar point b)vector point c)both (a) and (b)	**B**

	d)scalar - vector point	
64	------- are the d.r.s of normal to the surface $\varphi = C \; and \; \varphi\,(x, y, z) = C$ a)$\frac{d\varphi}{dx}, \frac{d\varphi}{dy}, \frac{d\varphi}{dz}$ b)dx, dy, dz c) $\frac{\partial\varphi}{\partial x}, \frac{\partial\varphi}{\partial y}, \frac{\partial\varphi}{\partial z}$ d)x, y, z	**C**
65	$\nabla. \bar{a}$=0 A)True B)False	**A**
66	$\nabla. \bar{a} \neq$0 A)True B)False	**B**
67	$\nabla x\; \bar{a}$=0 A)True B)False	**A**
68	$\nabla x\; \bar{a} \neq$0 A)True B)False	**B**
69	$\nabla. \bar{r} = 3$ A)True B)False	**A**
70	$\nabla. \bar{r} = 13$ A)True B)False	**B**
71	$\nabla. \bar{r} \neq 3$ A)True B)False	**B**
72	$\nabla \times \bar{r} = 0$ A)True B)False	**A**
73	$\nabla \times \bar{r} \neq 0$ A)True B)False	**B**

74	$$\nabla.(\nabla\times\bar{F})\neq 0$$ A)True B)False	**B**
75	$$\nabla.(\nabla\times\ \bar{F})=0$$ A)True B)False	**A**
76	Curl grad ϕ = A)3 B) 1 C) 0 D)None of these	**C**
77	Div(curl $\bar{F}$) $=$ A)3 B) 1 C) 0 D)None of these	**C**
78	$\nabla x\ \bar{F}=0$ then $\bar{F}$ is irrotational A)True B)False	**A**
79	$\nabla.\bar{F}=0$ then $\bar{F}$ is solenoidal A)True B)False	**A**
80	$\nabla x\ \bar{F}\ \neq\ 0$ then $\bar{F}$ is irrotational A)True B)False	**B**
81	$\nabla.\bar{F}\neq 0$ then $\bar{F}$ is solenoidal A)True B)False	**B**
82	$$\hat{\imath}\times\hat{\imath}=0$$ A)True B)False	**A**
83	$$\hat{\jmath}\times\hat{\jmath}=0$$ A)True B)False	**A**
84	Vector $\bar{u}\ =(\ 2x^2\ -8xy^2+z)\bar{\imath}\ -(3x^3y\ -\ 3xy)\bar{\jmath}\ -$ $(4y^2z^2\ +2x^3z)\bar{k}$ is not solenoidal A)True B)False	**B**
85	The vector point function $\bar{f}\ =\ (4xy\ -\ z^3)\bar{\imath}\ +\ (-2)x^2\bar{\jmath}\ +$ $(1\ -4)xz^2\bar{k}$ is irrotational A)True B)False	**B**
86	$\bar{f}\ =\ (y^2+z^2+3yz-2x)\ \bar{\imath}\ -\ (3xz+2xy)\ \bar{\jmath}\ -\ (3xy-$ $2xz+2z)\bar{k}$ is irrotational A)True B)False	**B**

87	$\bar{f} = (y^2 - z^2 + 3yz - 2x)\,\bar{\imath} - (3xz + 2xy)\,\bar{\jmath} - (3xy - 2xz + 2z)\bar{k}$ is solenoidal A)True B)False	**B**
88	$\bar{f} = (x^2 - y^2 + x)\,\bar{\imath} + (12xy + y)\,\bar{\jmath}$ is irrotational A)True B)False	**B**
89	$\bar{f} = (y^2)\bar{\imath} + (3x + y)\bar{\jmath}$ is irrotational A)True B)False	**B**
90	$\bar{f} = (x^2 + xy^2)\,\bar{\imath} - (y^2 + x^2 + y)\,\bar{\jmath}$ is irrotational A)True B)False	**B**
91	Unit normal for z=0 plane(i.e xy plane) is $\bar{k}$ A)True B)False	**A**
92	Unit normal for z=0 plane is $\bar{\jmath}$ A)True B)False	**B**
93	Unit normal for z=0 plane is $\bar{\imath}$ A)True B)False	**B**
94	. If $\bar{f}$ = $f_1\bar{\imath}$ + $f_2\bar{\jmath}$ + $f_3\bar{k}$ then the line integral of $\bar{f}$ along with C is $\int_C \bar{f}\,.\overline{dx}$ = A. $\int_C f_1\,dx + f_2dy - f_3dz$ B. $\int_C f_1\,dx - f_2dy + f_3dz$ **C.** $\int_C f_1\,dx + f_2dy + f_3dz$ D. None of these	C
95	1. If $\bar{\imath}, \bar{\jmath}, \bar{k}$ are unit vectors along x,y,z respectively then $\bar{\imath}$ x $\bar{\imath}$ = $\bar{\jmath}$ x $\bar{\jmath}$ = $\bar{k}$ x $\bar{k}$ = A. 0 B. 1 C. -1 D. None of these	A
96	2. If $\bar{A}$ = $A_1\bar{\imath}$ + $A_2\bar{\jmath}$ + $A_3\bar{k}$ and $\bar{B}$ = $B_1\bar{\imath}$ + $B_2\bar{\jmath}$ + $B_3\bar{k}$ then $\bar{A}\,.\,\bar{B}$ = A. 0 B. $\begin{vmatrix} \bar{\imath} & \bar{\jmath} & \bar{k} \\ A_1 & A_2 & A_3 \\ B_1 & B_2 & B_3 \end{vmatrix}$ C. 1 D. $A_1 B_1 + A_2 B_2 + A_3 B_3$	D
97	$\hat{\jmath} \times \hat{k} = \hat{\imath}$ A)True B)False	A

98	$\hat{\imath}.\hat{\jmath} = \hat{k}$ A)True B)False	**B**
99	Vector $\bar{u} = (2x^2 + 8xy^2z)\bar{\imath} + (3x^3y - 3xy)\bar{\jmath} - (4y^2z^2 + 2x^3z)\bar{k}$ is not solenoidal A)True B)False	**A**
100	The vector point function $\bar{f} = (4xy - z^3)\bar{\imath} + (2)x^2\bar{\jmath} + (-3)xz^2\bar{k}$ is irrotational A)True B)False	**A**