S. N o.	Questions	C O	Bloo m's Taxo nomy Level	Dif ficu lty Lev el	Comp etitive Exam Quest ion Y/N	Area	Topic
1	Find the nth term of the sequence 1, -4, 9, -16, 25, …	1	K2	M	N	sequence	notation
2	Solve: $\lim_{n\to\infty}\left(-\frac{1}{n}\right)$	1	K3	M	N	sequence	convergence
3	Solve: $\lim_{n\to\infty}\left(\frac{4-7n^6}{n^6+3}\right)$	1	K3	M	N	sequence	convergence
4	Solve: $\lim_{n\to\infty}\left(\frac{n-11}{n}\right)^n$	1	K3	M	N	sequence	convergence
5	Show that series $\frac{1}{9}+\frac{1}{27}+\frac{1}{81}+\cdots$ is convergent and find its sum.	1	K3	H	N	series	Geometric series
6	What is the value of $1+\frac{1}{4}+\frac{1}{16}+\frac{1}{64}+\cdots$	1	K3	M	Y	series	Geometric series
7	Show that the series $\sum_{n=1}^{\infty}\frac{-n}{2n+5}$ is divergent.	1	K3	H	N	series	nth term test
8	Show that the series $\sum_{n=0}^{\infty}\frac{2^n+5}{3^n}$ is convergent and its sum is 10.5.	1	K3	H	N	series	Ratio test
9	Show that the series $\sum_{n=1}^{\infty}\frac{(2n)!}{(n!)^2}$ is not convergent.	1	K3	H	N	series	Ratio test
10	Explain that the series $\sum_{n=1}^{\infty}\frac{n^2}{(2)^n}$ is convergent.	1	K2	H	N	series	Root test
11	Explain that the series $\sum_{n=0}^{\infty}\left(\frac{1}{1+n}\right)^n$ is convergent.	1	K2	H	N	series	Root test
12	Show that the power series $1-\frac{1}{2}(x-2)+(x-2)^2-\frac{1}{8}(x-2)^3+\cdots$ converges to $\frac{2}{x}$ for $0<x<4$.	1	K3	H	N	Power series	convergence
13	Show that the power series $\sum_{n=1}^{\infty}\frac{(-1)^{n+1}x^n}{n}$ converges for $-1<x\le 1$.	1	K3	H	N	Power series	convergence
14	Show that the power series $\sum_{n=1}^{\infty}(-1)^{n-1}\frac{x^{2n-1}}{2n-1}$ converges for $-1\le x\le 1$.	1	K3	H	N	Power series	convergence
15	Determine the interval and radius of convergence for the power series $\sum_{n=0}^{\infty}\frac{n}{3^{n+1}}x^n$.	1	K4	H	N	Power series	Radius of convergence
16	Find the radius of the convergence of the power series $\sum_{n=0}^{\infty}\frac{(x-3)^n}{(n!)3^n}$.	1	K3	H	Y	series	Radius of convergence
17	Determine the interval and radius of convergence for the power series $\sum_{n=0}^{\infty}\frac{10^n}{n!}(x-1)^n$.	1	K4	H	N	Power series	Radius of convergence
18	Find the Fourier sine and cosine series of the function $f(x)=k$ in the interval $0<x<5$.	1	K3	H	N	Fourier series	Expansion
19	Find the Fourier sine and cosine series of the function $f(x)=x$ in the interval $0<x<2$.	1	K3	H	N	Fourier series	Expansion
20	Find the Fourier sine and cosine series of the function $f(x)=\begin{cases}x, 0<x<2\\ 2, 2\le x<4\end{cases}$.	1	K3	H	N	Fourier series	Expansion
21	Solve: $\lim_{n\to\infty}\left(1-\frac{1}{n}\right)^{2n}$	1	K3	H	Y	Sequence	Convergence

22	Find the radius of the convergence of the power series $\sum_{n=0}^{\infty} \frac{(x-3)^n}{(n!)3^n}$.	1	K3	H	Y	series	convergence
21	Show that the ***p*-series** $\sum_{n=1}^{\infty} \frac{1}{n^p}$ (p a real constant) converges if $p > 1$, and diverges if $p \leq 1$.	1	K3	H	N	series	p-series test
22	Apply Rolle's theorem to find the value of c for the function $f(x) = x^3 - 3x^2 + 2x + 2$ in the interval [0,1].	2	K3	M	N	Application of derivatives	Rolle's theorem
23	Apply Rolle's theorem to find the value of c for the function $f(x) = (1/3)x^3 - 3x$ in the interval $[-3\,,3]$.	2	K3	M	N	Application of derivatives	Rolle's theorem
24	Apply Rolle's theorem to find the value of c for the function $f(x) = \sin x$ in the interval $[0\,,\pi/2]$.	2	K3	M	N	Application of derivatives	Rolle's theorem
25	Apply Mean value theorem to find the value of c for the function $f(x) = x^3 - x^2 - x + 1$ in the interval $[0\,,2]$.	2	K3	M	N	Application of derivatives	Mean value theorem
26	Apply Mean value theorem to find the value of c for the function $f(x) = x^2 + 1$ in the interval $[-2\,,2]$.	2	K3	M	N	Application of derivatives	Mean value theorem
27	Apply Mean value theorem to find the value of c for the function $f(x) = \lvert x \rvert$ in the interval $[-1\,,1]$.	2	K3	M	N	Application of derivatives	Mean value theorem
28	Compute: $\int_1^{\infty} \frac{\ln x}{x^2}\,dx$	2	K3	M	N	Improper integral	Type I
29	Compute: $\int_{-\infty}^{\infty} \frac{1}{1+x^2}\,dx$	2	K3	H	N	Improper integral	Type I
30	Compute: $\int_0^{\infty} e^{-x^2}\,dx$	2	K3	M	N	Improper integral	Type I
31	Compute: $\int_0^{1} \frac{1}{1-x}\,dx$	2	K3	H	N	Improper integral	Type II
32	Compute: $\int_0^{3} \frac{1}{(x-1)^{2/3}}\,dx$	2	K3	H	N	Improper integral	Type II
33	Compute: $\int_0^{1} x \ln x\,\,dx$	2	K3	H	N	Improper integral	Type II
34	Compute $\int_0^{\infty} x^4 e^{-x}\,dx$	2	K3	H	N	Special functions	Gamma function
35	Compute $\int_0^{\infty} x^{5/2} e^{-x}\,dx$	2	K3	H	N	Special functions	Gamma function
36	Compute $\int_0^{\infty} \sqrt{x} e^{-x^2}\,dx$	2	K3	H	N	Special functions	Gamma function
37	Compute $\int_0^{\infty} e^{-x^3}\,dx$	2	K3	H	N	Special functions	Gamma function
38	Compute $\int_0^{\infty} \sqrt[4]{x} e^{-\sqrt{x}}\,dx$	2	K3	H	N	Special functions	Gamma function
39	Compute $\int_0^{1} x^5 (1-x)^4 dx$	2	K3	H	N	Special functions	Beta function
40	Compute $\int_0^{1} x^4 (1-\sqrt{x})^5\,dx$	2	K3	H	N	Special functions	Beta function
41	Compute $\int_0^{1} (1-x^3)^{-1/2} dx$	2	K3	H	N	Special functions	Beta function
42	Find the evolutes of the curve $x^2 = 4ay$.	2	K4	H	N	Evolute & Involute	Evolute
43	Find the evolutes of the curve $xy = 1$.	2	K4	H	N	Evolute & Involute	Evolute
44	Find the evolutes of the curve $x^{2/3} + y^{2/3} = a^{2/3}$.	2	K4	H	N	Evolute & Involute	Evolute
45	Find the domain and range of the function $f(x, y) =$	3	K2	M	N	Functions of several	Function of several variable

	$\frac{2x}{y-x^2}$.					variables	
46	Find the domain and range of the function $f(x,y,z) = xy\ln z$.	3	K2	M	N	Functions of several variables	Function of several variable
47	Plot the level curves $f(x,y) = 51$, and $f(x,y) = 75$ in the domain of the function $f(x,y) = 100 - x^2 - y^2$ in the plane.	3	K2	M	N	Functions of several variables	Function of several variable
48	Show that the limit does not exist of the function: $\lim_{(x,y)\to(0,0)} \frac{2xy}{x^2+y^2}$	3	K3	M	N	Functions of several variables	Limit and continuity
49	Show that the limit does not exist of the function: $\lim_{(x,y)\to(0,0)} \frac{xy^2}{x^2+y^4}$	3	K3	M	N	Functions of several variables	Limit and continuity
50	Show that the limit does not exist of the function: $\lim_{(x,y)\to(1,-1)} \frac{xy+1}{x^2-y^2}$	3	K3	M	N	Functions of several variables	Limit and continuity
51	Find the limit: $\lim_{(x,y)\to(0,0)} \frac{x^2-xy}{\sqrt{x}-\sqrt{y}}$	3	K3	M	N	Functions of several variables	Limit and continuity
52	At what points (x, y) in the plane is the function continuous:	3	K2	M	N	Functions of several variables	Limit and continuity
53	Show that the function is continuous at every point except the origin: $f(x,y) = \begin{cases} \frac{x^2}{x^2+y^2}, & (x,y) \neq (0,0) \\ 0, & (x,y) = (0,0) \end{cases}$	3	K3	M	N	Functions of several variables	Limit and continuity
54	Show that the function is continuous at every point except the origin: $f(x,y) = \begin{cases} \frac{3x^2y}{x^4+y^4}, & (x,y) \neq (0,0) \\ 0, & (x,y) = (0,0) \end{cases}$	3	K3	M	N	Functions of several variables	Limit and continuity
55	Find the partial derivative of the function with respect to each variable: $f(x, y)=2x^2-3y-4$	3	K3	M	N	Differentiation of FSV	Partial derivatives
56	Find the partial derivative of the function with respect to each variable: $f(x,y)=(x+y)(xy-1)$	3	K3	M	N	Differentiation of FSV	Partial derivatives
57	Find the partial derivative of the function with respect to each variable: $f(x, y)=\tan^{-1}(y/x)$	3	K3	H	N	Differentiation of FSV	Partial derivatives
58	Find the partial derivative of the function with respect to each variable: $f(x, y)=\tan^{-1}(y/x)$	3	K3	H	N	Differentiation of FSV	Partial derivatives
59	Find all the second-order partial derivatives of the function: $f(x, y)=(x+y+xy)$	3	K3	M	N	Differentiation of FSV	Partial derivatives
60	Find all the second-order partial derivatives of the function $z=x^2 \tan(xy)$	3	K3	H	N	Differentiation of FSV	Partial derivatives
61	Find the total differential of the function at the point $(1,1)$: $f(x,y)=x^3y^4$	3	K3	L	N	Differentiation of FSV	Partial derivatives
62	Find the total differential of the function at the point $(1,0,0)$: $f(x,y,z)=\sqrt{(x^2+y^2+z^2)}$	3	K3	M	N	Differentiation of FSV	Partial derivatives
63	Find Taylor series upto 2_{nd} degree of $(x, y) = xe_y$ at the point (0, 0).	3	K4	M	N	Application of differentiat ion of FSV	Taylor series of two variables

64	Find Taylor series upto 2nd degree of $(x, y) = x2y + y3$ at the point (1, 3).	3	K4	M	N	Application of differentiation of FSV	Taylor series of two variables
65	Find Taylor series upto 2nd degree of $(x, y) = \tan^{-1}(y/x)$ at the point (1, 1).	3	K4	M	N	Application of differentiation of FSV	Taylor series of two variables
66	Find the critical points of the function $(x, y) = xy - x2 - y2 - 2x - 2y + 4$ and use second derivative test to classify each point as one where a saddle, local minimum or local maximum occurs.	3	K4	H	N	Application of differentiation of FSV	Extreme values
67	Find the critical points of the function $(x, y) = -3x2 + 3y2 + 6xy - 2y3$ and use second derivative test to classify each point as one where a saddle, local minimum or local maximum occurs.	3	K4	H	N	Application of differentiation of FSV	Extreme values
68	Find the critical points of the function $(x, y) = x3 - y3 - 2xy + 6$ and use second derivative test to classify each point as one where a saddle, local minimum or local maximum occurs.	3	K4	H	N	Application of differentiation of FSV	Extreme values
69	Find the extreme values of the function $(x, y) = x2 + 2y2$ on the circle $x2 + y2 =1$ using Lagrange Multiplier method.	3	K4	H	N	Application of differentiation of FSV	Lagrange method of multipliers
70	Find the extreme values of the function $(x, y) = x + y + 2z$ on the surface $x2 +y2 + z2 = 3$ using Lagrange Multiplier method.	3	K4	H	N	Application of differentiation of FSV	Lagrange method of multipliers
71	A rectangular box, open at the top, is to have a volume of 32 cc. Find the dimensions of the box requiring least material for its constructions.	3	K4	H	N	Application of differentiation of FSV	Lagrange method of multipliers
72	Compute: $\int_{-1}^{0}\int_{-1}^{1}(x + y + 1)\, dydx$	4	K2	M	N	Double integrals in Cartesian coordinates	Rectangular region
73	Compute the double integral over the region R: $0 \le x \le 1, 0 \le y \le 2$; $\iint_R (6y^2 - 2x)dA$	4	K3	H	N	Double integrals in Cartesian coordinates	Rectangular region
74	Calculate $\iint_R f(x,y)dA$ for $f(x,y) = 100 - 6x^2y$ and $R: 0 \le x \le 2, \quad -1 \le y \le 1$.	4	K3	H	N	Double integrals in Cartesian coordinates	Rectangular region
75	Compute: $\int_0^2\int_{x^2}^{2x}(4x + 2)\, dydx$	4	K2	M	N	Double integrals in Cartesian coordinates	Non-rectangular region
76	Compute: $\int_0^{\pi}\int_0^{\sin x} dydx$	4	K2	M	N	Double integrals in Cartesian coordinates	Non-rectangular region
77	Compute: $\int_1^2\int_y^{y^2} dxdy$	4	K2	M	N	Double integrals in Cartesian coordinates	Non-rectangular region
78	Compute: $\int_0^2\int_{y^2/4}^{(y+2)/4}(16 - x^2 - y^2)dxdy$	4	K3	H	N	Double integrals in Cartesian coordinates	Non-rectangular region

79	Plot the region, reverse the order of integration and then calculate the integral: $\int_0^1 \int_y^1 \frac{\sin x}{x}\, dxdy$	4	K3	H	N	Double integrals in Cartesian coordinates	Change order of integration
80	Sketch the region of integration and write an equivalent integral with the order of integration reversed for the integral $\int_0^2 \int_{x^2}^{2x} (4x+2) dydx$.	4	K2	H	N	Double integrals in Cartesian coordinates	Change order of integration
81	Sketch the region of integration and write an equivalent integral with the order of integration reversed for the integral $\int_0^1 \int_2^{4-2x} dydx$.	4	K2	H	N	Double integrals in Cartesian coordinates	Change order of integration
82	Change the Cartesian integral into polar integral and then compute the polar integral: $\int_{-1}^1 \int_0^{\sqrt{1-x^2}} dydx$	4	K3	H	N	Double integrals in Polar coordinates	Change Cartesian integrals into polar integrals
83	Change the Cartesian integral into polar integral and then compute the polar integral: $\int_0^1 \int_0^{\sqrt{1-y^2}} (x^2+y^2)\, dxdy$	4	K3	H	N	Double integrals in Polar coordinates	Change Cartesian integrals into polar integrals
84	Change the Cartesian integral into polar integral and then compute the polar integral: $\int_0^2 \int_0^{\sqrt{4-y^2}} (x^2+y^2)\, dxdy$	4	K3	H	N	Double integrals in Polar coordinates	Change Cartesian integrals into polar integrals
85	Evaluate $\iint_R e^{x^2+y^2} dydx$ where R is the semicircular region bounded by the x-axis and the curve $y = \sqrt{1-x^2}$.	4	K4	H	N	Double integrals in Polar coordinates	Change Cartesian integrals into polar integrals
86	Find the volume of the region bounded above by the elliptical paraboloid $z = 10 + x^2 + 3y^2$ and below by the rectangle $R: 0 \le x \le 1, 0 \le y \le 2$.	4	K4	H	N	Application of Double integral	Area and volume by double integral
87	Find the volume of the region bounded above by the paraboloid $z = x^2 + y^2$ and below by the square $R: -1 \le x \le 1, -1 \le y \le 1$.	4	K4	H	N	Application of Double integral	Area and volume by double integral
88	Find the volume of the region bounded above by the plane $z = 2 - x - y$ and below by the square $R: 0 \le x \le 1, 0 \le y \le 1$.	4	K4	H	N	Application of Double integral	Area and volume by double integral
89	Find a value of the constant *k* so that $\int_1^2 \int_0^3 kx^2y dx\, dy = 1$.	4	K4	H	N	Application of Double integral	Area and volume by double integral
90	Find the volume of the region bounded above by the paraboloid $z = x^2 + y^2$ and below by the triangle enclosed by the lines $y = x, x = 0$, and $x + y = 2$ in the *xy*-plane.	4	K4	H	N	Application of Double integral	Area and volume by double integral
91	Find the area of the region R bounded by $y = x$ and $y = x^2$ in the first quadrant using double integral.	4	K4	H	N	Application of Double integral	Area and volume by double integral
92	Find the area of the region R enclosed by the parabola $y = x^2$ and the line $y = x + 2$ using double integral.	4	K4	H	N	Application of Double integral	Area and volume by double integral
93	Evaluate: $\int_0^1 \int_0^1 \int_0^1 dz\, dy\, dx$	4	K3	H	N	Triple integrals in Cartesian coordinates	Triple integral

94	Evaluate: $\int_0^2 \int_0^2 \int_0^2 xyz\, dx\, dy\, dz$	4	K3	H	N	Triple integrals in Cartesian coordinates	Triple integral
95	Evaluate: $\int_0^1 \int_x^1 \int_0^{y-x} dz\, dy\, dx$	4	K3	H	N	Triple integrals in Cartesian coordinates	Triple integral
96	Evaluate: $\int_0^1 \int_0^{1-x} \int_{x+z}^1 dy\, dz\, dx$	4	K3	H	N	Triple integrals in Cartesian coordinates	Triple integral
97	Evaluate the triple integral $\iiint_Q 2xe^y \sin z\, dV$, where Q is the rectangular box defined by $Q = \{(x, y, z) \mid 1 \le x \le 2, 0 \le y \le 1, 0 \le z \le \pi\}$.	4	K4	H	N	Triple integrals in Cartesian coordinates	Triple integral
98	Find the volume of the cube of side 2 unit using triple integral.	4	K4	H	N	Application of Triple integrals	Volume by triple integral
99	Find the volume of the region enclosed by the surfaces $z = x^2 + 3y^2$ and $z = 8 - x^2 - y^2$.	4	K4	H	N	Application of Triple integrals	Volume by triple integral
100	Find the gradient of the scalar field $f(x, y, z) = x^2y^2 + xy^2 - z^2$.	5	K2	H	N	Differentiation of Vector function	Gradient
101	Find the directional derivative of $f(x, y, z) = xy^2 + 4xyz + z^2$ at the point $(1, 2, 3)$ in the direction of $3\,\mathbf{i} + 4\,\mathbf{j} - 5\,\mathbf{k}$.	5	K3	M	N	Differentiation of Vector function	Gradient
102	Find the divergence of the vector field $\mathbf{v} = (x^2y^2 - z^3)\,\mathbf{i} + 2xyz\,\mathbf{j} - e^{xyz}\,\mathbf{k}$.	5	K2	M	N	Differentiation of Vector function	Divergence and curl
103	Find the curl of the vector field $\mathbf{v} = (x^2y^2 - z^3)\,\mathbf{i} + 2xyz\,\mathbf{j} - e^{xyz}\,\mathbf{k}$.	5	K2	M	N	Differentiation of Vector function	Divergence and curl
104	Let $\mathbf{v} = a(x, y, z)\,\mathbf{i} + b(x, y, z)\,\mathbf{j} - c(x, y, z)\,\mathbf{k}$ be a differentiable vector field. Show that $\text{div}(\text{curl}\,\mathbf{v}) = 0$.	5	K3	M	N	Differentiation of Vector function	Divergence and curl
105	Let $\mathbf{v} = xy\,\mathbf{i} + yz\,\mathbf{j} + zx\,\mathbf{k}$ be a differentiable vector field. Show that $\text{div}(\text{curl}\,\mathbf{v}) = 0$.	5	K3	M	N	Differentiation of Vector function	Divergence and curl
106	Let $f(x, y, z) = 16xy^3z^2$ be a differentiable scalar field. Show that $\text{curl}(\text{grad}\,f) = \mathbf{0}$.	5	K3	M	N	Differentiation of Vector function	Divergence and curl
107	Show that the vector field $\mathbf{F} = 2x(y^2 + z^3)\,\mathbf{i} + 2x^2y\,\mathbf{j} + \mathbf{3}z^2x^2\,\mathbf{k}$ is conservative. Find its potential function.	5	K4	H	N	Differentiation of Vector function	Divergence and curl
108	Find whether the vector field $\mathbf{F} = xy\,\mathbf{i} + yz\,\mathbf{j} + zx\,\mathbf{k}$ is conservative. If it is, find the potential function.	5	K4	H	N	Differentiation of Vector function	Divergence and curl
109	Show that the vector field $\mathbf{F} = ye^{xy}\,\mathbf{i} + xe^{xy}\,\mathbf{j} + \mathbf{2}e^z\,\mathbf{k}$ is irrotational.	5	K3	M	N	Differentiation of Vector function	Divergence and curl

110	Let $\mathbf{v} = a(x, y, z)\ \mathbf{i} + b(x, y, z)\ \mathbf{j} - c(x, y, z)\ \mathbf{k}$ be a differentiable vector field. Show that $\text{div}(\text{curl}\ \mathbf{v}) = 0$.	5	K3	M	N	Differentiation of Vector function	Divergence and curl
111	Let $\mathbf{v} = xy\ \mathbf{i} + yz\ \mathbf{j} + zx\ \mathbf{k}$ be a differentiable vector field. Show that $\text{div}(\text{curl}\ \mathbf{v}) = 0$.	5	K3	M	N	Differentiation of Vector function	Divergence and curl
112	Show that the vector field $\mathbf{F} = (2x + 3y)\mathbf{i} + (x - y)\mathbf{j} - (x + y + z)\ \mathbf{k}$ is incompressible.	5	K3	M	N	Differentiation of Vector function	Divergence and curl
113	Evaluate $\oint_C (x^2 + y^2)dx + (y + 2x)dy$, where C is the boundary of the region in the first quadrant that is bounded by the curves $y^2 = x, x^2 = y$ by Green's theorem.	5	K5	H	N	Integration of Vector function	Green theorem
114	Find the work done by the force $\mathbf{F} = (x^2 - y^3)\mathbf{i} + (x + y)\ \mathbf{j}$ in moving a particle along the closed path C containing the curves $x^2 + y^2 = 16, x + y = 0, x - y = 0$ in the 1st and 4th quadrants by Green's theorem.	5	K5	H	N	Integration of Vector function	Green theorem
115	Evaluate $\oint_C 3x^2y dx - 2xy^2 dy$, where C is the boundary of the region $x^2 + y^2 \le 16, x \ge 0, y \ge 0$ by Green's theorem.	5	K5	H	N	Integration of Vector function	Green theorem
116	Evaluate $\oint_C (x^2 + y^2)dx + (5x^2 - 3y)dy$, where C is the boundary of the region $x^2 = 4y, y = 4$, by Green's theorem.	5	K5	H	N	Integration of Vector function	Green theorem
117	Use the Gauss theorem to evaluate $\iint_S (\mathbf{v}.\mathbf{n})dA$, where $\mathbf{v} = x^2z\ \mathbf{i} + y\ \mathbf{j} - xz^2\ \mathbf{k}$ and S is the boundary of the region bounded by the paraboloid $z = x^2 + y^2$ and the plane $z = 4y$.	5	K5	H	N	Integration of Vector function	Gauss theorem
118	Use the Gauss theorem to evaluate $\iint_S (\mathbf{v}.\mathbf{n})dA$, where $\mathbf{v} = 3x^2\ \mathbf{i} + \mathbf{6}y^2\ \mathbf{j} + z\ \mathbf{k}$ and S is the boundary of the region bounded by the cylinder $16 = x^2 + y^2$ and the planes $z = 0, z = 4$.	5	K5	H	N	Integration of Vector function	Gauss theorem
119	Use the Gauss theorem to evaluate $\iint_S (\mathbf{v}.\mathbf{n})dA$, where $\mathbf{v} = xy\ \mathbf{i} + yz\ \mathbf{j} + xz\ \mathbf{k}$ and S is the boundary of the cube cut from the first octant by the planes $x = 1, y = 1, z = 1$.	5	K5	H	N	Integration of Vector function	Gauss theorem
120	Use the Gauss theorem to evaluate $\iint_S (\mathbf{v}.\mathbf{n})dA$, where $\mathbf{v} = x\ \mathbf{i} + y\ \mathbf{j} + z\ \mathbf{k}$ and S is the boundary of sphere $x^2 + y^2 + z^2 = 4$.	5	K5	H	N	Integration of Vector function	Gauss theorem