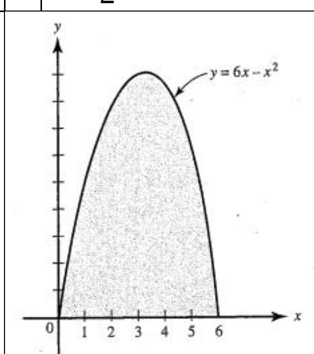
Department of Mathematics and Statistics

MCQs Bank of entry test for the Mphil (Mathematics)

MCQ's					Ans Key
1)	If $\frac{x^2+15}{(x+3)^2(x^2+3)}=\frac{A}{x+3}+\frac{B}{(x+3)^2}+\frac{Cx+D}{x^2+3}$, $A=$				B
	A.	$-\frac{1}{2}$	B.	$\frac{1}{2}$	
	C.	2	D.	none of these	
2)	If $\frac{x^2+15}{(x+3)^2(x^2+3)}=\frac{A}{x+3}+\frac{B}{(x+3)^2}+\frac{Cx+D}{x^2+3}$, $B=$				C
	A.	$-\frac{1}{2}$	B.	$\frac{1}{2}$	
	C.	2	D.	none of these	
3)	If $\frac{x^2+15}{(x+3)^2(x^2+3)}=\frac{A}{x+3}+\frac{B}{(x+3)^2}+\frac{Cx+D}{x^2+3}$, $C=$				A
	A.	-1	B.	1	
	C.	0	D.	none of these	
4)	If $\frac{x^2+15}{(x+3)^2(x^2+3)}=\frac{A}{x+3}+\frac{B}{(x+3)^2}+\frac{Cx+D}{x^2+3}$, $D=$				B
	A.	-1	B.	1	
	C.	0	D.	none of these	
5)	Derivative of $\frac{1}{x}$ with respect to x, is				B
	A.	$\frac{1}{x^2}$	B.	$-\frac{1}{x^2}$	
	C.	undefined	D.	none of these	
6)	Derivative of 2^x with respect to x, is				D
	A.	$\frac{2^x}{\log 2}$	B.	$-\frac{2^x}{\log 2}$	
	C.	$\frac{2^x}{\log x}$	D.	none of these	
7)	If $e^{x+y}=xy$, $\frac{dy}{dx}=$				C
	A.	$\frac{y(1+x)}{x(y-1)}$	B.	$\frac{y(1-x)}{x(y+1)}$	
	C.	$\frac{y(1-x)}{x(y-1)}$	D.	none of these	

8)	$\int \ln x \, dx =$				D
	A.	$\frac{1}{x}$	B.	$\frac{1}{\ln x}$	
	C.	$x\ln x + x + C$	D.	none of these	
9)	$\int \frac{1}{\sqrt{a^2 - x^2}} dx = C + f \ , \ f =$				C
	A.	$\cos^{-1}(\frac{x}{a})$	B.	$\frac{1}{a}\sin^{-1}(\frac{x}{a})$	
	C.	$\sin^{-1}(\frac{x}{a})$	D.	none of these	
10)	If $y = \frac{x^2}{1+x}$, $\frac{dy}{dx} =$				C
	A.	$\frac{x^2 - 2x}{(x+1)^2}$	B.	$x - 1 + \frac{1}{x+1}$	
	C.	$\frac{x^2 + 2x}{(x+1)^2}$	D.	none of these	
11)	$\int_0^3 \frac{1}{\sqrt{4-t}} dt =$				A
	A.	2	B.	0	
	C.	1	D.	none of these	
12)	$\int_{-1}^{0} \sqrt{3u+4} \, du =$				A
	A.	$\frac{14}{9}$	B.	$-\frac{14}{9}$	
	C.	$\frac{14}{3}$	D.	none of these	
13)	$\int_0^1 e^{-x} \, dx =$				C
	A.	$1 + \frac{1}{e}$	B.	0	
	C.	$1 - \frac{1}{e}$	D.	none of these	
14)	$\int_0^{\pi} \cos^2\theta \sin\theta \, d\theta =$				A
	A.	$\frac{2}{3}$	B.	$-\frac{2}{3}$	
	C.	0	D.	none of these	
15)	$\int_1^e \frac{\ln x}{x} dx =$				D

	A.	$-\frac{2}{3}$	B.	$\frac{2}{3}$	
	C.	$-\frac{1}{2}$	D.	none of these	
16)	$\int_0^1 \frac{e^{-x}+1}{e^{-x}}\,dx =$				A
	A.	e	B.	0	
	C.	e^{-1}	D.	none of these	
17)	$\int_0^{\frac{\pi}{4}} \cos^2\theta\,d\theta =$				C
	A.	$\frac{\pi}{8}-\frac{1}{4}$	B.	$\frac{\pi}{8}$	
	C.	$\frac{\pi}{8}+\frac{1}{4}$	D.	none of these	
18)	$\int_{\sqrt{2}}^{2} \frac{u}{u^2-1}\,du =$				A
	A.	$\ln\sqrt{3}$	B.	$\ln 3$	
	C.	$1-\ln\sqrt{3}$	D.	none of these	
19)	$\int_0^1 \frac{e^x}{e^x+1}\,dx =$				B
	A.	$\frac{e+1}{2}$	B.	$\ln\frac{e+1}{2}$	
	C.	$\ln\frac{e-1}{2}$	D.	none of these	
20)	 The area of the shaded region is				D
	A.	60	B.	30	
	C.	32	D.	none of these	
21)	$\int_0^{\infty}\int_x^{\infty} \frac{e^{-y}}{y}\,dxdy =$				A
	A.	1	B.	0	
	C.	-1	D.	none of these	

22)	If D is the region above the x-axis and within a circle centered at the origin of radius 2, $\iint_D (x^2+y^2)dxdy =$				C
	A.	2π	B.	π	
	C.	4π	D.	none of these	
23)	$\lim\limits_{x\to\infty} \frac{4-x^2}{x^2-1} =$				B
	A.	1	B.	1	
	C.	∞	D.	none of these	
24)	$\lim\limits_{x\to 0} \frac{x}{x} =$				B
	A.	0	B.	-3	
	C.	undefined	D.	none of these	
25)	$\lim\limits_{x\to 2} \frac{x^3-8}{x^2-4} =$				D
	A.	1	B.	-3	
	C.	0	D.	none of these	
26)	$\frac{5x-4}{x^2-x-2} =$				D
	A.	$\frac{2}{x-2}-\frac{3}{x+1}$	B.	$-\frac{2}{x-2}+\frac{3}{x+1}$	
	C.	$\frac{2}{x+2}+\frac{3}{x-1}$	D.	none of these	
27)	If $\frac{3x+11}{x^2-x-6} = \frac{A}{x-3}+\frac{B}{x+2}$, $A =$				A
	A.	4	B.	-1	
	C.	-4	D.	none of these	
28)	If $\frac{3x+11}{x^2-x-6} = \frac{A}{x-3}+\frac{B}{x+2}$, $B =$				C
	A.	1	B.	-4	
	C.	-1	D.	none of these	
29)	If derivative of $f(x)+C$ is $-\frac{1}{x^2}$, $f(x) =$				A
	A.	$\frac{1}{x}$	B.	$-\frac{1}{x}$	
	C.	$-\ln x^2$	D.	none of these	
30)	Derivative of 2^{-x} with respect to x, is				C
	A.	$\frac{2^{-x}}{\log 2}$	B.	$-\frac{2^{-x}}{\log x}$	
	C.	$-2^{-x}\log 2$	D.	none of these	
31)	$\frac{3x+11}{x^2-x-6} =$				C

	A.	$\frac{4}{x-3}+\frac{1}{x+2}$	B.	$-\frac{4}{x-3}+\frac{1}{x+2}$	
	C.	$\frac{4}{x-3}-\frac{1}{x+2}$	D.	none of these	
32)	$\int (\ln x + c)\, dx =$				B
	A.	$\frac{1}{x}$	B.	$x\ln x - x + cx + C$	
	C.	$x\ln x + cx + C$	D.	none of these	
33)	$\int xe^x\, dx =$				A
	A.	$e^x(x-1)+C$	B.	$e^x(x+1)+C$	
	C.	$xe^x - 1 + C$	D.	none of these	
34)	$\int \frac{1}{ax+b}\, dx =$				C
	A.	$-\frac{1}{(ax+b)^2}+C$	B.	$a\ln(ax+b)+C$	
	C.	$\frac{1}{a}\ln(ax+b)+C$	D.	none of these	
35)	$\int \frac{e^{\tan^{-1}x}}{1+x^2}\, dx = C + f\ ,\ f =$				A
	A.	$e^{\tan^{-1}x}$	B.	$e^{-\tan^{-1}x}$	
	C.	$\ln e^{\tan^{-1}x}$	D.	none of these	
36)	If $y=\frac{x^2}{1+x}$, $\int y\, dx = C + f\ ,\ f =$				C
	A.	$\frac{x^2}{2}+x-\ln(x+1)$	B.	$x-1+\frac{1}{1+x}$	
	C.	$\frac{x^2}{2}-x+\ln(x+1)$	D.	none of these	
37)	$\frac{x^2}{1+x} =$				C
	A.	x^2+x	B.	$x+1-\frac{1}{1+x}$	
	C.	$x-1+\frac{1}{1+x}$	D.	none of these	
38)	$\int_{-1}^{1} (x^2-x-1)\, dx =$				B
	A.	$\frac{4}{3}$	B.	$-\frac{4}{3}$	
	C.	$-\frac{3}{4}$	D.	none of these	

39)	$\int_1^2 \frac{3x-1}{3x}\,dx =$				C
	A.	$1-\frac{\ln 3}{2}$	B.	$1+\frac{\ln 2}{3}$	
	C.	$1-\frac{\ln 2}{3}$	D.	none of these	
40)	$\int_0^3 \frac{1}{\sqrt{4+t}}\,dt =$				D
	A.	1	B.	0	
	C.	–2	D.	none of these	
41)	$\int_{-1}^0 \sqrt{3u+4}\,du =$				C
	A.	$\frac{14}{3}$	B.	$-\frac{14}{9}$	
	C.	$\frac{14}{9}$	D.	none of these	
42)	$\int_0^{\sqrt{3}} \frac{x}{\sqrt{4-x^2}}\,dx =$				B
	A.	–1	B.	1	
	C.	0	D.	none of these	
43)	$\int_0^1 (2t-1)^3\,dt =$				B
	A.	–1	B.	0	
	C.	1	D.	none of these	
44)	$\int_4^9 \frac{2+x}{2\sqrt{x}}\,dx =$				A
	A.	$\frac{25}{3}$	B.	$\frac{5}{3}$	
	C.	$\frac{25}{9}$	D.	none of these	
45)	$\int_{-3}^3 \frac{1}{9+x^2}\,dx =$				C
	A.	$-\frac{\pi}{6}$	B.	0	
	C.	$\frac{\pi}{6}$	D.	none of these	
46)	$\int_0^1 e^{-x}\,dx =$				D
	A.	0	B.	–1	
	C.	1	D.	none of these	

47)	$\int_0^\infty \int_x^\infty \frac{e^{-y}}{y}\, dxdy =$				D
	A.	-1	B.	0	
	C.	e	D.	none of these	
48)	If D is the region above the x-axis and within a circle centered at the origin of radius 2, $\iint_D (x^2+y^2)dxdy =$				C
	A.	π	B.	2π	
	C.	4π	D.	none of these	
49)	If $[x]$ is the greatest integer not greater than x, $\lim_{x\to\frac{1}{2}}[x] =$				A
	A.	0	B.	1	
	C.	2	D.	none of these	
50)	$\lim_{x\to 0}\frac{\sin(3x)}{\sin(4x)} =$				C
	A.	$\frac{4}{3}$	B.	1	
	C.	$\frac{3}{4}$	D.	none of these	
51)	If A is bounded above and $s = Sup(A)$, for each $\varepsilon > 0$, there is at least one element a_0 of A such that				B
	A.	$a_0 > s+\varepsilon$	B.	$a_0 > s-\varepsilon$	
	C.	$a_0 < s-\varepsilon$	D.	none of these	
52)	If $\lvert x\rvert \le 0$, $x =$				C
	A.	1	B.	∞	
	C.	0	D.	none of these	
53)	If limit of a sequence $(a_n)_{n=1}^{\infty}$ is l, $a_n \to l$ as				A
	A.	$n\to\infty$	B.	$n\to 0$	
	C.	$n\to 1$	D.	none of these	
54)	The sequence $\left(\frac{1}{n}\right)_{n=1}^{\infty}$ is				B
	A.	divergent	B.	convergent	
	C.	oscillating	D.	none of these	
55)	For a fixed $\lambda > 0$, if $\lvert x\rvert \le \lambda\varepsilon$ for all $\varepsilon > 0$, $x =$				B
	A.	1	B.	0	
	C.	∞	D.	none of these	
56)	$\log_3(243) =$				D
	A.	24	B.	6	
	C.	8	D.	none of these	

57)	A bounded sequence of real numbers				C
	A.	converges	B.	diverges	
	C.	may converge	D.	none of these	
58)	A Cauchy sequence of real numbers is				D
	A.	not bounded	B.	oscillating	
	C.	divergent	D.	none of these	
59)	The series $\sum_{n=1}^{\infty}\frac{1}{n}$ is				C
	A.	convergent	B.	=2	
	C.	divergent	D.	none of these	
60)	If $a \le b$ and $b < c$,				C
	A.	$a = c$	B.	$b = \frac{a+c}{2}$	
	C.	$a < c$	D.	none of these	
61)	The set of rational numbers is				A
	A.	countable	B.	uncountable	
	C.	finite	D.	none of these	
62)	The interval $[0,1[$ is				A
	A.	infinite	B.	bounded	
	C.	finite	D.	none of these	
63)	If $a < b$, the interval $]a,b]$ is				C
	A.	countable	B.	unbounded	
	C.	not countable	D.	none of these	
64)	If A is countable, $A \sim$				A
	A.	N	B.	Q	
	C.	R	D.	none of these	
65)	The set of natural numbers is equivalent to				B
	A.	$[0,1]$	B.	Q	
	C.	R	D.	none of these	
66)	A bounded monotonically decreasing sequence converges to its				A
	A.	infimum	B.	suprimum	
	C.	1st term	D.	none of these	
67)	$\sum_{k=0}^{\infty}\frac{1}{k!} =$				C
	A.	∞	B.	π	
	C.	e	D.	none of these	

68)	The series $\sum_{n=1}^{\infty}\frac{1}{n^2}$ is				A
	A.	convergent	B.	divergent	
	C.	undefined	D.	none of these	
69)	A bijection f from N to W is $f(n)=$				B
	A.	$n+1$	B.	$n-1$	
	C.	n	D.	none of these	
70)	The function $f(n)=2n-1$ is bijection from Z to the set of				C
	A.	natural numbers	B.	even integers	
	C.	odd integers	D.	none of these	
71)	The function $f(x)=e^x$ is bijection:				A
	A.	$R \to R^+$	B.	$R^+ \to R$	
	C.	$R \to R$	D.	none of these	
72)	If A is bounded below and $i = Inf(A)$, for each $\varepsilon > 0$, there is at least one element a_1 of A such that				C
	A.	$a_1 < i-\varepsilon$	B.	$a_1 > i+\varepsilon$	
	C.	$a_1 < i+\varepsilon$	D.	none of these	
73)	If d is a metric on $X(\neq \Phi)$, d:				B
	A.	$X \to R$	B.	$X \times X \to R$	
	C.	$X \to X$	D.	none of these	
74)	If d is a metric on $X(\neq \Phi)$, for all $x, y \in X$, $d(x, y)$ is				B
	A.	positive	B.	non negative	
	C.	0	D.	none of these	
75)	If d is a metric on $X(\neq \Phi)$, for all $x, y \in X$, $d(x, y)$ is				D
	A.	positive	B.	negative	
	C.	0	D.	none of these	
76)	If d is a metric on $X(\neq \Phi)$ and $x, y \in X$ be such that $y = x$, $d(x, y)$ is				D
	A.	positive	B.	negative	
	C.	undefined	D.	none of these	
77)	If d is a metric on $X(\neq \Phi)$, for all $x, y \in X$, $d(x, y) =$				C
	A.	$-d(y, x)$	B.	0	
	C.	$d(y, x)$	D.	none of these	
78)	If d is a metric on $X(\neq \Phi)$, for all $x, y, z \in X$, $d(x, y)$ is				A
	A.	$\leq d(x, z)+d(z, y)$	B.	$< d(x, z)+d(z, y)$	
	C.	$> d(x, z)+d(z, y)$	D.	none of these	

79)	The function $f: R \to R^{+}$ defined by $f(x) = e^{x}$ is				B
	A.	not one to one	B.	one to one	
	C.	decreasing	D.	none of these	
80)	The function $f: R^{+} \to R$ defined by $f(x) = \ln x$ is				B
	A.	decreasing	B.	increasing	
	C.	constant	D.	none of these	
81)	The set R^{+} is equivalent to				C
	A.	Q	B.	Q^{+}	
	C.	R	D.	none of these	
82)	The interval $[0,1]$ is equivalent to				C
	A.	Q	B.	Z	
	C.	$[2,5]$	D.	none of these	
83)	The area bounded by the curves $y = \sin x$, $y = 0$, $x = 0$ and $x = \pi$ is				A
	A.	2	B.	0	
	C.	undefined	D.	none of these	
84)	The area bounded by the curves $y = \sin x$, $y = 0$, $x = 0$ and $x = 2\pi$ is				B
	A.	2	B.	0	
	C.	4	D.	none of these	
85)	The interval $\left]-\frac{\pi}{2}, \frac{\pi}{2}\right[$ is equivalent to				C
	A.	Q	B.	Z	
	C.	R	D.	none of these	
86)	$f(x) = \cos x$ is a periodic function with period				A
	A.	2π	B.	π	
	C.	$\frac{\pi}{2}$	D.	none of these	
87)	If $a \le b$ and $c \le d$,				A
	A.	$a + c \le b + d$	B.	$a + c < b + d$	
	C.	$a + c \ge b + d$	D.	none of these	
88)	If $a \le b$ and $c < 0$,				C
	A.	$ac \le bc$	B.	$ac = bc$	
	C.	$ac \ge bc$	D.	none of these	
89)	If $a \le b$ and $c > 0$,				A
	A.	$ac \le bc$	B.	$ac \ge bc$	
	C.	$ac = bc$	D.	none of these	

90)	$\lim_{x\to 0}\frac{\sin(2x)}{3x}=$				D
	A.	1	B.	0	
	C.	$\frac{3}{2}$	D.	none of these	
91)	In a metric space, a convergent sequence				A
	A.	is Cauchy	B.	is not Cauchy	
	C.	is oscillating	D.	none of these	
92)	A Cauchy sequence of real numbers is				C
	A.	unbounded	B.	divergent	
	C.	convergent	D.	none of these	
93)	A convergent sequence of real numbers is				B
	A.	unbounded	B.	Cauchy	
	C.	oscillating	D.	none of these	
94)	In a metric space, a Cauchy sequence				B
	A.	is convergent	B.	may not converge	
	C.	is oscillating	D.	none of these	
95)	The circumference to diameter ratio of a circle is				C
	A.	1	B.	e	
	C.	π	D.	none of these	
96)	The sequence $\left((-1)^n\right)_{n=1}^{\infty}$				D
	A.	converges to 1	B.	converges to 0	
	C.	converges to -1	D.	none of these	
97)	Which of the following is true				D
	A.	$\pi < e$	B.	$\pi = \frac{22}{7}$	
	C.	π is rational	D.	none of these	
98)	The number π is				B
	A.	not real	B.	irrational	
	C.	rational	D.	none of these	
99)	The number e belongs to				B
	A.	Q	B.	Q'	
	C.	Z	D.	none of these	
100)	$\sum_{k=1}^{n} k =$				C
	A.	n^2	B.	$\frac{n(n-1)}{2}$	

	C.	$\frac{n(n+1)}{2}$	D.	none of these	
101)	The sequence $\left(n^{\frac{1}{n}}\right)_{n=1}^{\infty}$ is				B
	A.	divergent	B.	convergent	
	C.	oscillating	D.	none of these	
102)	If a convergent sequence $(a_n)_{n=1}^{\infty}$ consists of infinitely many distinct elements and $A=\{a_1,a_2,a_3,...\}$, the limit of the sequence				C
	A.	does not exist	B.	is not limit point of A	
	C.	is limit point of A	D.	none of these	
103)	If a convergent sequence $(a_n)_{n=1}^{\infty}$ consists of finitely many distinct elements and $A=\{a_1,a_2,a_3,...\}$, the limit of the sequence				A
	A.	$\in A$	B.	$\notin A$	
	C.	is undefined	D.	none of these	
104)	If x_0 is an element of a metric space (X,d) and $r>0$, $\{x \in X : d(x,x_0) < r\} =$				B
	A.	$\overline{B}(x_0;r)$	B.	$B(x_0;r)$	
	C.	$S(x_0;r)$	D.	none of these	
105)	If x_0 is an element of a metric space (X,d) and $r>0$, $\{x \in X : d(x,x_0) > r\} =$				B
	A.	$X-B(x_0;r)$	B.	$X-\overline{B}(x_0;r)$	
	C.	$X-S(x_0;r)$	D.	none of these	
106)	The sequence $\left(n^{\frac{1}{n}}\right)_{n=1}^{\infty}$ converges to				C
	A.	0	B.	-1	
	C.	1	D.	none of these	
107)	If x_0 is an element of a metric space (X,d) and $r>0$, $\{x \in X : d(x,x_0) = r\} =$				C
	A.	$B(x_0;r)$	B.	$\overline{B}(x_0;r)$	
	C.	$S(x_0;r)$	D.	none of these	
108)	If x_0 is an element of a metric space (X,d), $r>0$, $A=B(x_0;r)$ and $B=\overline{B}(x_0;r)$,				A
	A.	$A \subseteq B$	B.	$B \subseteq A$	
	C.	$A=B$	D.	none of these	
109)	If x_0 is an element of a metric space (X,d), $r>0$, $S=S(x_0;r)$ and $B=\overline{B}(x_0;r)$,				C
	A.	$S=B$	B.	$B \subseteq S$	
	C.	$S \subseteq B$	D.	none of these	

110)	If x_0 is an element of a metric space (X,d) and $r>0$, $\{x\in X : d(x,x_0)\neq r\}=$				D
	A.	$X-B(x_0;r)$	B.	$X-\overline{B}(x_0;r)$	
	C.	$X\cup S(x_0;r)$	D.	none of these	
111)	The limit of the sequence $\left(\dfrac{n^2-3n+1}{2n^2+3n-1}\right)_{n=1}^{\infty}$ is				D
	A.	$\dfrac{-1}{2}$	B.	0	
	C.	-1	D.	none of these	
112)	If a relation f is such that $a=b\Rightarrow f(a)=f(b)$ then f is				A
	A.	a function	B.	onto	
	C.	one to one	D.	none of these	
113)	If a function f is such that $f(a)=f(b)\Rightarrow a=b$ then f is				C
	A.	a function	B.	onto	
	C.	one to one	D.	none of these	
114)	If $f:A\to B$ is a function, $Dom(f)$				A
	A.	$=A$	B.	$\subset A$	
	C.	$\supset A$	D.	none of these	
115)	If $f:A\to B$ is a function, $Range(f)$				B
	A.	$=B$	B.	$\subseteq B$	
	C.	$\subseteq A$	D.	none of these	
116)	If $f:A\to B$ is a function and $a\neq b\Rightarrow f(a)\neq f(b)$, f is				A
	A.	one to one	B.	onto	
	C.	bijection	D.	none of these	
117)	If $f:A\to B$ is a function such that different elements of A have different images in B, f is said to be				C
	A.	bijection	B.	onto	
	C.	one to one	D.	none of these	
118)	If $f:A\to B$ is a function such that $Range(f)\subset B$, f is said to be				A
	A.	into	B.	onto	
	C.	bijection	D.	none of these	
119)	If $f:A\to B$ is a function such that $Range(f)=B$, f is said to be				B
	A.	into	B.	onto	
	C.	bijection	D.	none of these	
120)	If $f:A\to B$ is a function and such that $A_1\subseteq A$, the function $f_1:A_1\to B$ defined by				C

	$f_1(a) = f(a)$ for all $a \in A_1$, is called				
	A.	extension of f on A_1	B.	subset of A	
	C.	restriction of f on A_1	D.	none of these	
121)	For two non-empty sets A and B, the set $\{(a,b): a \in A, b \in B\}$ is called Cartesian product of				A
	A.	A and B	B.	B and A	
	C.	AB	D.	none of these	
122)	For two non-empty sets A and B, the Cartesian product of A and B is denoted by				C
	A.	AB	B.	$B \times A$	
	C.	$A \times B$	D.	none of these	
123)	If $A \times B$ is the Cartesian product of A and B, $\lvert A \times B \rvert$ is				B
	A.	$> \lvert A \rvert \lvert B \rvert$	B.	$= \lvert A \rvert \lvert B \rvert$	
	C.	$< \lvert A \rvert \lvert B \rvert$	D.	none of these	
124)	$\sum_{k=0}^{n} \binom{n}{k} =$				B
	A.	2^{-n}	B.	2^n	
	C.	$2n$	D.	none of these	
125)	Integral of e^{x^2} w.r.t. x, is				D
	A.	$\frac{e^{x^2}}{2x}$	B.	$2xe^{x^2}$	
	C.	$x^2 e^{x^2-1}$	D.	none of these	
126)	An infinite series				B
	A.	is convergent	B.	may converge	
	C.	is divergent	D.	none of these	
127)	An infinite sequence				B
	A.	is divergent	B.	may converge	
	C.	is convergent	D.	none of these	
128)	If $a < b$, $\frac{a+b}{2}$ is				D
	A.	lesser than a	B.	greater than b	
	C.	equal to ab	D.	none of these	
129)	A decreasing sequence				B
	A.	is divergent	B.	may diverge	
	C.	is convergent	D.	none of these	
130)	If $a < b$, $a^2 + b^2$ is				B
	A.	lesser than $2ab$	B.	greater than $2ab$	

	C.	equal to $2ab$	D.	none of these	
131)	The equation of the line passing through origin at an inclination of $\frac{\pi}{4}$, is				B
	A.	$x=2y$	B.	$x=y$	
	C.	$2x=y$	D.	none of these	
132)	The equation of the line passing through $(0,3)$ at an inclination of $\frac{\pi}{4}$, is				C
	A.	$x-3=y$	B.	$-3x=y$	
	C.	$x+3=y$	D.	none of these	
133)	If $f(x)=\frac{x}{2}$, $f^{-1}(1)=$				C
	A.	0	B.	1	
	C.	2	D.	none of these	
134)	The inverse relation of a function, is a function iff the function is				C
	A.	onto	B.	one to one	
	C.	bijective	D.	none of these	
135)	If $a>0$ and $\lvert x\rvert<a$,				C
	A.	$x=a$	B.	$a<x<-a$	
	C.	$-a<x<a$	D.	none of these	
136)	If S is the solution set of the relation $\lvert x\rvert=5$, $S=$				A
	A.	$\{-5,5\}$	B.	$[-5,5]$	
	C.	$]-5,5[$	D.	none of these	
137)	For any $x,y\in R$, $\lvert x+y\rvert$ is				A
	A.	$\leq \lvert x\rvert+\lvert y\rvert$	B.	$< \lvert x\rvert+\lvert y\rvert$	
	C.	$\geq \lvert x\rvert+\lvert y\rvert$	D.	none of these	
138)	Infimum of the sequence $\left(\frac{1}{n^2+2}\right)_{n=1}^{\infty}$, is the number				C
	A.	$\frac{1}{2}$	B.	$\frac{1}{3}$	
	C.	0	D.	none of these	
139)	Suprimum of the sequence $\left\{\sqrt{2},\sqrt{2+\sqrt{2}},\sqrt{2+\sqrt{2+\sqrt{2}}},\ldots\right\}$, is the number				A
	A.	2	B.	$\sqrt{2}$	
	C.	∞	D.	none of these	
140)	If A and B are two sets such that $A\subseteq B$, $\inf(A)$ is				A

	A.	$\geq \inf(B)$	B.	$\leq \inf(B)$	
	C.	$= \inf(B)$	D.	none of these	
141)	If A and B are two sets such that $A \subseteq B$, $Sup(A)$ is				A
	A.	$\leq Sup(B)$	B.	$\geq Sup(B)$	
	C.	$= Sup(B)$	D.	none of these	
142)	If A and B are two sets such that $A \subseteq B$, $Sup(A)$ is				D
	A.	finite	B.	infinite	
	C.	0	D.	none of these	
143)	Which of the followings is not true				D
	A.	$Z \subset Q$	B.	$Q \subset R$	
	C.	$W \subset Z$	D.	none of these	
144)	Domain of the function $f(x) = \dfrac{1}{\sqrt{4-x^2}}$, is the set				B
	A.	$[-2, 2]$	B.	$]-2, 2[$	
	C.	$\{2, -2\}$	D.	none of these	
145)	If $f(x) = \dfrac{x}{2} - 3$, $f^{-1}(x) =$				C
	A.	$\dfrac{2}{x-6}$	B.	$2x-6$	
	C.	$2x+6$	D.	none of these	
146)	If $x = 10^y$, $y =$				D
	A.	$\dfrac{1}{\ln(10)}$	B.	$\dfrac{1}{\ln(x)}$	
	C.	e	D.	none of these	
147)	If $\lvert x-3 \rvert = 3 - x$,				D
	A.	$x > 3$	B.	$x = 3$	
	C.	$x - 3 = 0$	D.	none of these	
148)	$\ln x$ is undefined for				D
	A.	$x > 0$	B.	$x = 10$	
	C.	$x = e$	D.	none of these	
149)	The real line R is a metric space under the metric $d_0 : R \times R \to R$ defined as $d_0(x, y) =$				B
	A.	$\lvert x + y \rvert$	B.	$\lvert x - y \rvert$	
	C.	$\lvert x - 2y \rvert$	D.	none of these	

150)	In the metric space (R, d_0) with usual metric d_0, if $A = N$ and $B = \{\ n - \frac{1}{n} : n \in N - \{1\}\ \}$, $d(A, B)$ =				A
	A.	0	B.	1	
	C.	∞	D.	none of these	
151)	$\int_{-\infty}^{\infty} e^{-x^2}\ dx =$				C
	A.	$\frac{\sqrt{\pi}}{2}$	B.	π	
	C.	$\sqrt{\pi}$	D.	none of these	
152)	The function $f(x) = x$ is called				B
	A.	a linear function	B.	an identity function	
	C.	a quadratic function	D.	none of these	
153)	The notation $y = f(x)$ was invented by				A
	A.	Euler	B.	Leibnitz	
	C.	Newton	D.	none of these	
154)	The graph of a linear equation is always a				B
	A.	Parabola	B.	Straight line	
	C.	Cycle	D.	none of these	
155)	The linear function $f(x) = ax + b$ is identity function if				B
	A.	$a \neq 0, b = 1$	B.	$a = 1, b = 0$	
	C.	$a = 1, b = 1$	D.	none of these	
156)	The notation $f(x)$ was invented by				C
	A.	Leibnitz	B.	Lagrange	
	C.	Newton	D.	none of these	
157)	$\int (ax+b)^n dx =$				C
	A.	$n(a^{n-1}x + b)$	B.	$\frac{1}{n+1}(ax+b)^{n+1} + C$	
	C.	$\frac{1}{a(n+1)}(ax+b)^{n+1} + C$	D.	none of these	
158)	The change in variable x is called increment of x. It is denoted by δx which is				A
	A.	Positive or negative	B.	Negative only	
	C.	Positive only	D.	none of these	
159)	If $\frac{d}{dx}(f(x) + C) = \text{Sec}^2(3x)$, $f(x) =$				B
	A.	$\tan(3x)$	B.	$\frac{1}{3}\tan(3x)$	

	C.	$3\tan(3x)$	D.	none of these	
160)	$\lim\limits_{x\to a}\frac{f(x)-f(a)}{x-a}=$				A
	A.	$f'(a)$	B.	$f'(x)$	
	C.	$f(0)$	D.	none of these	
161)	If $\frac{d}{dx}(f(x)+C)=x^{n-1}$, $f(x)=$				D
	A.	x^n	B.	nx^n	
	C.	x^{n-2}	D.	none of these	
162)	$\log_a a=?$				B
	A.	a	B.	1	
	C.	0	D.	none of these	
163)	If $y=\sinh^{-1}(ax+b)$, $\frac{dy}{dx}=$				B
	A.	$\frac{1}{a\sqrt{1+(ax+b)^2}}$	B.	$\frac{a}{\sqrt{1+(ax+b)^2}}$	
	C.	$\frac{1}{\sqrt{1+(ax+b)^2}}$	D.	none of these	
164)	If $y=e^{-ax}$, $\frac{d^n y}{dx^n}=$				C
	A.	$a^n y$	B.	$(-a)^{-n} y$	
	C.	$(-a)^n y$	D.	none of these	
165)	If $y=e^{-ax}$, $y\frac{dy}{dx}=$				D
	A.	$-ae^{2ax}$	B.	$-\frac{e^{-2ax}}{a}$	
	C.	ae^{-2ax}	D.	none of these	
166)	$f(x)=f(0)+xf'(0)+\frac{x^2}{2!}f'(0)+\ldots$ is called				A
	A.	Maclaurin's series expansion	B.	Taylor's series expansion	
	C.	Taylor's theorem	D.	none of these	
167)	$1-x+x^2-x^3+\ldots=$				B
	A.	$\frac{-1}{1+x}$	B.	$\frac{1}{1+x}$	
	C.	$\frac{1}{1-x}$	D.	none of these	

168)	f is said to be increasing function on $]a,b[$ if for $x_1, x_2 \in]a,b[$				A
	A.	$f(x_2) > f(x_1)$ whenever $x_2 > x_1$	B.	$f(x_2) > f(x_1)$ whenever $x_2 < x_1$	
	C.	$f(x_2) < f(x_1)$ whenever $x_2 > x_1$	D.	none of these	
169)	f is said to be decreasing function on $]a,b[$ if for $x_1, x_2 \in]a,b[$				C
	A.	$f(x_2) > f(x_1)$ whenever $x_2 > x_1$	B.	$f(x_2) > f(x_1)$ whenever $x_2 < x_1$	
	C.	$f(x_2) < f(x_1)$ whenever $x_2 > x_1$	D.	none of these	
170)	A point where first derivative of a function is zero, is called				A
	A.	Stationary point	B.	Corner point	
	C.	Point of concurrency	D.	none of these	
171)	$f(x) = \sin x$ is				C
	A.	An even function	B.	A linear function	
	C.	An odd function	D.	none of these	
172)	The maximum value of the function $f(x) = x^2 - x - 2$ is				B
	A.	$\frac{9}{4}$	B.	$-\frac{9}{4}$	
	C.	$\frac{9}{2}$	D.	none of these	
173)	$\frac{d}{dx}(\cos x) - \frac{d^2}{dx^2}(\sin x) =$				A
	A.	0	B.	$2\sin x$	
	C.	$2\cos x$	D.	none of these	
174)	If $f(x) = x^3 + 2x + 9$, $f''(x) =$				C
	A.	0	B.	$3x^2$	
	C.	$6x$	D.	none of these	
175)	$\frac{d}{dx}(\sqrt{x} - \frac{1}{\sqrt{x}})^2 =$				B
	A.	$1 + \frac{1}{x^2}$	B.	$1 - \frac{1}{x^2}$	
	C.	$\sqrt{1 - \frac{1}{x^2}}$	D.	none of these	
176)	At $x = 0$, the function $f(x) = 1 - x^3$ has				C
	A.	Maximum value	B.	Minimum value	
	C.	Point of inflection	D.	none of these	
177)	If $y = \sin\sqrt{x}$, $y' =$				B

	A.	$\frac{\cos\sqrt{x}}{\sqrt{x}}$	B.	$\frac{\cos\sqrt{x}}{2\sqrt{x}}$	
	C.	$2\sqrt{x}\cos\sqrt{x}$	D.	none of these	
178)	$y = x^x$ has the value				B
	A.	Minimum at $x = e$	B.	Minimum at $x = \frac{1}{e}$	
	C.	Maximum at $x = e$	D.	none of these	
179)	The degree of the differential equation $\frac{d^2x}{dt^2} + 2x^3 = 0$ is				B
	A.	0	B.	1	
	C.	2	D.	none of these	
180)	The order and degree of differential equation $\frac{d^3x}{dt^3} + 4\sqrt{(\frac{dy}{dx})^3 + y^2}$=0 are respectively				A
	A.	3 and 2	B.	2 and 3	
	C.	3 and 3	D.	none of these	
181)	The differential equation $2\frac{dy}{dx} + x^2y = 2x + 3,\ y(0) = 5$ is				A
	A.	linear	B.	nonlinear	
	C.	linear with fixed constants	D.	none of these	
182)	The partial differential equation $\frac{\partial u}{\partial t} + u\frac{\partial u}{\partial x} = \frac{\partial^2 u}{\partial x^2}$ is a				D
	A.	Linear equation of order 2	B.	Non linear equation of order 1	
	C.	Linear equation of order 1	D.	none of these	
183)	Consider the following differential equation $\frac{dy}{dt} = 5y$, initial condition *y=2* at *t=0*, the value pf *y* at *t=3* is				C
	A.	$-5e^{-10}$	B.	$2e^{-10}$	

	C.	$2e^{-15}$	D.	none of these	
184)	The following differential equation $3(\frac{d^2y}{dt^2})+4\left(\frac{dy}{dt}\right)^3+y^2+2=x$				B
	A.	Degree=2, order=1	B.	Degree=1, order=2	
	C.	Degree=4, order=3	D.	none of these	
185)	The order of the differential equation $(\frac{d^2y}{dt^2})+\left(\frac{dy}{dt}\right)^3+y^4=e^{-t}$ is				B
	A.	1	B.	2	
	C.	3	D.	none of these	
186)	The differential equation $\frac{d^2y}{dx^2}$ + 16y=0 for *y(x)* with two boundary conditions $\frac{dy}{dx}(x=0)=1$ and $\frac{dy}{dx}$ $(x=\frac{\pi}{2})$=-1 has				A
	A.	No solution	B.	Exactly one solution	
	C.	Exactly two solutions	D.	none of these	
187)	A differential equation is considered to be ordinary if it has				C
	A.	one dependent variable	B.	more than one dependent variable	
	C.	one independent variable	D.	none of these	
188)	PDE has independent variable				A
	A.	More than 1	B.	Less than 1	
	C.	1	D.	none of these	
189)	In homogeneous first order linear constant coefficient ordinary DE is				B
	A.	$\frac{\partial u}{\partial x}=0$	B.	$\frac{\partial u}{\partial x}=cu+x^2$	

	C.	$\frac{\partial u}{\partial x}=\frac{c}{u}+x^2$	D.	none of these	
190)	The P.D.E $\frac{\partial^2 U}{\partial x^2}+\frac{\partial^2 U}{\partial y^2}=f(x,y)$; is known as				A
	A.	Laplace equation	B.	Poisson equation	
	C.	Wave equation	D.	none of these	
191)	The solution of a differential equation which is not obtained from the general solution is known as:				B
	A.	Particular solution	B.	Singular solution	
	C.	Auxiliary solution	D.	none of these	
192)	The differential equation $\frac{dy}{dx}=y^2$ is:				A
	A.	Non-linear	B.	Linear	
	C.	Quasilinear	D.	none of these	
193)	The DE formed by $y= acosx+bcosx+4$ where a and b are arbitrary constants is:				C
	A.	$(\frac{d^2y}{dx^2})+y=0$	B.	$(\frac{d^2y}{dx^2})-y=0$	
	C.	$(\frac{d^2y}{dx^2})+y=4$	D.	none of these	
194)	The equation $a_0 x^{2+}\frac{d^2y}{dx^2}+a_1 x\frac{dy}{dx}+a_2 y=\varphi(x)$ is called:				B
	A.	Legendre's linear equation	B.	Cauchy's linear equation	
	C.	Simultaneous equation	D.	none of these	
195)	Solution of the DE $\frac{dy}{dx}=sin(x+y)+cos(x+y)$, is				D

	A.	$Log\|1+tan\frac{(x+y)}{2}\|=y+c$	B.	$Log\|2+sec\frac{(x+y)}{2}\|=x+c$	
	C.	$Log\ \|1+tan(x+y)\|=y+c$	D.	none of these	
196)	If $y=a\cos(\log x)+b\sin(\log x)$, then				B
	A.	$x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}+y=0$	B.	$x^2\frac{d^2y}{dx^2}-x\frac{dy}{dx}+y=0$	
	C.	$x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}-y=0$	D.	none of these	
197)	If $y=\sin(a\sin^{-1}x)$, then				A
	A.	$(1-x^2)\frac{d^2y}{dx^2}-x\frac{dy}{dx}+a^2y=0$	B.	$(1-x^2)\frac{d^2y}{dx^2}+x\frac{dy}{dx}-a^2y=0$	
	C.	$(1-x^2)\frac{d^2y}{dx^2}-x\frac{dy}{dx}-a^2y=0$	D.	none of these	
198)	The DE of the family of curves $y^2=4a(x+$ is				B
	A.	$y^2=4\frac{dy}{dx}(x+\frac{dy}{dx})$	B.	$y^2(\frac{dy}{dx})^2+2xy\frac{dy}{dx}-y^2=0$	
	C.	$y^2\frac{dy}{dx}+4y=0$	D.	none of these	
199)	Inverse derivative of sin x is:				A
	A.	$\frac{1}{\sqrt{1-x^2}}$	B.	$\frac{1}{\sqrt{1+x^2}}$	
	C.	$\frac{-1}{\sqrt{1-x^2}}$	D.	none of these	
200)	Inverse derivative of cos x is:				C
	A.	$\frac{1}{\sqrt{1-x^2}}$	B.	$\frac{1}{\sqrt{1+x^2}}$	

	C.	$\frac{-1}{\sqrt{1-x^2}}$	D.	none of these	
201)	If $y=tan^{-1}\,x^{3/2}$, then $\frac{dy}{dx}=$				A
	A.	$\frac{3\sqrt{x}}{2(1+x^3)}$	B.	$\frac{2\sqrt{x}}{(1+x^3)}$	
	C.	$\frac{3\sqrt{x}}{2(1-x^3)}$	D.	none of these	
202)	The equation of the curves, satisfying the DE $\frac{d^2y}{dx^2}(x^2+1)=2x\frac{dy}{dx}$ passing through the point (0,1) and having the slope of tangent at $x=0$ as 6 is				B
	A.	$y^2=2x^3+6x+1$	B.	$y=2x^3+6x+1$	
	C.	$y^2=x^3+6x+1$	D.	none of these	
203)	A particle, initially at origin moves along x-axis according to the rule $\frac{dx}{dt}=x+4$. The time taken by the particle to traverse a distance of 96 units is:				C
	A.	ln 5	B.	$\log_5 e$	
	C.	2 ln 5	D.	none of these	
204)	If $y=cos^{-1}\,(ln\,x)$, then the value of $\frac{dy}{dx}$ is				B
	A.	$\frac{1}{x\sqrt{1-(\ln x)^2}}$	B.	$\frac{-1}{x\sqrt{1-(\ln x)^2}}$	
	C.	$\frac{-1}{x\sqrt{1+(\ln x)^2}}$	D.	none of these	

205)	If $x=2\ ln\ cot(t)$ and $y= tan(t) + cot(t)$, the value of $\frac{dy}{dx}$ is A. $cot(2t)$ B. $tan(2t)$ C. $cos(2t)$ D. none of these	A
206)	Solution of the DE $ln(\frac{dy}{dx})= ax + by$ is A. $-\frac{1}{b}e^{-by} = \frac{1}{a}e^{ax} + c$ B. $\frac{1}{b}e^{-by} = \frac{1}{a}e^{ax} + c$ C. $\frac{1}{b}e^{-by} = -\frac{1}{a}e^{ax} + c$ D. none of these	A
207)	If the general solution of a differential equation is $(y+c)^2=cx$, where c is an arbitrary constant, then the order and degree of differential equation is A. 1, 2 B. 2, 1 C. 1, 3 D. none of these	A
208)	Solution of $(x^2 \sin^3 y - y^2 \cos x)\, dx + (x^3 \cos y \sin^2 y - 2y \sin x)\, dy = 0$ is A. $(x^3 \sin^3 y/3) = c$ B. $x^3 \sin^3 y = y^2 \sin x + c$ C. $(x^3 \sin^3 y/3) = y^2 \sin x + c$ D. none of these	C
209)	Solution of $\frac{x\,dy}{x^2+y^2} = (\frac{y}{x^2+y^2} - 1)dx$ is A. $x - \tan^{-1}\frac{y}{x}$ B. $\tan^{-1}\frac{y}{x} = c$ C. $x \tan^{-1}\frac{y}{x} = c$ D. none of these	C
210)	Solution of $(y + x^{\sqrt{xy}}(x+y))dx + (y^{\sqrt{xy}}(x+y) - x)dy = 0$ is A. $x^2 + y^2 = 2\tan^{-1}\sqrt{\frac{y}{x} + c}$ B. $x^2 + y^2 = 4\tan^{-1}\sqrt{\frac{y}{x} + c}$	D

	C.	$x^2 + y^2 = \tan^{-1}\sqrt{\frac{y}{x} + c}$	D.	none of these	
211)	Solution of the DE $\frac{dy}{dx} + 2xy = y$ is				A
	A.	$y = ce^{x-x^2}$	B.	$y = ce^{x^2} - x$	
	C.	$y = ce^{x}$	D.	none of these	
212)	Solution of the differential equation $\frac{dy}{dx} = \sin(x+y) + \cos(x+y)$, is				D
	A.	$log\,\lvert 1 + tan\frac{(x+y)}{2}\rvert = y + c$	B.	$log\,\lvert 2 + sec\frac{(x+y)}{2}\rvert = x + c$	
	C.	$log\,\lvert 1 + tan\,(x+y)\rvert = y + c$	D.	none of these	
213)	The Blasius equation $\frac{d^3 f}{d\eta^3} + \frac{f}{2}\frac{d^2 f}{d\eta^2} = 0$ is a				B
	A.	Second order non linear differential equation	B.	Third order non linear ordinary differential equation	
	C.	Third order linear ordinary differential equation	D.	none of these	
214)	The general solution of DE $\frac{dy}{dx} = \cos(x+y)$ with c as a constant is				D
	A.	$y + sin\,(x+y) = x + c$	B.	$tan\left(\frac{x+y}{2}\right) = y + c$	
	C.	$cos\left(\frac{x+y}{2}\right) = x + c$	D.	none of these	
215)	The solution of the initial value problem $\frac{dy}{dx} = -2xy;\, y(0) = 2$ is				B
	A.	$1 + e^{-x^2}$	B.	$2e^{-x^2}$	

	C.	$1+e^{x^2}$	D.	none of these	
216)	The solution of ODE $\frac{d^2y}{dx^2}+\frac{dy}{dx}-6y=0$ is				A
	A.	$y=c_1e^{-3x}+c_2e^{2x}$	B.	$y=c_1e^{3x}+c_2e^{2x}$	
	C.	$y=c_1e^{3x}+c_2e^{-2x}$	D.	none of these	
217)	The solution for the differential equation $\frac{dy}{dx}=x^2y$ with two condition that *y=1* at *x=0*				C
	A.	$2e^{\frac{x^2}{2}}$	B.	$3e^{\frac{x}{2}}$	
	C.	$e^{\frac{x^2}{2}}$	D.	none of these	
218)	The solution of $\frac{dy}{dx}=-\frac{x}{y}$ with initial condition *y(1)=*$\sqrt{3}$ is				C
	A.	$x^3+y^3=4$	B.	$y=4ax$	
	C.	$x^2+y^2=4$	D.	none of these	
219)	Which of these is the solution of differential equation $\frac{dx}{dt}+3x=0$				A
	A.	$2e^{-3t}$	B.	e^{-3t}	
	C.	$2e^{2t}$	D.	none of these	
220)	The general solution of DE $\frac{dy}{dx}=\frac{y}{x}$ is				B
	A.	*log y= kx*	B.	*y=kx*	
	C.	*y=*$\frac{k}{x}$	D.	none of these	

221)	Integrating factor of DE $\cos\frac{dy}{dx} + ysinx = 1$ is				B
	A.	*sin x*	B.	*sec x*	
	C.	*tan x*	D.	none of these	
222)	If $2xy\,dx + P(x, y)dy = 0$ is exact then $P(x, y)$ is				D
	A.	$x – y$	B.	$x + y$	
	C.	$x – y^2$	D.	none of these	
223)	A differential equation of first degree				B
	A.	Is of first order	B.	May or may not be linear	
	C.	Is always linear	D.	none of these	
224)	A general solution of an n^{th} order differential equation contains				B
	A.	$n – 1$ arbitrary constants	B.	n arbitrary constants	
	C.	$n+1$ arbitrary constants	D.	none of these	
225)	The differential equation $Mdx + Ndy = 0$ is defined as an exact differential equation of				D
	A.	$\frac{\partial M}{\partial x} = \frac{\partial N}{\partial y}$	B.	$\frac{\partial M}{\partial y} \neq \frac{\partial N}{\partial x}$	
	C.	$\frac{\partial M}{\partial y} = -\frac{\partial N}{\partial x}$	D.	none of these	
226)	The order of the differential equation $\frac{\partial^2 y}{\partial x^2} + y^2 = x + e^x$ is				A
	A.	2	B.	3	
	C.	0	D.	none of these	
227)	‘’Infinitely many differential equation have the same integrating factor’’. This statement is				C

	A.	Never true	B.	May be true	
	C.	Always true	D.	none of these	
228)	If $\frac{dy}{dx} = \frac{f(x,y)}{\varphi(x,y)}$ is a homogeneous DE then it can be made in the form ''separable in variables'' by putting				C
	A.	$y^2 = vx$	B.	$x^2 = vy$	
	C.	$y = vx$	D.	none of these	
229)	The differential equation $\frac{dy}{dx} + Py = Qy^n$, $n \geq 2$ can be reduced to linear form by substituting				D
	A.	$z = y^{n-1}$	B.	$x = y^{n+1}$	
	C.	$x = y^{1-n}$	D.	none of these	
230)	The differential equation $(y - 2x^3)dx - x(1 - xy)dy = 0$ becomes exact on multiplication by				B
	A.	$\frac{1}{x}$	B.	$\frac{1}{x^2}$	
	C.	$\frac{1}{x^3}$	D.	none of these	
231)	If the DE $f(x, y)dx + xsinydy = 0$ is exact then $f(x, y)$ equals				B
	A.	$cos\ y$	B.	$-cos(y) + x^2$	
	C.	$-sin\ y$	D.	none of these	
232)	The differential equation $x\frac{dy}{dx} = x - y$ is				C
	A.	Exact	B.	Linear	
	C.	Both A and B	D.	none of these	

233)	The general solution of the equation $x' + 5x = 3$ is				C
	A.	$x(t) = \frac{3}{5} + e^{-5t}$	B.	$x(t) = 3 + C\sin 5t$	
	C.	$x(t) = \frac{3}{5} + Ce^{-5t}$	D.	none of these	
234)	A solution of the initial value problem $y' + 8y = 1 + e^{-6t}$ is				B
	A.	$x(t) = \frac{1}{8} + \frac{1}{2}e^{6t} - \frac{5}{8}e^{8t}$	B.	$x(t) = \frac{1}{8} + \frac{1}{2}e^{-6t} - \frac{5}{8}e^{-8t}$	
	C.	$x(t) = 4 - e^{2t} + 3e^{8t}$	D.	none of these	
235)	Two linearly independent solutions of the equation $y'' + y' - 6y = 0$ are				A
	A.	e^{-3x} and e^{2x}	B.	e^{-2x} and e^{3x}	
	C.	e^{-x} and e^{6x}	D.	none of these	
236)	$\int_{-\infty}^{0} e^{-x^2}\, dx =$				A
	A.	$\frac{\sqrt{\pi}}{2}$	B.	π	
	C.	$\sqrt{\pi}$	D.	none of these	
237)	A particular solution for the differential equation $y'' + 2y' + y = 3 - 2\sin x$is				B
	A.	$A + Bx^2 + C\cos x + D\sin x$	B.	$A + B\cos x + C\sin x$	
	C.	$A + Bx\cos x + Cx\sin x$	D.	none of these	
238)	The solution of the initial value problem $x^2y'' - xy' - 3y = 0,\ y(1) = 1, y'(1) = -2$ is y=				A
	A.	$\frac{5}{4}x^{-1} - \frac{1}{4}x^3$	B.	$\frac{1}{4}x + \frac{3}{4}x^{-3}$	

	C.	$\frac{5}{4}e^{-x} - \frac{1}{4}e^{3x}$	D.	none of these	
239)	The differential equation $x'' + 2x' - 5x = \sin t$ is equivalent to the system				A
	A.	$x' = y\ , y' = 5x - 2y + \sin t$	B.	$x' = 2x - 5y\ , y' = \sin t$	
	C.	$x' = y\ , y' = 2x - 5y + \sin t$	D.	none of these	
240)	The system of differential equation $x'' = -\frac{y}{x^2+y^2},\ y'' = -\frac{y}{x^2+y^2}$ is equivalent to a 1st order system consisting of				C
	A.	Two equations	B.	Three equations	
	C.	Four equations	D.	none of these	
241)	The series solution for the differential equation $y'' + xy' + y = 0$ is of the form $\sum_{n=0}^{\infty} C_n X^n$ has recursion relation				B
	A.	$C_{n+2} + C_{n+1} + C_n = 0, n \geq 0$	B.	$(c+2)C_{n+2} + C_n = 0, n \geq 2$	
	C.	$nc_{n+1} - c_n = 0, n \geq 1$	D.	none of these	
242)	The differential equation $xy'' + (x-2)y' + y = 0$ has a solution of the form				C
	A.	$y = x^2 \sum_{n=0}^{\infty} c_n x^n, c_0 \neq 0$	B.	$y = x^{1/2} \sum_{n=0}^{\infty} c_n x^n, c_0 \neq 0$	
	C.	$y = x^3 \sum_{n=0}^{\infty} c_n x^n, c_0 \neq 0$	D.	none of these	
243)	The solution of the differential equation$(2x-1)y' + 2y = 0$, can be represented as a power series $\sum_n^{\infty} = 0\ C_n X^n$ with radius of convergence equal to				B
	A.	0	B.	1/2	
	C.	1	D.	none of these	

244)	The partial fraction decomposition of $\frac{s+4}{(s-1)^2(s^2+4)}$ is				B
	A.	$\frac{A}{(s-1)^2}+\frac{B_s+C}{s^2+4}$	B.	$\frac{A}{s-1}+\frac{B}{(s-1)^2}+\frac{C_s+D}{s^2+4}$	
	C.	$\frac{A}{s-1}+\frac{B}{(s-1)^2}+\frac{C}{s^2+4}$	D.	none of these	
245)	Which of the following equations can be rearranged into separable equations?				B
	A.	$(x+y)y' = x-y$	B.	$y' - e^y = e^{x=y}$	
	C.	$y' = ln(xy)$	D.	none of these	
246)	A body with mass $m = \frac{1}{2}kg$ is attached to the end of a spring that is stretched $2m$ by a force of $100N$. It is set in motion with initial position x_0 = 1 m and initial velocity v_0 =–5m/s. The position function of the body is given by				A
	A.	$x(t) = \cos 10t - \frac{1}{2}sin10t$	B.	$x(t) = \cos 5t - sin5t$	
	C.	$x(t) = e^{-t}(cos9t - 3sin9t)$	D.	none of these	
247)	The appropriate form of a particular solution y_p of the equation $y'' + 2y' + y = e^{-t}$ is				C
	A.	Ae^{-t}	B.	Ate^{-t}	
	C.	At^2e^{-t}	D.	none of these	
248)	Particular integral of $(D^2+4)y = sin3x$ is				B
	A.	$-\frac{1}{5}sin3x$	B.	$-\frac{1}{5}tan3x$	
	C.	$-\frac{1}{5}cos3x$	D.	none of these	
249)	The DE $\frac{dy}{dx} = \frac{x^2+xy+2y}{2x^2+y^2}$ is				B

	A.	Exact	B.	Homogeneous	
	C.	Cauchy	D.	none of these	
250)	$\int_0^\infty e^{-x^2}\, dx =$				B
	A.	π	B.	$\frac{\sqrt{\pi}}{2}$	
	C.	$\sqrt{\pi}$	D.	none of these	
251)	The order and degree of the DE $\left(\frac{1+(\frac{dy}{dx})^2}{\frac{d^2y}{dx^2}}\right)^{\frac{3}{2}} = b$ are respectively				C
	A.	1 and 3	B.	1 and 2	
	C.	2 and 3	D.	none of these	
252)	A general solution of 3rd order DE contains				C
	A.	One constant	B.	Two constants	
	C.	Three constants	D.	none of these	
253)	Solving $y' + y' + 2y = 0$ with $y(0), y(1) = 1$ is				B
	A.	Initial value problem	B.	Boundary value problem	
	C.	Eigen value problem	D.	none of these	
254)	If p and q are the order and degree of DE $y\frac{dy}{dx} + x^2(\frac{d^2y}{dx^2})^3 + xy = cosx$, then				
	A.	$p < q$	B.	$p = q$	A
	C.	$p > q$	D.	none of these	
255)	A solution to the partial differential equation $\frac{\partial^2 u}{\partial x^2} = 9\frac{\partial^2 u}{\partial y^2}$ is				D
	A.	$\cos(3x - y)$	B.	$x^2 + y^2$	
	C.	$\sin(3x - y)$	D.	none of these	
256)	The partial differential equation $5\frac{\partial^2 z}{\partial x^2} + 6\frac{\partial^2 z}{\partial y^2} = xy$ is classified as				A
	A.	Elliptic	B.	Parabola	
	C.	Hyperbola	D.	none of these	

257)	The partial differential equation $xy\frac{\partial z}{\partial x} = 5\ \frac{\partial^2 z}{\partial y^2}$ is				B
	A.	Elliptic	B.	Parabolic	
	C.	Hyperbolic	D.	none of these	
258)	The following is true for the following partial differential equation under non linear mechanics known as the Kortewege-de-vfies equation $\frac{\partial w}{\partial t} + \frac{\partial^3 w}{\partial x^3} - 6w\frac{\partial w}{\partial x} = 0$				B
	A.	Linear, 3rd order	B.	Non-linear 3rd order	
	C.	Linear first order	D.	none of these	
259)	Solve $\frac{\partial u}{\partial x} = 6\frac{\partial u}{\partial t} + u$ using separation method of variable if $u(x, 0) = 10e^{-x}$, $u =$				A
	A.	$10e^{-x}e^{-\frac{t}{3}}$	B.	$10e^{x}e^{-\frac{t}{3}}$	
	C.	$10e^{\frac{x}{3}}e^{-t}$	D.	none of these	
260)	While solving the partial differential equation by separable method we equate the ratio to constant which?				B
	A.	Can be positive or negative integer or zero	B.	Can be positive or negative rational number or zero	
	C.	Must be positive integer	D.	none of these	
261)	When solving a 1-dimensional heat equation using a variable separable method we get the solution				C
	A.	k is positive	B.	k is 0	
	C.	k is negative	D.	none of these	
262)	$f(x, y) = \sin(xy) + x^2\ln(y)$. Then f_{xy} at $(0,\frac{\pi}{2})$ is				D
	A.	33	B.	0	
	C.	3	D.	none of these	
263)	$f(x, y) = x^2 + y^3$; $x = t^2 + t^3$; $y = t^3 + t^9$. Then $\frac{df}{dt}$ at $t=1$ is				A
	A.	164	B.	-164	
	C.	0	D.	none of these	
264)	DE for $y = Acos\alpha x + Bsin\alpha x$, where A and B are arbitrary constants is				B
	A.	$\frac{d^2y}{dx^2} + \alpha y = 0$	B.	$\frac{d^2y}{dx^2} - \alpha y = 0$	

	C.	$\frac{d^2y}{dx^2} - \alpha^2 y = 0$	D.	none of these	
265)	The order of DE is defined as				B
	A.	The highest degree of the variable	B.	The order of the highest derivative	
	C.	The power of variable in the solution	D.	none of these	
266)	A primitive of an ODE is				C
	A.	Its general solution	B.	Its particular solution	
	C.	Its complementary solution	D.	none of these	
267)	The solution of a DE subject to a condition satisfied at one particular point is called				C
	A.	A boundary value problem	B.	A two-point boundary value problem	
	C.	An initial value problem	D.	none of these	
268)	A general solution of an nth order DE then				A
	A.	n can be zero	B.	n is any non-negative integer	
	C.	n is any integer	D.	none of these	
269)	The DE $\frac{dy}{dx} = \frac{ax+by+c}{a'x+b'y+c'}$ is				B
	A.	Homogeneous	B.	Non-Homogeneous	
	C.	Separable	D.	none of these	
270)	The order of D.E where general solution is $y = C_1e^x + C_2e^{2x} + C_3e^{3x} + C_4e^{4x} + C_5$, where C_1, C_2, C_3, C_4, C_5, are arbitrary constant is				A
	A.	5	B.	4	
	C.	7	D.	none of these	
271)	The particular integral of DE $(D^2 - a^2)y - cosax$ is $y =$				C
	A.	$-\frac{x}{2a}cosax$	B.	$\frac{x}{2a}sinax$	
	C.	$-\frac{x}{2a}sinax$	D.	none of these	
272)	The equation $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = \frac{\partial u}{\partial z}$ where x, y, z are variable is a partial DE of order and degree				A
	A.	2, 1	B.	2, 2	

	C.	1, 2	D.	none of these	
273)	A PDE $A\frac{\partial^2 u}{\partial x^2} + B\frac{\partial^2 u}{\partial y^2} + C\frac{\partial^2 u}{\partial x \partial y} = sinx + 2y$ where *A*, *B*, *C* are real constants				A
	A.	Linear	B.	Homogeneous	
	C.	Non-Homogeneous	D.	none of these	
274)	The linear partial DE $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$ is				B
	A.	2- dimensional Poisson equation	B.	2-dimensional Laplace equation	
	C.	3-dimensional Laplace equation	D.	none of these	
275)	The linear PDE $AU_{xx} + 2BU_{xy} + CU_{yy} = F(x, y, U, U_x, U_y)$ is elliptic if				B
	A.	$AB - C^2 > 0$	B.	$AC - B^2 > 0$	
	C.	$AC - B^2 > 0$	D.	none of these	
276)	The wave equation $U_{tt} = c^2 U_{xx}$ is				C
	A.	Elliptic	B.	Parabolic	
	C.	Hyperbolic	D.	none of these	
277)	$\frac{\partial^2 U}{\partial t^2} = c^2 \frac{\partial^2 U}{\partial x^2}$ is				B
	A.	Heat equation	B.	Wave equation	
	C.	Equation of vibrating string	D.	none of these	
278)	The D.E $(1 - x^2)y' - 2xy' + n(n+1)y = 0$ is				B
	A.	Barrel equation	B.	Legendre equation	
	C.	Poisson equation	D.	none of these	
279)	The partial differential $\frac{\partial^2 z}{\partial x^2} + z\frac{\partial^2 z}{\partial x \partial y} + \frac{\partial^2 z}{\partial y^2} = 0$ is				B
	A.	Hyperbolic	B.	Parabolic	
	C.	Elliptic	D.	none of these	
280)	The PDE $(x^2 - yz)p + (y^2 - zx)q = z^2 - xy$ where $p = \frac{\partial z}{\partial x}, q = \frac{\partial z}{\partial y}$ is				A
	A.	Linear	B.	Non-linear	

	C.	Algebraic	D.	none of these	
281)	*Let X be an arbitrary topological space and Y a Harsdorf space. Let f: X→ Y be a Continues function. Then the graph* $G = \{(x, y): y = f(x)$ *is subset of* $X \times Y\}$ *is ……… In* $X \times Y$				B
	A.	*Open*	B.	*closed*	
	C.	*Continuous*	D.	*None of these*	
282)	*A First countable space X is a ……….. if and only if every convergent sequence has a unique limit*				D
	A.	$T_0 space$	B.	$T_1 space$	
	C.	$T_2 space$	D.	*Harsdorf space*	
283)	*Let the product X of topological spaces be normal then each X is…………….*				A
	A.	$Normal$	B.	$Regular$	
	C.	$Completly\ Regular$	D.	$T_0 space$	
284)	*If R is a ring and J be its Maximal Ideal, then what about R/J?*				B
	A	*R/J is vector*	B	*R/J is field*	
	C	*R/J is scaler*	D	*R/J is ring*	
285)	*Gaussian integers are form a*				C
	A	*Vector*	B	*Scalar*	
	C	*Field*	D	*None of these*	
286)	*Let I and J be the ideals of a commutative ring R Ideal of R is* $I + J = \{a + b \mid a \in I\ and\ \ b \in J\}$ *then I+J is*				B
	A	*Principal Ideal*	B	*Ideal of R*	
	C	*Maximal Ideal*	C	*None of these*	
287)	*Let A and B be the subspace of a vector space V(F). Then Dim(A+B) is*				C
	A.	*Dim A+ Dim B*	B.	*Dim A+ Dim B-Dim (A∪ B)*	
	C.	*Dim A + Dim B-Dim (A∩ B)*	D	*None of these*	
288)	$T: R^2 \to R^2\ \ T(x, y) = (x + 2, y + 1)\ then\ T\ is$				A
	A	*T is not Linear Transformation*	B.	*T is Linear Transformation*	
	C.	*T is Kernel of Linear Transformation*	D.	*None of these*	
289)	*Let I and J be the ideals of a commutative ring R Ideal of R is* $I\,.\,J = \{ab \mid a \in I\ and\ \ b \in J\}$ *then IJ is*				A
	A	*Ideal*	B.	*Not Ideal*	
	C.	*Principal Ideal*	D.	*None of these*	
290)	*A ring Homomorphism is both (1-1) and onto, then it is called*				D
	A.	*Endomorphism*	B.	*Epimorphism*	
	C.	*Isomorphism*	D.	*None of these*	
291)	*Every ring R has surely*				A
	A.	*Two Ring*	B.	*One ring*	
	C.	*Three Ring*	D.	*None of these*	
292)	*If there will be trivial solution of homogenous equations, then there exist*				B
	A.	*Linearly Independent*	B.	*Linearly Dependent*	
	C.	*Basis*	D.	*None of these*	
293)	*The vectors (3,0, -3), (-1,1,2),(4,2,-2) and (2,1,1) are*				C
	A.	*Linearly Independent*	B.	*Bases*	
	C.	*Linearly Dependent*	D	*None of these*	

294)	*Let* $\{v_1, v_2, \ldots v_n\}$ *be the bases of a vector space V(F) and let* $\{w_1, w, \ldots w_r\}$ *be linearly independent subset of V(F) then*			A
	A. $(i)\ n < r \quad (ii)\ n \geq r \quad (iii) n \leq r$		B. $(i)\ n > r \quad (ii)\ n \geq r \quad (iii) n \leq r$	
	C. $(i)\ n = r \quad (ii)\ n \geq r \quad (iii) n \leq r$		D *None of these*	
295)	*Let* $T: V_1(F) \to V_2(F)$ *be a linear transformation. Then R(T) is …………Where R(T) = Rank T*			B
	A. *subspace of* $V_1(F)$		B. *subspace of* $V_2(F)$	
	C. *Subspace of* $V_1(F) \cap V_2(F)$		D. *None of these*	
296)	*Converse of the Lagrange 's Theorem holds true in P groups due to*			A
	A. *Lagrange 's Theorem*		B. *3rd Sy low Theorem*	
	C. *Sy low Theorem*		D. *None of these*	
297)	*If H is the only One P-sylow subgroup of a finite group, then ………. H is in G*			C
	A. *Cyclic*		B. *Abelian*	
	C. *Normal*		D. *None of these*	
298)	*Every Characteristic subgroup is a*			B
	A. *Double Cosets*		B. *Normal subgroup*	
	C. *Invariant Subgroup*		D. *None of these*	
299)	*In group theory Z(G) is fully*			C
	A. *Covariant*		B. *Cosets*	
	C. *Invariant*		D. *None of these*	
300)	*If a group is …………….. there is no inner automorphism*			A
	A. *Abelian*		B. *Cyclic*	
	C. *Non-Abelian*		D. *None of these*	
301)	*Every outer is inner automorphism* $\emptyset_a : g \to aga^{-1} = g$ *in ……………….*			A
	A. *Abelian*		B. *Cyclic*	
	C. *Non-Abelian*		D. *None of these*	
302)	*Let H and K be normal subgroup of G where H is subset of K then* $\frac{G}{K} = \frac{\frac{G}{H}}{\frac{K}{H}}$			C
	A. *2nd isomorphism Theorem*		B. *3rd isomorphism Theorem*	
	C. *1st isomorphism Theorem*		D. *None of these*	
303)	*Under the condition* $\frac{HK}{K} = \frac{H}{H \cap K}$ *holds in group G for its subgroup H & K*			A
	A. *(i)K is normal in HK (ii)* $H \cap K$ *is normal in H*		B. *(i)K is normal in HK (ii)* HUK *is normal in H*	
	C. *(i)K is normal in K (ii)* $H \cap K$ *is normal in H*		D. *None of these*	
304)	*The identity of the Quotient group of G by its normal subgroup H is always*			C
	A. *G*		B. *K*	
	C. *H*		D. *None of these*	
305)	*Every automorphism is endomorphism its converse is*			A
	A. *Not true*		B. *True*	
	C. *False*		D. *None of these*	
306)	*A mapping* $\mu: G \to \frac{G}{K}$, $\mu(g) = gk, \forall g \in G$ *then* μ *is an*			B
	A. *Endomorphism of G to G/K*		B. *Epimorphism of G to G/K*	
	C. *Homomorphism of G to G/K*		D. *None of these*	
307)	*If H is a subgroup of index ……… then H is subgroup of G*			A
	A. *2*		B. *3*	
	C. *4*		D. *None of these*	
308)	*If H and K are two normal subgroups, then* $H \cap K$ *is*			C

	A.	Abelian	B.	subgroup	
	C.	Normal	D.	None of these	
309)	A finite p group has a ………center				A
	A.	Trivial	B.	Non-trivial	
	C.	Normal	D.	None of these	
310)	If G is ……..then all the elements of finite order in a group G form its subgroup.				C
	A.	Non-abelian	B.	Normal	
	C.	Abelian	D.	None of these	
311)	Every subgroup of an abelian group is ……				B
	A.	Non-abelian	B.	Normal	
	C.	Abelian	D.	None of these	
312)	The center of simple group is ……				A
	A.	Either identity or group itself	B.	group itself	
	C.	Identity	D.	None of these	
313)	Let G be group of order 2p, where p is prime then g has a normal subgroup of order				A
	A.	p	B.	2p	
	C.	p/2	D.	None of these	
314)	If HK= KH, then HK is the ……..subgroup containing both H & K.				C
	A.	Normal	B.	Largest	
	C.	Smallest	D.	None of these	
315)	Let H & K be subgroups of group G then $H \cap K$ is the …… subgroup of g contained in both H &K.				B
	A.	Normal	B.	Largest	
	C.	Smallest	D.	None of these	
316)	The …… subgroup containing H & K is the subgroup generated by H∪K				C
	A.	Normal	B.	Largest	
	C.	Smallest	D.	None of these	
317)	Every ……space is Lindelöf				C
	A.	1^{st} Countable	B.	Countable	
	C.	Second Countable	D.	None of these	
318)	A discrete space X is if and only if it is countable.				B
	A.	Symmetric	B.	Separable	
	C.	Countable	D.	None of these	
319)	All open intervals are				C
	A.	Separable	B.	Isomorphism	
	C.	Homeomorphism	D.	None of these	
320)	The set of Z integers as a subspace of R has ……Topology				D
	A.	Indiscrete	B.	Coffinite	
	C.	Countable	D.	None of these	
321)	Let X,Y,Z be topological spaces $f: X \to Y$, $g: Y \to Z$ be continues function & then …. Is Continues				A
	A.	$gof: X \to Z$	B.	$gof: X \to Y$	
	C.	$gof: Y \to X$	D.	None of these	
322)	A function f is continuing on a topological space X if it is continues at ……. Point X				B
	A.	One	B.	Every	
	C.	Two	D.	None of these	
323)	Any uncountable set X with ……. topology is not 1^{st} Countable and so not 2^{nd} Countable.				B
	A.	Usual	B.	Cofinite	
	C.	Discrete	D.	None of these	

324)	*A space X is said to completely Normal if and only if every subspace of x is Normal is called*				*A*
	A.	*Completely Normal*	*B.*	*Normal*	
	C.	*completely Regular*	*D.*	*None of these*	
325)	*Let X be normal space then every point of disjoint closed sets has neighborhoods whose closures are also*				*C*
	A.	*Joint*	*B.*	*Closures*	
	C.	*Disjoint*	*D.*	*None of these*	
326)	*A normal T_1 space is*				*D*
	A.	*Normal*	*B.*	*Not regular*	
	C.	*Closed*	*D.*	*None of these*	
327)	*Every Closed subspace of a T_4 space is a*				*D*
	A.	*Normal*	*B.*	*Not regular*	
	C.	*Closed*	*D.*	*None of these*	
328)	*Every subspace of completely Regular space is*				*C*
	A.	*Regular*	*B.*	*Not Regular*	
	C.	*Completely Regular*	*D.*	*None of these*	
329)	*T_3 space is a*				*A*
	A.	*Regular T_1 space.*	*B.*	*Regular T_2 space.*	
	C.	*Regular T_4 space.*	*D.*	*None of these*	
330)	*T_2 space is called*				*C*
	A.	*Regular Space*	*B.*	*Normal Space*	
	C.	*Harsdorf Space*	*D.*	*None of these*	
331)	Let V be a vector space over field F. A subset W of V is called ……. Of V if under the operation of V, W itself forms a vector space over F.				C
	A.	Vector	B.	Scalar	
	C.	subspace	D.	None of these	
332)	Let W_1 and W_2 be the two subspaces of vector space V(F). Then V(F) is said to be …… of W_1 and W_2				B
	A.	Sum	B.	Direct Sum	
	C.	subspace	D.	None of these	
333)	The set of all vectors in vector space V(F) which can be written as Linear Combination of $\{v_1,v_2,\dots v_n\}$is denoted by L $\{v_1,v_2,\dots v_n\}$ is called				A
	A.	Linear Span	B.	Direct Sum	
	C.	Subspace	D.	None of these	
334)	$P_n(F)=\{1,x,x^2,\dots x^n\}$ is				B
	A.	Linearly dependent	B.	Linearly Independent	
	C.	Basis	D.	None of these	
335)	The set of polynomials is				C
	A.	Linearly dependent	B.	Basis	
	C.	Linearly Independent	D.	None of these	
336)	If a vector is multiple of other vector in a set. Then it is always				A
	A.	Linearly dependent	B.	Linearly Independent	
	C.	Basis	D.	None of these	

337)	Let {$v_1,v_2,\ldots v_n$} generate the vector space V(F) then for any vector v∈ $V(F)$,the set {$v_1,v_2,\ldots v_n$} is ……. and generate V(F).				B
	A.	Linearly independent	B.	Linearly dependent	
	C.	Basis	D.	None of these	
338)	The number of elements in the basis of a vector space V(F) is called ………. Vector space of V(F)				C
	A.	Linearly independent	B.	Basis	
	C.	Dimension	D.	None of these	
339)	V(R) = C the set of all complex numbers , {1,i} is …… generate V(R) Dim V(R) = 2				C
	A.	Dimension	B.	Linearly dependent	
	C.	Linearly independent	D.	None of these	
340)	If C(C) is a vector space over the field of Complex Number ,then the Basis and dimension is				C
	A.	Dim(C) =1, Basis =2	B.	Dim(C) =2, Basis =1	
	C.	Dim(C) =1, Basis =1	D.	None of these	
341)	A linearly independent set is always a part of …… of V(F)				A
	A.	Basis	B.	Subspace	
	C.	Vector Space	D.	None of these	
342)	If $V = M_{n\times n}(F), Let\ T: M_{n\times n} \to M_{n\times n}\ be\ defined\ by\ T(A) = A^t.T\ is\ a$				A
	A.	Linear Transformation	B.	Range of Linear of Transformation	
	C.	Not a Linear Transformation	D.	None of these	
343)	$T: R^2 \to R^2, T(x,y) = (x+2\ , y+1)\ then\ T\ is$				C
	A.	Linear Transformation	B.	Range of Linear of Transformation	
	C.	Not a Linear Transformation	D.	None of these	
344)	Linear Transformation is called if it is …... then it is called Monomorphism				A
	A.	One -One	B.	Onto	
	C.	One-one and onto	D.	None of these	
345)	Linear Transformation is called if it is …... then it is called Isomorphism				C
	A.	One -One	B.	Onto	
	C.	One-one and onto	D.	None of these	
346)	$Let\ T: V_1 \to V_2\ be\ a\ linear\ transformation\ then\ image\ of\ T\ is\ defined\ as\ R(T) = \{T(V_1 \mid)\ v_1 \in V_1\}\ is\ called$				B
	A.	Linear Transformation	B.	Range of Linear of Transformation	
	C.	Not a Linear Transformation	D.	None of these	
347)	$Let\ V(F)\ be\ a\ vector\ if\ \dim n\ .then$				C
	A.	$V_n(F) = F$	B.	$V_n(F) = F^{n-1}$	
	C.	$V_n(F) = F^n$	D.	None of these	
348)	$Let\ T: V_1 \to V_2\ be\ a\ linear\ transformation\ between\ two\ vector\ space\ V_1(F)\ and\ V_2(F), where\ V_1(F)\ a$ $have\ dimension\ then\ T\ is\ (1-1) iff\ T\ is$				B
	A.	One -One	B.	Onto	
	C.	One-one and onto	D.	None of these	
349)	$Let\ T: V_1 \to V_2\ be\ a\ linear\ transformation\ \ Then\ \ker T\ is\ subspace\ of$ ….				B
	A.	$V_2(F)$	B.	$V_1(F)$	
	C.	R(T)	D.	None of these	
350)	$Let\ T: V_1 \to V_2\ be\ a\ linear\ transformation\ \ Then$ R (T) $is\ subspace\ of$ ….. Where R(T) = Ker of T				A
	A.	$V_2(F)$	B.	$V_1(F)$	
	C.	R(T)	D.	None of these	

351)	$Let\ T: V_1 \to V_2\ \ be\ a\ linear\ \ transformation\ \ Then$ T $\dots\dots. is\ \ Iff\ N(T) = \{0_1\}\ \ \dots.$				A
	A.	One -One	B.	Onto	
	C.	One-one and onto	D.	None of these	
352)	$Let\ T: V_1 \to V_2\ \ be\ a\ linear\ \ transformation\ \ then$				C
	A.	$Dim\ V_1(F) = Nullity\ (T)$	B.	$Dim\ V_1(F) = Nullity\ (T) + Range\ (T)$	
	C.	$Dim\ V_1(F) = Nullity\ (T) + Rank\ (T)$	D.	None of these	
353)	$Let\ \ T : V \to V\ is\ \dots\dots.. Iff\ T^{-1}\ \ exist\ such\ that\ \ TT^{-1} = I$				B
	A.	Singular	B.	Non-singular	
	C.	Bijective	D.	None of these	
354)	$Let\ \ T: V \to V\ be\ a\ linear\ and\ Dim\ V = n\ \ then\ T\ can\ not\ more\ then\ eigen\ values$				B
	A.	n+1	B.	n	
	C.	n-1	D.	None of these	
355)	An $n \times n$ matrix A is …. iff A has n real and distinct eigen values				C
	A.	Similar	B.	Orthogonal	
	C.	Diagonalizable	D.	None of these	
356)	$Is\ G = \{\overline{1}, \overline{2}\ \ , \overline{3}\ \ , \overline{4}\}\ a\ group\ of\ mod 8$				A
	A.	Yes	B.	No	
	C.	Basis	D.	None of these	
357)	$An\ element\ a \in G\ is\ said\ and\ congugate\ to\ b\ \in G\ , if\ there\ exist\ an\ element\ g \in G\ s.t. a = g^{-1}ag$ is called				A
	A.	Conjugate of an element in a group	B.	Self-conjugate of an element in a group	
	C.	Equivalence Relation	D.	None of these	
358)	How many conjugate classes are there I symmetric group S_3				C
	A.	1	B.	2	
	C.	3	D.	None of these	
359)	Every Group of prime order is a				A
	A.	*Cyclic*	*B.*	*Generator*	
	C.	*Center of the group*	*D.*	*None of these*	
360)	*(Q +) is*				B
	A.	*A cyclic group*	*B.*	*Not cyclic group*	
	C.	*Abelian group*	*D.*	*None of these*	
361)	*A cyclic of length 2 is called*				C
	A.	*Permutation*	*B.*	*Combination*	
	C.	*Transposition*	*D.*	*None of these*	
362)	*Each permutation can be expressed as product of*				B
	A.	*Not Cyclic Permutation*	*B.*	*Cyclic Permutation*	
	C.	*Transposition*	*D.*	*None of these*	
363)	$If\ \ group\ is\ abelian\ , then\ what\ will\ be\ N_G(X)$?				A
	A.	$N_G(X)\ =\ \ G$	B.	$N_G(X)\ =\ \ X$	
	C.	$N_G(X)\ =\ \ N$	D.	None of these	
364)	$Let\ \ \emptyset: (Z, +) \to (Z, +) defined\ by\ \emptyset(n) = 2n\ \ \forall\ n \in Z = set\ of\ integers\ \ is\ example\ of$				C
	A.	Isomorphism	B.	Epimorphism	
	C.	Monomorphism	D.	None of these	
365)	$Let\ \ \emptyset: (Z, +) \to (G, .) = \{\pm 1, \pm i\} defined\ by\ \emptyset(n) = i^n\ \ \forall\ n \in Z = set\ of\ integers\ \ is\ example\ of$				B
	A.	*Isomorphism*	*B.*	*Epimorphism*	
	C.	*Monomorphism*	*D.*	*None of these*	

366)	Let $\emptyset: (Z,+) \rightarrow (E,+) = defined\ by\ \emptyset(n) = 2n\ \forall\ n \in Z = set\ of\ integers\ and\ E = Set\ of\ even\ integer\ is\ example\ of$			A
	A. Isomorphism		B. Epimorphism	
	C. Monomorphism		D. None of these	
367)	Every Characteristic subgroup is a			C
	A. Subgroup		B. Invariant	
	C. Normal Subgroup		D. None of these	
368)	When are the subgroups of group its normal subgroup?			B
	A. Left coset ≠ Right Coset		B. Left coset = Right Coset	
	C. Left coset × Right Coset		D. None of these	
369)	If p is prim divisor of a finite group G having order n then G has an element with order p is called			C
	A. Sylow 2nd Theorem		B. Lagrange's Theorem	
	C. Cauchy 2nd order Theorem		D. None of these	
370)	Intersection of two subrings be an			B
	A. Quotient Set		B. Empty Set	
	C. Integer Set		D. None of these	
371)	Every ideal is a			C
	A. Maximal		B. Ring	
	C. Subring		D. None of these	
372)	$R = M_{2\times2}$ be the ring of 2×2 matirces , $R = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$, $I_1 = \begin{pmatrix} r_1 & 0 \\ r_2 & 0 \end{pmatrix}$, $r_1, r_2 \in R$ is			B
	A. Right Ideal		B. Left Ideal	
	C. Sided ideal		D. None of these	
373)	$R = M_{2\times2}$ be the ring of 2×2 matirces , $R = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$, $I_1 = \begin{pmatrix} r_1 & r_2 \\ 0 & 0 \end{pmatrix}$, $r_1, r_2 \in R$ is			A
	A. Right Ideal		B. Left Ideal	
	C. Sided ideal		D. None of these	
374)	Irrational number is a			B
	A. Ring		B. Not Ring	
	C. Ideal ring		D. None of these	
375)	A ring I which the non-zero element form a multiplication group is called			C
	A. Ring		B. Ideal Ring	
	C. Division Ring		D. None of these	
376)	The dimension of the null space is called			D
	A. Ring		B. Ideal Ring	
	C. Division Ring		D. None of these	
377)	Subspace of a Discrete space is			C
	A. Topological Space		B. Indiscrete	
	C. Discrete		D. None of these	
378)	In particular, the open intervals on the real lines are base for the ……..topology.			C
	A. Discrete		B. Indiscrete	
	C. Usual		D. None of these	
379)	Every Compact subsets R^n is ……..			A
	A. Closed and bounded		B. Closed and Continuous	
	C. Open and interior		D. None of these	
380)	The continouse image of a conected space is			C
	A. Discrete		B. Disconnected	

	C.	*Connected*	D.	*None of these*	

381)	Which of the following is the degree of the differential equation $\frac{d^2x}{dt^2}+2x^3=0$?				C
	A.	0	B.	1	
	C.	2	D.	3	
382)	The order and degree of differential equation $\frac{d^3x}{dt^3}+4\sqrt{\left(\frac{dy}{dx}\right)^3+y^2}=0$ are respectively				A
	A.	3 and 2	B.	2 and 3	
	C.	3 and 3	D.	3 and 1	
383)	The differential equation $2\frac{dy}{dx}+x^2y=2x+3$ is				A
	A.	Linear	B.	Non-Linear	
	C.	Linear with fixed constants	D.	Undetermined to be linear or non-linear	
384)	Which of the following is the solution of the differential equation $\frac{dy}{dt}=5y;\ \ y(0)=2$				D
	A.	$y=5e^{-5t}$	B.	$y=2e^{-10}$	
	C.	$y=3e^{-5t}$	D.	$y=2e^{5t}$	
385)	The order and degree of differential equation $3\frac{d^2y}{dt^2}+4\left(\frac{dy}{dx}\right)^3+y^4=e^{-t}$ are respectively				A
	A.	2 and 1	B.	1 and 2	
	C.	4 and 3	D.	2 and 3	
386)	A differential equation is said to be ordinary differential equation if it has				C
	A.	one dependent variable	B.	More than one dependent variables	
	C.	one independent variable	D.	More than one dependent variables	
387)	Which of the following is the trivial solution of a differential equation.				A
	A.	$y\equiv 0$	B.	$y\propto 0$	
	C.	$y\neq 0$	D.	$y\approx 0$	
388)	The differential equation $x^2\frac{dy}{dx}-2xy=\sin x$ is defined for				D
	A.	$(0,\infty)$	B.	$(0,1)\cup(1,\infty)$	
	C.	$(-\infty,0)\cup(1,\infty)$	D.	$(-\infty,\infty)$	
389)	The differential equation $y''+\frac{1}{x}y=\frac{1}{x^2-4}$ is defined for				D
	A.	$(0,\infty)$	B.	$(0,1)\cup(1,\infty)$	
	C.	$(-\infty,\infty)$	D.	All real line except 0,2 and -2	
390)	Which of the following is the solution of the differential equation $x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}-y=0$				C
	A.	$y=Ax+B$	B.	$y=Ax^2+Bx$	
	C.	$y=Ax+\frac{B}{x}$	D.	$y=\frac{A}{x}+Bx$	
391)	The solution of a differential equation which is not obtained from the general solution is known as				B

	A.	Particular solution	B.	Singular solution	
	C.	Complete solution	D.	Auxiliary solution	
392)	The differential equation $\frac{dy}{dx} = y^2$ is:				B
	A.	Linear	B.	Non-Linear	
	C.	Quasi Linear	D.	None of these	
393)	The equation $a_0x^2y'' + a_1xy' + a_2y = \varphi(x)$ is called:				B
	A.	Legendre's linear equation	B.	Cauchy's linear equation	
	C.	Simultaneous equation	D.	None of these	
394)	Which of the following is wronskian of $\cos\theta$ and $\sin\theta$?				A
	A.	1	B.	$\sin\theta$	
	C.	$\cos\theta$	D.	None of these	
395)	Which of the following is wronskian of x, x^2 and x^3?				B
	A.	$2x$	B.	$2x^3$	
	C.	2	D.	None of these	
396)	Which of the following is wronskian of x^2, x^3 and x^{-2}?				C
	A.	$20x$	B.	$20x^2$	
	C.	20	D.	None of these	
397)	Which of the following is wronskian of $e^x, 2e^x$ and e^{-x}?				C
	A.	1	B.	e^x	
	C.	0	D.	None of these	
398)	$\sin 2x$ and $\cos 2x$ are				A
	A.	Linearly Independent	B.	Linearly dependent	
	C.	Singular	D.	None of these	
399)	Which of the following is the differential equation of all the circles passing through origin having centers on x-axis.				A
	A.	$2xy\frac{dy}{dx} + x^2 - y^2 = 0$	B.	$2xy\frac{dy}{dx} + x^2 = 0$	
	C.	$\frac{dy}{dx} + x^2 - y^2 = 0$	D.	None of these	
400)	If a differential equation $\frac{dy}{dx} = f(x,y)$ can be written in the form of $g(y)dy = f(x)dx$ then it is called				D
	A.	Exact	B.	Linear	
	C.	Non-exact	D.	Separable	
401)	Which of the following is the solution of $\frac{dy}{dx} = 8x^3y^2$?				A
	A.	$y = \frac{-1}{2x^4 + c}$	B.	$y = 2x^4 + c$	
	C.	$y = 2x + c$	D.	None of these	
402)	Which of the following is the solution of $\frac{dy}{dx} = 1 + y^2$?				C
	A.	$y = \sin(x) + c$	B.	$y = \sin^{-1}(x) + c$	
	C.	$y = \tan(x + c)$	D.	None of these	
403)	Which of the following is the solution of $\frac{dy}{dx} = 2y$?				B
	A.	$y = ce^x$	B.	$y = ce^{2x}$	
	C.	$y = e^x + c$	D.	None of these	
404)	Which of the following is the solution of $\frac{dy}{dx} = x\sqrt{1 - y^2}$?				B

	A.	$y=\cos\left(\frac{x^2}{2}+c\right)$	B.	$y=\sin\left(\frac{x^2}{2}+c\right)$	
	C.	$y=\cos(x+c)$	D.	None of these	
405)	A differential equation that can be put in the form of $\frac{dy}{dx}=f\left(\frac{y}{x}\right)$ is known as				D
	A.	Separable	B.	Exact	
	C.	Non Exact	D.	Homogenous	
406)	A differential equation $\frac{dy}{dx}=\frac{y}{x}-\frac{y^3}{x^3}$ is known as				D
	A.	Separable	B.	Exact	
	C.	Non Exact	D.	Homogenous	
407)	A differential equation $\frac{dy}{dx}=\frac{y}{x}+e^{y/x}$ is known as				D
	A.	Separable	B.	Exact	
	C.	Non Exact	D.	Homogenous	
408)	A differential equation $M(x,y)dx+N(x,y)dy=0$ is exact if				A
	A.	$\frac{\partial M}{\partial y}=\frac{\partial N}{\partial x}$	B.	$\frac{\partial M}{\partial y}\neq\frac{\partial N}{\partial x}$	
	C.	$\frac{\partial M}{\partial x}=\frac{\partial N}{\partial y}$	D.	None of these	
409)	$du=\frac{\partial u}{\partial x}dx+\frac{\partial u}{\partial y}dy$ is known as				A
	A.	Exact differential	B.	Laplace differential	
	C.	Homogenous differential	D.	None of these	
410)	The differential equation $-ydx+xdy=0$ is				D
	A.	Separable	B.	Exact	
	C.	Non-Exact	D.	A and C both	
411)	Which of the following integrating factor can be multiplied by $-ydx+xdy=0$ to make it exact?				C
	A.	x^2	B.	e^x	
	C.	$\frac{1}{x^2}$	D.	None of these	
412)	If a differential equation $M(x,y)dx+N(x,y)dy=0$ is not exact and $\frac{M_y-N_x}{N}=f(x)$ then integrating factor is				A
	A.	$e^{\int f(x)dx}$	B.	e^x	
	C.	$\int f(x)dx$	D.	None of these	
413)	The solution of an exact differential equation $(3x^2y^2+2xy)dx+(2x^3y+x^2)dy=0$ is				A
	A.	$x^3y^2+x^2y=C$	B.	$x^3y^2+y=C$	
	C.	$xy^2+x^2y=C$	D.	None of these	
414)	The differential equation $(x^4+y^4)dx-xy^3dy=0$ is				C
	A.	Linear	B.	Exact	
	C.	Homogenous	D.	None of these	
415)	A differential equation $\frac{dy}{dx}+2y=6e^x$ is				A
	A.	Linear	B.	Non-linear	
	C.	Homogenous	D.	None of these	

416)	A differential equation $\frac{dy}{dx}+\frac{2}{x}y=9$ is				A
	A.	Linear	B.	Non-linear	
	C.	Homogenous	D.	None of these	
417)	A differential equation $\frac{dy}{dx}+y=5x$ is				A
	A.	Linear	B.	Non-linear	
	C.	Homogenous	D.	None of these	
418)	A differential equation $\frac{dy}{dx}+3xy=\sin x$ is				A
	A.	Linear	B.	Non-linear	
	C.	Homogenous	D.	None of these	
419)	A differential equation $\frac{dy}{dx}+3xy^2=\sin x$ is				B
	A.	Linear	B.	Non-linear	
	C.	Homogenous	D.	None of these	
420)	What is the solution of a linear differential equation $\frac{dy}{dx}+2xy=2e^{-x^2}$ with integrating factor e^{x^2} ?				D
	A.	$y=(2x+c)e^{x}$	B.	$y=(x^2+c)e^{-x^2}$	
	C.	$y=ce^{-x^2}$	D.	$y=(2x+c)e^{-x^2}$	
421)	A differential equation $\frac{dx}{dy}+\frac{2}{y}x=10y^2$ is				A
	A.	Linear	B.	Non-linear	
	C.	Homogenous	D.	None of these	
422)	A differential equation $x\frac{dy}{dx}+y=xy^3$ is				B
	A.	Linear	B.	Bernouli	
	C.	Homogenous	D.	None of these	
423)	A differential equation $\frac{dy}{dx}=\frac{1}{x}y^2+\frac{1}{x}y-\frac{2}{x}$ is				D
	A.	Linear	B.	Bernouli	
	C.	Homogenous	D.	Riccati	
424)	Which of the following is the solution of $\frac{e^y}{1+e^y}dy=\frac{2x}{1+x^2}dx$				A
	A.	$1+e^y=C(1+x^2)$	B.	$y=C(1+x^2)$	
	C.	$e^y=C(1+x^2)$	D.	None of these	
425)	The solution of an exact differential equation $(3x^2+y\cos x)dx+(\sin x-4y^3)dy=0$ is				A
	A.	$x^3+y\sin x-y^4=C$	B.	$y\sin x-y^4=C$	
	C.	$x^3+y\sin x-y^4=y$	D.	None of these	
426)	What should be I.F of a non-exact differential equation $(6x^2+4y^3+12y)dx+(3x+3xy^2)dy=0$ to be an exact?				D
	A.	$1/x$	B.	e^x	
	C.	x	D.	x^3	
427)	What should be I.F of a non-exact differential equation $(2x^2y^2+e^xy)dx-(e^x+y^3)dy=0$ to be an exact?				D
	A.	1 / y	B.	y^2	
	C.	$1/x$	D.	$1/y^2$	

428)	What should be I.F of a linear differential equation $\frac{dx}{dy}+\frac{1}{y\ln y}x=\frac{1}{y}$?				B
	A.	$1/y$	B.	$\ln y$	
	C.	$1/x$	D.	$1/y^2$	
429)	What will be particular solution if general solution of an ODE is $y=\frac{1}{4}+Ce^{-x^4}$ using $y(0)=1$?				A
	A.	$y=\frac{1}{4}-\frac{5}{4}e^{-x^4}$	B.	$y=\frac{1}{4}+5e^{-x^4}$	
	C.	$y=4-5e^{-x^4}$	D.	None of these	
430)	Determine the order and degree of the differential equation $2x\frac{d^4y}{dx^4}+5x^2\left(\frac{dy}{dx}\right)^3-xy=0$.				A
	A.	Fourth order first degree	B.	Fourth order third degree	
	C.	First order first degree	D.	Third order fourth degree	
431)	Which of the following is the exact differential equation?				C
	A.	$\left(x^2+1\right)dx-xydy=0$	B.	$xdy+\left(3x-2y\right)dx=0$	
	C.	$2xydx+\left(2+x^2\right)dy=0$	D.	$x^2ydy-ydx=0$	
432)	Which of the following is the variable separable equation?				C
	A.	$\left(x+x^2y\right)dy=\left(2x+xy^2\right)dx$	B.	$\left(x+y\right)dx-2ydy=0$	
	C.	$2ydx=\left(x^2+1\right)dy$	D.	$y^2dx+\left(2x-3y\right)dy=0$	
433)	The equation $y^2=cx$ is a general solution of				D
	A.	$\frac{dy}{dx}=\frac{2y}{x}$	B.	$\frac{dy}{dx}=\frac{2x}{y}$	
	C.	$\frac{dy}{dx}=\frac{x}{2y}$	D.	$\frac{dy}{dx}=\frac{y}{2x}$	
434)	If $dy=x^2dx$ then what is the equation of y in terms of x if the curve passes through (1,1)?				B
	A.	$x^2-3y+3=0$	B.	$x^3-3y+2=0$	
	C.	$x^3+3y^2+2=0$	D.	$2y+x^3+2=0$	
435)	What is the differential equation of the family of lines passing through origin?				B
	A.	$ydx-xdy=0$	B.	$xdy-ydx=0$	
	C.	$xdx+ydy=0$	D.	$ydx+xdy=0$	
436)	What is the differential equation of the family of parabolas having their vertices at the origin and their foci on the x-axis?				A
	A.	$2xdy-ydx=0$	B.	$xdy+ydx=0$	
	C.	$2ydx-xdy=0$	D.	$\frac{dy}{dx}-x=0$	
437)	What will be the particular integral of the differential equation $\left(D^2+4\right)y=\sin 3x$?				D
	A.	$\sin 3x$	B.	$-\cos 3x$	
	C.	$\frac{-\cos 3x}{5}$	D.	$\frac{-\sin 3x}{5}$	
438)	What will be the particular integral of the differential equation $\left(D^2+1\right)y=\sin 2x$?				D
	A.	$\sin 2x$	B.	$-\cos 2x$	
	C.	$\frac{-\cos 2x}{5}$	D.	$\frac{\sin 2x}{9}$	
439)	What will be the particular integral of the differential equation $\left(D^2+2D+3\right)y=\cos 2x$?				C
	A.	$\sin 2x-\cos 2x$	B.	$-\cos 2x+17\sin 2x$	

	C.	$\frac{1}{17}(4\sin 2x-\cos 2x)$	D.	$\frac{\sin 2x}{9}-\frac{\cos 2x}{17}$	
440)	What will be the particular integral of the differential equation $(D^3+D^2+2D-1)y=\cos 2x$?				C
	A.	$\sin 2x-\cos 2x$	B.	$-\cos 2x+17\sin 2x$	
	C.	$-\frac{1}{41}(4\sin 2x+5\cos 2x)$	D.	$\frac{\sin 2x}{9}-\frac{\cos 2x}{17}$	
441)	The general solution of $y''+y'-2y=0$ is				A
	A.	$y=c_1e^{x}+c_2e^{-2x}$	B.	$y=c_1e^{2x}+c_2e^{-2x}$	
	C.	$y=c_1e^{x}+c_2e^{-x}$	D.	None of these	
442)	The general solution of $y''-4y'+4y=0$ is				B
	A.	$y=c_1e^{x}+c_2e^{-2x}$	B.	$y=(c_1+c_2x)e^{2x}$	
	C.	$y=c_1e^{x}+c_2e^{-x}$	D.	None of these	
443)	The general solution of $y''+y'-2y=0$ is				A
	A.	$y=e^{-x}\left(c_1\cos\sqrt{2}x+c_2\sin\sqrt{2}x\right)$	B.	$y=e^{-2x}\left(c_1\cos\sqrt{3}x+c_2\sin\sqrt{3}x\right)$	
	C.	$y=c_1e^{x}+c_2e^{-x}$	D.	None of these	
444)	What will be form of y_p while solving $y''-5y'+4y=8e^{x}$ by UC method?				A
	A.	Axe^{x}	B.	Ae^{x}	
	C.	Ax^2e^{x}	D.	None of these	
445)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=1$ by UC method?				A
	A.	A	B.	Ae^{x}	
	C.	Ax^2e^{x}	D.	None of these	
446)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=5x+7$ by UC method?				B
	A.	A	B.	$Ax+B$	
	C.	Ax^2e^{x}	D.	None of these	
447)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=3x^2-2$ by UC method?				C
	A.	A	B.	$Ax+B$	
	C.	Ax^2+Bx+C	D.	None of these	
448)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=3x^3-2x$ by UC method?				A
	A.	Ax^3+Bx^2+Cx+E	B.	$Ax+B$	
	C.	Ax^2+Bx+C	D.	None of these	
449)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=\sin 5x$ by UC method?				C
	A.	$A\cos x$	B.	$A\sin x+B$	
	C.	$A\cos 5x+B\sin 5x$	D.	None of these	
450)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=\cos 5x$ by UC method?				C
	A.	$A\cos x$	B.	$A\sin x+B$	
	C.	$A\cos 5x+B\sin 5x$	D.	None of these	
451)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=e^{3x}$ by UC method?				C
	A.	$A\cos x$	B.	$Ae^{3x}+B$	
	C.	Ae^{3x}	D.	None of these	
452)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=xe^{3x}$ by UC method?				B
	A.	$A\cos x$	B.	$(Ax+B)e^{3x}$	
	C.	Ae^{3x}	D.	None of these	
453)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=x^2e^{3x}$ by UC method?				C

	A.	$A\cos x$	B.	$(Ax+B)e^{3x}$	
	C.	$(Ax^2+Bx+C)e^{3x}$	D.	None of these	
454)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=e^{3x}\sin 4x$ by UC method?				C
	A.	$A\cos 4xe^{3x}$	B.	$(Ax+B)e^{3x}$	
	C.	$(A\cos 4x+B\sin 4x)e^{3x}$	D.	None of these	
455)	What will be form of y_p while solving $a_2y''+a_1y'+a_0y=5x^2\sin 4x$ by UC method?				C
	A.	$A\cos 4xe^{3x}$	B.	$(Ax+B)e^{3x}$	
	C.	$(Ax^2+Bx+C)\cos 4x+(Cx^2+Ex+F)\sin 4x$	D.	None of these	
456)	What is y_2 if $y_1=x^2$ is a solution of $x^2y''-3xy'+4y=0$?				B
	A.	$A\cos 4xe^{3x}$	B.	$x^2\ln x$	
	C.	$4x^3$	D.	None of these	
457)	What is y_2 if $y_1=e^{2x}$ is a solution of $y''-4y'+4y=0$?				A
	A.	xe^{2x}	B.	$x^2\ln x$	
	C.	$4x^3$	D.	None of these	
458)	What is y_2 if $y_1=\cos 4x$ is a solution of $y''+16y=0$?				A
	A.	$\sin 4x$	B.	$x^2\ln x$	
	C.	$4x^3$	D.	None of these	
459)	What is y_2 if $y_1=\cosh x$ is a solution of $y''-y=0$?				C
	A.	$\sin 4x$	B.	$x^2\ln x$	
	C.	$\sinh x$	D.	None of these	
460)	What is y_2 if $y_1=\ln x$ is a solution of $xy''+y'=0$?				D
	A.	$\sin 4x$	B.	$x^2\ln x$	
	C.	$\sinh x$	D.	1	
461)	The partial differential equation $\frac{\partial u}{\partial t}+u\frac{\partial u}{\partial x}=\frac{\partial^2 u}{\partial x^2}$ is a				D
	A.	Linear equation of order 2	B.	Non-linear equation of order 1	
	C.	Linear equation of order 1	D.	Non-linear equation of order 2	
462)	The order of the differential equation $(\frac{d^2y}{dt^2})+\left(\frac{dy}{dt}\right)^3+y^4=e^{-t}$ is				B
	A.	1	B.	2	
	C.	3	D.	4	
463)	The differential equation $\frac{d^2y}{dx^2}$ + 16y=0 for y(x) with two boundary conditions $\frac{dy}{dx}(x=0)=1$ and $\frac{dy}{dx}$ (x=$\frac{\pi}{2}$)=-1 has				A
	A.	No solution	B.	Exactly one solution	
	C.	Exactly two solutions	D.	Infinitely many solutions	
464)	A differential equation is considered to be ordinary if it has				
465)	A.	one dependent variable	B.	more than one dependent variable	C
466)	C.	one independent variable	D.	more than one independent variable	
467)	PDE has independent variable				D
	A.	0	B.	1	
	C.	Less than 1	D.	More than 1	
468)	In homogeneous first order linear constant coefficient ordinary DE is				C
	A.	$\frac{\partial u}{\partial x}$=0	B.	$cu+x^2$=0	
	C.	$\frac{\partial u}{\partial x}$ =cu+x^2	D.	$\frac{\partial u}{\partial x}=\frac{c}{u}+x^2$	
469)	The P.D.E $\frac{\partial^2 U}{\partial x^2}+\frac{\partial^2 U}{\partial y^2}=f(x,y)$; is known as				A

	A.	laplace equation	B.	heat equation	
	C.	poission equation	D.	wave equation	
470)	The solution of a differential equation which is not obtained from the general solution is known as:				B
	A.	Particular solution	B.	Singular solution	
	C.	Complete solution	D.	Auxiliary solution	
471)	The differential equation $\frac{dy}{dx}$ = y^2 is				B
	A.	Linear	B.	Non-linear	
	C.	Quasilinear	D.	None of these	
472)	The DE formed by y= acosx+bcosx+4 where a and b are arbitrary constants is:				C
	A.	$(\frac{d^2y}{dx^2})$+y=0	B.	$(\frac{d^2y}{dx^2})$-y=0	
	C.	$(\frac{d^2y}{dx^2})$+y=4	D.	$(\frac{d^2y}{dx^2})$-y=4	
473)	The equation $a_0 x^2y''+a_1 xy'+a_2y=\varphi(x)$ is called:				B
	A.	Legendre's linear equation	B.	Cauchy's linear equation	
	C.	Simultaneous equation	D.	Method of undetermined coefficients	
474)	Solution of the DE $\frac{dy}{dx}$=sin(x+y)+ cos(x+y), is				D
	A.	Log|1+tan$\frac{(x+y)}{2}$|=y+c	B.	Log|2+sec$\frac{(x+y)}{2}$|=x+c	
	C.	Log |1+tan(x+y)|=y+c	D.	None of these	
475)	If y=a cos (log x)+ b sin (log x), then				B
	A.	$x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} + y=0$	B.	$x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} + y=0$	
	C.	$x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} - y=0$	D.	none of these	
476)	If y=sin(a $\sin^{-1} x$), then				A
	A.	$(1-x^2)\frac{d^2y}{dx^2} - x\frac{dy}{dx} + a^2 y=0$	B.	$(1-x^2)\frac{d^2y}{dx^2} + x\frac{dy}{dx} - a^2 y=0$	
	C.	$(1-x^2)\frac{d^2y}{dx^2} - x\frac{dy}{dx} - a^2 y=0$	D.	None of these	
477)	The DE of the family of curves y^2= 4a(x+a) is				B
	A.	$y^2=4\frac{dy}{dx}(x+\frac{dy}{dx})$	B.	$y^2(\frac{dy}{dx})^2+2xy\frac{dy}{dx} - y^2=0$	
	C.	$y^2\frac{dy}{dx}$ + 4y=0	D.	$2y\frac{dy}{dx}$ + 4a=0	
478)	Inverse derivative of sin x is				A
	A.	$\frac{1}{\sqrt{1-x^2}}$	B.	$\frac{1}{\sqrt{1+x^2}}$	
	C.	$\frac{-1}{\sqrt{1-x^2}}$	D.	None of these	
479)	Inverse derivative of cos x is				C
	A.	$\frac{1}{\sqrt{1-x^2}}$	B.	$\frac{1}{\sqrt{1+x^2}}$	
	C.	$\frac{-1}{\sqrt{1-x^2}}$	D.	None of these	
480)	If y=$\tan^{-1} x^{3/2}$, then $\frac{dy}{dx} =$				A
	A.	$\frac{3\sqrt{x}}{2(1+x^3)}$	B.	$\frac{2\sqrt{x}}{(1+x^3)}$	
	C.	$\frac{3\sqrt{x}}{2(1-x^3)}$	D.	None of these	
481)	The equation of the curves, satisfying the DE $\frac{d^2y}{dx^2}(x^2+1) = 2x\frac{dy}{dx}$ passing through the point (0,1) and having the slope of tangent at x=0 as 6 is				B
	A.	$y^2 = 2x^3 + 6x + 1$	B.	$y = 2x^3 + 6x + 1$	
	C.	$y^2 = x^3 + 6x + 1$	D.	None of these	
482)	A particle, initially at origin moves along x-axis according to the rule $\frac{dx}{dt}$ = x+4. The time taken by the particle to traverse a distance of 96 units is:				C

	A.	$\ln 5$	B.	$\log_5 e$	
	C.	$2 \ln 5$	D.	None of these	
483)	If y=$\cos^{-1}(\ln x)$, then the value of $\frac{dy}{dx}$ is				B
	A.	$\frac{1}{x\sqrt{1-(\ln x)^2}}$	B.	$\frac{-1}{x\sqrt{1-(\ln x)^2}}$	
	C.	$\frac{-1}{x\sqrt{1+(\ln x)^2}}$	D.	None of these	
484)	If x=2 $\ln \cot(t)$ and y= tan(t) + cot(t), the value of $\frac{dy}{dx}$ is				A
	A.	cot(2t)	B.	tan(2t)	
	C.	cos(2t)	D.	sec(2t)	
485)	Solution of the DE ln($\frac{dy}{dx}$)= ax + by is				A
	A.	$-\frac{1}{b}e^{-by} = \frac{1}{a}e^{ax} + c$	B.	$\frac{1}{b}e^{-by} = \frac{1}{a}e^{ax} + c$	
	C.	$\frac{1}{b}e^{-by} = -\frac{1}{a}e^{ax} + c$	D.	$-\frac{1}{b}e^{-by} = -\frac{1}{a}e^{ax} + c$	
486)	If the general solution of a differential equation is $(y+c)^2$=cx, where c is an arbitrary constant, then the order and degree of differential equation is				A
	A.	1, 2	B.	2, 1	
	C.	1, 3	D.	None of these	
487)	Solution of ($x^2 \sin^3 y - y^2 \cos x$) dx + ($x^3 \cos y \sin^2 y - 2y \sin x$) dy = 0 is				C
	A.	($X^3 \sin^3 y/3$) = c	B.	$x^3 \sin^3 y = y^2 \sin x + c$	
	C.	($X^3 \sin^3 y/3$)= $y^2 \sin x$ +c	D.	None of these	
488)	Solution of $\frac{x\,dy}{x^2+y^2} = (\frac{y}{x^2+y^2} - 1)$dx is				C
	A.	$x - \tan^{-1}\frac{y}{x}$	B.	$\tan^{-1}\frac{y}{x} = c$	
	C.	$x \tan^{-1}\frac{y}{x} = c$	D.	None of these	
489)	Solution of $(y + x^{\sqrt{xy}}(x+y))dx + (y^{\sqrt{xy}}(x+y) - x)dy = 0$ is				D
	A.	$x^2 + y^2 = 2\tan^{-1}\sqrt{\frac{y}{x}} + c$	B.	$x^2 + y^2 = 4\tan^{-1}\sqrt{\frac{y}{x}} + c$	
	C.	$x^2 + y^2 = \tan^{-1}\sqrt{\frac{y}{x}} + c$	D.	None of these	
490)	Solution of the DE $\frac{dy}{dx} + 2xy = y$ is				
	A.	$y = ce^{x-x^2}$	B.	$y = ce^{x^2} - x$	
	C.	$y = ce^{x}$	D.	None of these	
491)	Solution of the differential equation $\frac{dy}{dx} = \sin(x+y) + \cos(x+y)$, is				D
	A.	log $\lvert 1 + \tan\frac{(x+y)}{2} \rvert$ = y + c	B.	log $\lvert 2 + \sec\frac{(x+y)}{2} \rvert$ = x + c	
	C.	log $\lvert 1 + \tan(x+y) \rvert$ = y + c	D.	None of these	
492)	The Blasius equation $\frac{d^3 f}{d\eta^3} + \frac{f}{2}\frac{d^2 f}{d\eta^2} = 0$ is a				B
	A.	Second order non-linear differential equation	B.	Third order non-linear ordinary differential equation	
	C.	Third order linear ordinary differential equation	D.	Mixed order non-linear ODE	
493)	The general solution of DE $\frac{dy}{dx} = \cos(x+y)$with c as a constant is				D
	A.	$y + \sin(x+y) = x + c$	B.	$\tan\left(\frac{x+y}{2}\right) = y + c$	
	C.	$\cos\left(\frac{x+y}{2}\right) = x + c$	D.	$\tan\left(\frac{x+y}{2}\right) = x + c$	
494)	The solution of the initial value problem $\frac{dy}{dx} = -2xy; y(0) = 2$ is				B
	A.	$1 + e^{-x^2}$	B.	$2e^{-x^2}$	
	C.	$1 + e^{x^2}$	D.	$2e^{x^2}$	
495)	The solution of ODE $\frac{d^2 y}{dx^2} + \frac{dy}{dx} - 6y = 0$ is				A

	A.	$y = c_1 e^{-3x} + c_2 e^{2x}$	B.	$y = c_1 e^{3x} + c_2 e^{2x}$	
	C.	$y = c_1 e^{3x} + c_2 e^{-2x}$	D.	$y = e^{-3x} + e^{2x}$	
496)	The solution for the differential equation $\frac{dy}{dx} = x^2 y$ with two condition that y=1 at x=0				C
	A.	$2e^{\frac{x^2}{2}}$	B.	$3e^{\frac{x}{2}}$	
	C.	$e^{\frac{x^2}{2}}$	D.	$3e^{\frac{x^2}{2}}$	
497)	The solution of $\frac{dy}{dx} = -\frac{x}{y}$ with initial condition y(1)=$\sqrt{3}$ is				C
	A.	$x^3 + y^3 = 4$	B.	$y = 4ax$	
	C.	$x^2 + y^2 = 4$	D.	None of these	
498)	If $L\{f(t)\} = \int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{1\}$?				A
	A.	$\frac{1}{s}$	B.	$\frac{1}{s^2}$	
	C.	s	D.	None of these	
499)	If $L\{f(t)\} = \int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{t\}$?				B
	A.	$\frac{1}{s}$	B.	$\frac{1}{s^2}$	
	C.	s	D.	None of these	
500)	If $L\{f(t)\} = \int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{t^n\}$?				C
	A.	$\frac{1}{s}$	B.	$\frac{1}{s^2}$	
	C.	$\frac{n!}{s^{n+1}}$	D.	None of these	
501)	If $L\{f(t)\} = \int_0^\infty e^{-st} f(t)\,dt$, then what is $L\left\{\frac{1}{\sqrt{\pi t}}\right\}$?				A
	A.	$\frac{1}{\sqrt{s}}$	B.	$\frac{1}{s^2}$	
	C.	$\frac{n!}{s^{n+1}}$	D.	None of these	
502)	If $L\{f(t)\} = \int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{te^{at}\}$?				C
	A.	$\frac{1}{\sqrt{s}}$	B.	$\frac{1}{s^2}$	
	C.	$\frac{1}{(s-a)^2}$	D.	None of these	
503)	If $L\{f(t)\} = \int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{\cos at\}$?				B
	A.	$\frac{1}{\sqrt{s}}$	B.	$\frac{s}{s^2 + a^2}$	
	C.	$\frac{1}{(s-a)^2}$	D.	None of these	
504)	If $L\{f(t)\} = \int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{\cosh at\}$?				B

	A.	$\frac{1}{\sqrt{s}}$	B.	$\frac{s}{s^2-a^2}$	
	C.	$\frac{1}{(s-a)^2}$	D.	None of these	
505)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$, then what is $L\{e^{at}\sin bt\}$?				A
	A.	$\frac{b}{(s-a)^2+b^2}$	B.	$\frac{s}{s^2-a^2}$	
	C.	$\frac{a}{(s-a)^2+b^2}$	D.	None of these	
506)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$, then what is $L\{t\sin at\}$?				C
	A.	$\frac{b}{(s-a)^2+b^2}$	B.	$\frac{s}{s^2-a^2}$	
	C.	$\frac{2as}{(s^2+a^2)^2}$	D.	None of these	
507)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$, then what is $L\{1-\cos at\}$?				A
	A.	$\frac{a^2}{s(s^2+a^2)}$	B.	$\frac{s}{s^2-a^2}$	
	C.	$\frac{2as}{(s^2+a^2)^2}$	D.	None of these	
508)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$, then what is $L\{t^\alpha\},\alpha>-1$?				A
	A.	$\frac{\Gamma(\alpha+1)}{s^{n+1}}$	B.	$\frac{\alpha}{s^2-\alpha^2}$	
	C.	$\frac{2as}{(s^2+a^2)^2}$	D.	None of these	
509)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$, then what is $L\{e^{at}\}$?				C
	A.	$\frac{a^2}{s(s^2+a^2)}$	B.	$\frac{s}{s^2-a^2}$	
	C.	$\frac{1}{(s-a)}$	D.	None of these	
510)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$, then what is $L\{\sin at\}$?				B
	A.	$\frac{a^2}{s(s^2+a^2)}$	B.	$\frac{a}{s^2+a^2}$	
	C.	$\frac{1}{(s-a)}$	D.	None of these	
511)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$, then what is $L\{\sinh at\}$?				B

	A.	$\frac{a^2}{s\left(s^2+a^2\right)}$	B.	$\frac{a}{s^2-a^2}$	
	C.	$\frac{1}{(s-a)}$	D.	None of these	
512)	If $L\{f(t)\}=\int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{t^n e^{at}\}$?				C
	A.	$\frac{a^2}{s\left(s^2+a^2\right)}$	B.	$\frac{a}{s^2-a^2}$	
	C.	$\frac{n!}{(s-a)^{n+1}}$	D.	None of these	
513)	If $L\{f(t)\}=\int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{e^{at}\cos bt\}$?				B
	A.	$\frac{a^2}{s\left(s^2+a^2\right)}$	B.	$\frac{s-a}{(s-a)^2+b^2}$	
	C.	$\frac{n!}{(s-a)^{n+1}}$	D.	None of these	
514)	If $L\{f(t)\}=\int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{\mathrm{t\,cosa}\,t\}$?				A
	A.	$\frac{s^2-a^2}{\left(s^2+a^2\right)^2}$	B.	$\frac{s-a}{(s-a)^2+b^2}$	
	C.	$\frac{n!}{(s-a)^{n+1}}$	D.	None of these	
515)	If $L\{f(t)\}=\int_0^\infty e^{-st} f(t)\,dt$, then what is $L\left\{\int_0^t f(u)\,du\right\}$?				C
	A.	$\frac{s^2-a^2}{\left(s^2+a^2\right)^2}$	B.	$\frac{s-a}{(s-a)^2+b^2}$	
	C.	$\frac{1}{s}F(s)$	D.	None of these	
516)	If $L\{f(t)\}=\int_0^\infty e^{-st} f(t)\,dt$, then what is $L\left\{\frac{f(t)}{t}\right\}$?				B
	A.	$\frac{s^2-a^2}{\left(s^2+a^2\right)^2}$	B.	$\int_s^\infty F(u)\,du$	
	C.	$\frac{1}{s}F(s)$	D.	None of these	
517)	If $L\{f(t)\}=\int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{f'(t)\}$?				A
	A.	$sF(s)-f(0)$	B.	$\int_s^\infty F(u)\,du$	
	C.	$\frac{1}{s}F(s)$	D.	None of these	
518)	If $L\{f(t)\}=\int_0^\infty e^{-st} f(t)\,dt$, then what is $L\{at-\sin t\}$?				B

	A.	$sF(s)-f(0)$	B.	$\frac{a^3}{s^2(s^2+a^2)}$	
	C.	$\frac{1}{s}F(s)$	D.	None of these	
519)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$, then what is $L\{\cosh at-\cos at\}$?				C
	A.	$sF(s)-f(0)$	B.	$\frac{a^3}{s^2(s^2+a^2)}$	
	C.	$\frac{2a^2s}{s^4-a^4}$	D.	None of these	
520)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$ and $L^{-1}\{F(s)\}=f(t)$ then what is $L^{-1}\{F(s-a)\}$?				A
	A.	$e^{at}f(t)$	B.	$\frac{a^3}{s^2(s^2+a^2)}$	
	C.	$\frac{2a^2s}{s^4-a^4}$	D.	None of these	
521)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$ and $L^{-1}\{F(s)\}=f(t)$ then what is $L^{-1}\{F(cs)\}$?				B
	A.	$e^{at}f(t)$	B.	$\frac{1}{c}f\left(\frac{t}{c}\right)$	
	C.	$\frac{2a^2s}{s^4-a^4}$	D.	None of these	
522)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$ and $L^{-1}\{F(s)\}=f(t)$ then what is $L^{-1}\{F^{(n)}(s)\}$?				C
	A.	$e^{at}f(t)$	B.	$\frac{1}{c}f\left(\frac{t}{c}\right)$	
	C.	$(-1)^n t^n f(t)$	D.	None of these	
523)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$ and $L^{-1}\{F(s)\}=f(t)$ then what is $L^{-1}\left\{\frac{F(s)}{s}\right\}$?				C
	A.	$e^{at}f(t)$	B.	$\frac{1}{c}f\left(\frac{t}{c}\right)$	
	C.	$\int_0^t f(u)\,du$	D.	None of these	
524)	If $L\{f(t)\}=\int_0^\infty e^{-st}f(t)\,dt$ and $L^{-1}\{F(s)\}=f(t)$ then what is $L^{-1}\{e^{-as}F(s)\}$?				B
	A.	$e^{at}f(t)$	B.	$u_a(t)f(t-a)$	
	C.	$\int_0^t f(u)\,du$	D.	None of these	
525)	The solution of $(D^2+4D+3)y=0$ is				A
	A.	$y=c_1e^{-x}+c_2e^{-3x}$	B.	$y=c_1e^{-4x}+c_2e^{-3x}$	
	C.	$y=c_1e^{-x}+c_2e^{-2x}$	D.	None of these	
526)	The solution of $(D^3-5D^2+7D-3)y=0$ is				B
	A.	$y=c_1e^{-x}+c_2e^{-3x}$	B.	$y=(c_1+c_2x)e^x+c_3e^{3x}$	

	C.	$y=c_1e^{-x}+c_2e^{-2x}+c_3e^{-3x}$	D.	None of these	
527)	The solution of $\left(D^3-D^2+D-1\right)y=0$ is				C
	A.	$y=c_1e^{-x}+c_2e^{-3x}$	B.	$y=\left(c_1+c^2x\right)e^{x}+c_3e^{3x}$	
	C.	$y=c_1e^{x}+c_2\sin x+c_3\cos x$	D.	None of these	
528)	The solution of $\left(D^2+D-12\right)y=0$ is				A
	A.	$y=c_1e^{3x}+c_2e^{-4x}$	B.	$y=c_1e^{-4x}+c_2e^{-3x}$	
	C.	$y=c_1e^{-x}+c_2e^{-2x}$	D.	None of these	
529)	The solution of $\left(D^2+4D+5\right)y=0$ is				C
	A.	$y=c_1e^{3x}+c_2e^{-4x}$	B.	$y=c_1e^{-4x}+c_2e^{-3x}$	
	C.	$y=e^{-2x}\left(c_1\sin x+c_2\cos x\right)$	D.	None of these	
530)	The solution of $\left(D^3-3D^2+4\right)y=0$ is				B
	A.	$y=c_1e^{-x}+c_2e^{-3x}$	B.	$y=\left(c_1+c_2x\right)e^{2x}+c_3e^{-x}$	
	C.	$y=c_1e^{-x}+c_2e^{-2x}+c_3e^{-3x}$	D.	None of these	
531)	The solution of $\left(9D^2-12D+4\right)y=0$ is				A
	A.	$y=\left(c_1+c_2x\right)e^{\frac{2}{3}x}$	B.	$y=\left(c_1+c_2x\right)e^{2x}+c_3e^{-x}$	
	C.	$y=c_1e^{-x}+c_2e^{-2x}+c_3e^{-3x}$	D.	None of these	
532)	The solution of $\left(D^3-4D^2+D+6\right)y=0$ is				C
	A.	$y=\left(c_1+c_2x\right)e^{\frac{2}{3}x}$	B.	$y=\left(c_1+c_2x\right)e^{2x}+c_3e^{-x}$	
	C.	$y=c_1e^{-x}+c_2e^{2x}+c_3e^{3x}$	D.	None of these	
533)	Which of these is the solution of differential equation $\frac{dx}{dt}+3x=0$				A
	A.	$2e^{-3t}$	B.	e^{-3t}	
	C.	$2e^{2t}$	D.	e^{-2t}	
534)	The general solution of DE $\frac{dy}{dx}=\frac{y}{x}$ is				B
	A.	log y= kx	B.	y=kx	
	C.	y=$\frac{k}{x}$	D.	y=k log x	
535)	Integrating factor of DE cos$\frac{dy}{dx}+ysinx=1$ is				B
	A.	sin x	B.	sec x	
	C.	tan x	D.	cos x	
536)	If 2xy dx + P(x, y)dy = 0 is exact then P(x, y) is				D
	A.	x – y	B.	x+y	
	C.	x – y^2	D.	x^2 + y	
537)	A differential equation of first degree				B
	A.	Is of first order	B.	May or may not be linear	
	C.	Always linear	D.	All are false	
538)	A general solution of an n^{th} order differential equation contains				B
	A.	n – 1 arbitrary constants	B.	n arbitrary constants	
	C.	n+1 arbitrary constants	D.	no constant	
	The order of the differential equation $\frac{\partial^2 y}{\partial x^2}+y^2=x+e^x$ is				A
	A.	2	B.	3	
	C.	0	D.	1	
539)	‘’Infinitely many differential equation have the same integrating factor’’. This statement is				D
	A.	Never true	B.	May be true	
	C.	Semi true	D.	Always true	

540)	If $\frac{dy}{dx}=\frac{f(x,y)}{\varphi(x,y)}$ is a homogeneous DE then it can be made in the form ''separable in variables'' by putting				C
	A.	$y^2 = vx$	B.	$x^2=vy$	
	C.	$y=vx$	D.	$x=vy$	
541)	The differential equation $\frac{dy}{dx}+Py=Qy^n \ ,n\geq 2$ can be reduced to linear form by substituting				D
	A.	$z= y^{n-1}$	B.	$z= y^n$	
	C.	$x=y^{n+1}$	D.	$x=y^{1-n}$	
542)	The differential equation $(y-2x^3)dx-x(1-xy)dy=0$ becomes exact on multiplication by				B
	A.	$\frac{1}{x}$	B.	$\frac{1}{x^2}$	
	C.	$\frac{1}{x^3}$	D.	$\frac{1}{x^4}$	
543)	If the DE $f(x,y)dx+xsinydy=0$ is exact then $f(x,y)$ equals				B
	A.	cos y	B.	–cos(y) +x^2	
	C.	–sin y	D.	Sin(y) +x	
544)	The differential equation $x\frac{dy}{dx}=x-y$ is				D
	A.	Exact	B.	Linear	
	C.	Homogeneous	D.	All of above	
545)	The general solution of the equation $x'+5x=3$ is				C
	A.	$x(t)=\frac{3}{5}+e^{-5t}$	B.	$x(t)=3+C\sin 5t$	
	C.	$x(t)=\frac{3}{5}+Ce^{-5t}$	D.	$x(t)=C\cos 3t$	
546)	A solution of the initial value problem $y'+8y=1+e^{-6t}$ is				B
	A.	$x(t)=\frac{1}{8}+\frac{1}{2}e^{6t}-\frac{5}{8}e^{8t}$	B.	$x(t)=\frac{1}{8}+\frac{1}{2}e^{-6t}-\frac{5}{8}e^{-8t}$	
	C.	$x(t)=4-e^{2t}+3e^{8t}$	D.	$x(t)=4-e^{-2t}+3e^{-8t}$	
547)	Two linearly independent solutions of the equation $y''+y'-6y=0$ are				A
	A.	e^{-3x} And e^{2x}	B.	e^{-2x} And e^{3x}	
	C.	e^{-x} And e^{6x}	D.	e^{-6x} And e^{x}	
548)	A particular solution for the differential equation $y''+2y'+y=3-2\sin x$is				D
	A.	$A+B\sin x$	B.	$A+Bx^2+C\cos x+D\sin x$	
	C.	$A+Bx\cos x+Cx\sin x$	D.	$A+B\cos x+C\sin x$	
549)	The solution of the initial value problem $x^2y''-xy'-3y=0,\ y(1)=1, y'(1)=-2$ is				A
	A.	$\frac{5}{4}x^{-1}-\frac{1}{4}x^3$	B.	$\frac{1}{4}x+\frac{3}{4}x^{-3}$	
	C.	$\frac{5}{4}e^{-x}-\frac{1}{4}e^{3x}$	D.	$\frac{1}{4}e^{x}+\frac{3}{4}e^{-3x}$	
550)	The differential equation $x''+2x'-5x=\sin t$ is equivalent to the system				A
	A.	$x'=y\ ,y'=5x-2y+\sin t$	B.	$x'=2x-5y\ ,y'=\sin t$	
	C.	$x'=y\ ,y'=2x-5y+\sin t$	D.	$x'=5x-2y\ ,y'=\sin t$	
551)	The system of DE $x''=-\frac{y}{x^2+y^2},\ y''=-\frac{y}{x^2+y^2}$ is equivalent to a 1st order system consisting of				D
	A.	One equation	B.	Two equations	
	C.	Three equations	D.	Four equations	
552)	The series solution for the DE $y''+xy'+y=0$ is of the form $\sum_n^\infty=0\ C_n X^n$ has recursion relation				B
	A.	$C_{n+2}+C_{n+1}+C_n=0, n\geq 0$	B.	$(c+2)C_{n+2}+C_n=0, n\geq 2$	
	C.	$nc_{n+1}-c_n=0, n\geq 1$	D.	$C_n=0, n\geq 3$	
553)	The differential equation $xy''+(x-2)y'+y=0$ has a solution of the form				C
	A.	$y=x^2\sum_{n=0}^\infty c_n\,x^n, c_0\neq 0$	B.	$y=x^{1/2}\sum_{n=0}^\infty c_n\,x^n, c_0\neq 0$	
	C.	$y=x^3\sum_{n=0}^\infty c_n\,x^n, c_0\neq 0$	D.	$y=x^{-1}\sum_{n=0}^\infty c_n\,x^n, c_0\neq 0$	
554)	The solution of the DE$(2x-1)y'+2y=0$, can be represented as a power series $\sum_n^\infty=0\ C_n X^n$ with radius of convergence equal to				C
	A.	0	B.	1/2	
	C.	1	D.	∞	
555)	The partial fraction decomposition of $\frac{s+4}{(s-1)^2(s^2+4)}$ is				B

	A.	$\frac{A}{(s-1)^2}+\frac{B_s+C}{s^2+4}$	B.	$\frac{A}{s-1}+\frac{B}{(s-1)^2}+\frac{C_s+D}{s^2+4}$	
	C.	$\frac{A}{s-1}+\frac{B}{(s-1)^2}+\frac{C}{s^2+4}$	D.	$\frac{A}{s-1}+\frac{B}{(s-1)^2}+\frac{C_s}{s^2+4}$	
556)	Which of the following equations can be rearranged into separable equations?				B
	A.	$(x+y)y'=x-y$	B.	$y'-e^y=e^{x=y}$	
	C.	$y'=ln(xy)$	D.	None of these	
557)	The appropriate form of a particular solution y_p of the equation $y''+2y'+y=e^{-t}$ is				C
	A.	Ae^{-t}	B.	Ate^{-t}	
	C.	At^2e^{-t}	D.	$(A+Bt)e^{-t}$	
558)	Particular integral of $(D^2+4)y=sin3x$ is				C
	A.	$-\frac{1}{5}sin3x$	B.	$-\frac{1}{5}cos3x$	
	C.	$-\frac{1}{5}tan3x$	D.	None of these	
559)	The D.E $\frac{dy}{dx}=\frac{x^2+xy+2y^2}{2x^2+y^2}$ is				B
	A.	Exact	B.	Homogenous	
	C.	Cauchy	D.	None of these	
560)	The order and degree of the D.E $\left(\frac{1+(\frac{dy}{dx})^2}{\frac{d^2y}{dx^2}}\right)^{\frac{3}{2}}$ =b are respectively				D
	A.	1 and 3	B.	1 and 2	
	C.	3 and 2	D.	2 and 3	
561)	A general solution of 3rd order D.E contains				C
	A.	One constant	B.	Two constants	
	C.	Three constants	D.	No constant	
562)	solving $y'+y'+2y=0$ with $y(0),y(1)=1$ is				B
	A.	Initial value problem	B.	Boundary value problem	
	C.	Eigen value problem	D.	None of these	
563)	If p and q are the order and degree of D.E $y\frac{dy}{dx}+x^2(\frac{d^2y}{dx^2})^3+xy=cosx$, then				A
	A.	$p<q$	B.	$p=q$	
	C.	$p>q$	D.	None of these	
564)	A solution to the partial differential equation $\frac{\partial^2u}{\partial x^2}=9\frac{\partial^2u}{\partial y^2}$ is				D
	A.	$\cos(3x-y)$	B.	x^2+y^2	
	C.	$\sin(3x-y)$	D.	$e^{-3\pi x}\sin(\pi x)$	
565)	The partial differential equation $5\frac{\partial^2z}{\partial x^2}+6\frac{\partial^2z}{\partial y^2}=xy$ is classified as				A
	A.	Elliptic	B.	Parabola	
	C.	Hyperbola	D.	None of above	
566)	The partial differential equation $xy\frac{\partial z}{\partial x}=5\frac{\partial^2z}{\partial y^2}$ is				B
	A.	Elliptic	B.	Parabola	
	C.	Hyperbola	D.	None of above	
567)	The following is true for the following partial differential equation under non-linear mechanics known as the Kortewege-de-vfies equation $\frac{\partial w}{\partial t}+\frac{\partial^3w}{\partial x^3}-6w\frac{\partial w}{\partial x}=0$				B
	A.	Linear, 3rd order	B.	Non-linear 3rd order	
	C.	Linear first order	D.	Non-linear first order	
568)	Solve $\frac{\partial u}{\partial x}=6\frac{\partial u}{\partial t}+u$ using separation method of variable if $u(x,0)=10e^{-x}$				A
	A.	$10e^{-x}e^{-\frac{t}{3}}$	B.	$10e^{x}e^{-\frac{t}{3}}$	
	C.	$10e^{\frac{x}{3}}e^{-t}$	D.	$10e^{-\frac{x}{3}}e^{t}$	
569)	While solving the partial differential equation by separable method we equate the ratio to constant which?				B

	A.	Can be positive or negative integer or zero	B.	Can be positive or negative rational number or zero	
	C.	Must be positive integer	D.	Must be negative integer	
570)	When solving a 1-dimensional heat equation using a variable separable method we get the solution				C
	A.	k is positive	B.	k is 0	
	C.	k is negative	D.	k can be anything	
571)	$f(x,y) = \sin(xy) + x^2 \ln(y)$. Find f_{xy} at $(0,\frac{\pi}{2})$				D
	A.	33	B.	0	
	C.	3	D.	1	
572)	$f(x,y) = x^2 + y^3$; $x = t^2 + t^3$; $y = t^3 + t^9$ find $\frac{df}{dt}$ at t=1				D
	A.	0	B.	1	
	C.	-164	D.	164	
573)	D.E for $y = Acos\alpha x + Bsin\alpha x$, where A and B are arbitrary constants is				B
	A.	$\frac{d^2y}{dx^2} + \alpha y = 0$	B.	$\frac{d^2y}{dx^2} - \alpha y = 0$	
	C.	$\frac{d^2y}{dx^2} - \alpha^2 y = 0$	D.	$\frac{d^2y}{dx^2} + \alpha^2 y = 0$	
574)	The order of D.E is defined as				B
	A.	The highest degree of the variable	B.	The order of the highest derivative	
	C.	The power of variable in the solution	D.	None of these	
575)	A primitive of an ODE is				C
	A.	Its general solution	B.	Its particular solution	
	C.	Its complementary solution	D.	None of these	
576)	The solution of a D.E subject to a condition satisfied at one particular point is called				C
	A.	A boundary value problem	B.	A two-point boundary value problem	
	C.	An initial value problem	D.	A two point initial value problem	
577)	A general solution of an nth order D.E then				A
	A.	n can be zero	B.	n is any non-negative integer	
	C.	n is any integer	D.	n is any natural number	
578)	The D.E $\frac{dy}{dx} = \frac{ax+by+c}{a'x+b'y+c'}$ is				C
	A.	Homogeneous	B.	Non-Homogeneous	
	C.	Non-Linear	D.	None of these	
579)	The order of D.E where general solution is $C_1e^x + C_2e^{2x} + C_3e^{3x} + C_4e^{4x} + C_5$, where C_1, C_2, C_3, C_4, C_5, are arbitrary constant is				A
	A.	5	B.	4	
	C.	3	D.	7	
580)	The particular integral of D.E $(D^2 - a^2)y - cosax$				C
	A.	$-\frac{x}{2a}cosax$	B.	$\frac{x}{2a}sinax$	
	C.	$-\frac{x}{2a}sinax$	D.	None of these	
581)	The equation $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = \frac{\partial u}{\partial z}$ where x, y, z are variable is a partial D.E of order and degree				C
	A.	2,1	B.	2,2	
	C.	1,2	D.	None of these	
582)	If $f(x) = e^{2x}$, $f'''(x) =$				C
	A.	$6e^{2x}$	B.	$\frac{e^{2x}}{6}$	
	C.	$8e^{2x}$	D.	none of these	
583)	$\frac{d}{dx}5^x =$				B

	A.	$\frac{5^x}{\ln 5}$	B.	$5^x \ln 5$	
	C.	$\frac{\ln 5}{5^x}$	D.	none of these	
584)	If $f^{'}(c)=0$, then f has relative maximum value at $x=c$, if				A
	A.	$f^{''}(c)<0$	B.	$f^{''}(c)=0$	
	C.	$f^{''}(c)>0$	D.	none of these	
585)	The function f is neither increasing nor decreasing at a point, provided that $f^{'}(x)=0$ at that point, then it is called				B
	A.	Critical point	B.	Maximum point	
	C.	Stationary point	D.	none of these	
586)	The function $f(x)=ax^2+bx+c$ has minimum value if				A
	A.	$a>0$	B.	$a=0$	
	C.	$a<0$	D.	none of these	
587)	$1-x+x^2-x^3+x^4+.....+(-1)^n x^n+....$ is the expansion of				C
	A.	$\frac{1}{1-x}$	B.	$\frac{1}{\sqrt{1-x}}$	
	C.	$\frac{1}{1+x}$	D.	none of these	
588)	If $f^{'}(x)=0$, $f^{''}(c)\le 0$ at a point P, then P is called				D
	A.	Relative maximum	B.	Relative minimum	
	C.	Point of inflection	D.	none of these	
589)	If $y=\sinh^{-1}(x^3)$, $\frac{dy}{dx}=$				C
	A.	$\frac{x^2}{\sqrt{1+x^3}}$	B.	$\frac{1}{\sqrt{1+x^6}}$	
	C.	$\frac{3x^2}{\sqrt{1+x^6}}$	D.	none of these	
590)	A function $f(x)$ is such that, $f^{'}(x)>0$ at $x=c$, then f is said to be				A
	A.	Increasing	B.	Decreasing	
	C.	Constant	D.	none of these	
591)	A function $f(x)$ is such that, at a point $x=0$, $f^{'}(x)=0$ then f is said to be				C
	A.	Increasing	B.	Decreasing	
	C.	Constant	D.	none of these	
592)	If $f(x)=e^{\sqrt{x}-1}$, $f^{'}(0)=$				B
	A.	e^{-1x}	B.	∞	

	C.	e	D.	none of these	
593)	$\frac{d}{dx}(\tan^{-1}x-\cot^{-1}x)=$				C
	A.	$\frac{2}{\sqrt{1+x^2}}$	B.	$-\frac{2}{1+x^2}$	
	C.	$\frac{2}{1+x^2}$	D.	none of these	
594)	If $f(\frac{1}{x})=\tan x$, $f'(\frac{1}{\pi})=$				A
	A.	$-\pi^2$	B.	1	
	C.	$-\frac{1}{\pi^2}$	D.	none of these	
595)	If $f(\frac{1}{x})=\frac{1}{x}$ Then a critical point of f is				B
	A.	-1	B.	0	
	C.	1	D.	none of these	
596)	$\int a^{\lambda x}dx=$				B
	A.	$\frac{a^{\lambda x}}{\lambda}$	B.	$\frac{a^{\lambda x}}{\lambda\ln a}$	
	C.	$\frac{a^{\lambda x}}{\ln a}$	D.	none of these	
597)	$\int\frac{f'(x)}{f(x)}dx=$				A
	A.	$\ln\lvert f(x)\rvert$	B.	$f'(x)$	
	C.	$\ln\lvert f'(x)\rvert$	D.	none of these	
598)	$\int\frac{1}{\sqrt{x+a}+\sqrt{x}}dx$ can be evaluated if				C
	A.	$x>0,a<0$	B.	$x<0,a<0$	
	C.	$x>0,a>0$	D.	none of these	
599)	$\int a^{x^2}xdx=$				B
	A.	$\frac{a^{x^2}}{\ln a}$	B.	$\frac{a^{x^2}}{2\ln a}$	
	C.	$a^{x^2}\ln a$	D.	none of these	
600)	$\int e^{ax}[af(x)+f'(x)]dx=$				B
	A.	$e^{ax}f'(x)$	B.	$e^{ax}f(x)$	

	C.	$ae^{ax} f'(x)$	D.	none of these	
601)	$\int e^x[\sin x+\cos x]dx =$				C
	A.	$-e^x \sin x$	B.	$e^x \cos x$	
	C.	$e^x \sin x$	D.	none of these	
602)	$\int_1^2 a^x dx =$				B
	A.	$(a^2-a)\ln a$	B.	$\frac{(a^2-a)}{\ln a}$	
	C.	$(a^2-a)\log a$	D.	none of these	
603)	$\int \frac{1}{x\ln x}$				A
	A.	$\ln(\ln x)+c$	B.	$\ln x+c$	
	C.	$\ln x$	D.	none of these	
604)	$\int \frac{x+2}{x+1}dx$				B
	A.	$\ln(x+1)$	B.	$x+\ln(x+1)$	
	C.	$\ln(x+1)-x$	D.	none of these	
605)	$\int_0^3 \frac{1}{x^3+9}dx$				C
	A.	$\frac{\pi}{4}$	B.	$\frac{\pi}{2}$	
	C.	$\frac{\pi}{12}$	D.	none of these	
606)	$\int e^x[\frac{1}{x}+\ln x]dx =$				A
	A.	$e^x \ln x$	B.	$e^x \frac{1}{x}$	
	C.	$-e^x \frac{1}{x}$	D.	none of these	
607)	$\int e^x[\frac{1}{x}-\frac{1}{x^2}]dx =$				A
	A.	$e^x \frac{1}{x}$	B.	$e^x \ln x$	
	C.	$e^x \frac{1}{x^2}$	D.	none of these	
608)	If $x<0, y>0$ then the point $P(-x,-y)$ lies in the quadrant				C
	A.	II	B.	II	

	C.	IV	D.	none of these	
609)	The centroid of a triangle divides each median in the ratio of				B
	A.	$1:2$	B.	$2:1$	
	C.	$1:1$	D.	none of these	
610)	If x and y have opposite signs then the point $P(x,y)$ lies in the quadrants				A
	A.	II&IV	B.	I&III	
	C.	II&IV	D.	none of these	
611)	The two intercepts form of the equation of a straight line is				C
	A.	$y = mx + c$	B.	$y - y_1 = m(x - x_1)$	
	C.	$\frac{x}{a} + \frac{y}{b} = 1$	D.	none of these	
612)	The slope of the line perpendicular to $ax + by + c = 0$ is				A
	A.	$\frac{b}{a}$	B.	$-\frac{a}{b}$	
	C.	$\frac{a}{b}$	D.	none of these	
613)	The line $2x + y + 2 = 0$ and $6x + 3y - 8 = 0$ are				B
	A.	Perpendicular	B.	Parallel	
	C.	Non coplanar	D.	none of these	
614)	If three lines pass through one common point then the lines are called				C
	A.	Parallel	B.	Congruent	
	C.	Concurrent	D.	none of these	
615)	$2x + y + k = 0$ (k being a parameter) represent				B
	A.	Two line	B.	Family of lines	
	C.	Intersecting lines	D.	none of these	
616)	Equation of vertical line through $(-5,3)$ is				A
	A.	$x + 5 = 0$	B.	$x - 5 = 0$	
	C.	$x + 3 = 0$	D.	none of these	
617)	Equation of line through $(-8,5)$ and having slope undefined is				C
	A.	$x + 8 = 0$	B.	$x - 5 = 0$	
	C.	$x - 8 = 0$	D.	none of these	
618)	Two lines l_1 and l_2 with the slope m_1 and m_2, are perpendicular if				A
	A.	$m_1 m_2 = -1$	B.	$m_1 m_2 = 1$	
	C.	$m_1 m_2 = 0$	D.	none of these	
619)	Two lines represented by $ax^2 + 2hxy + by^2 = 0$ are real and distinct if				C
	A.	$h^2 - ab < 0$	B.	$h = 0$	
	C.	$h^2 - ab > 0$	D.	none of these	

620)	Two lines represented by $ax^2+2hxy+by^2=0$ are coincident if				A
	A.	$h^2-ab=0$	B.	$h^2-ab<0$	
	C.	$h^2-ab>0$	D.	none of these	
621)	The lines $3y=2x+5$ and $3x+2y-8=0$ intersect at an angle of				B
	A.	$\frac{\pi}{3}$	B.	$\frac{\pi}{2}$	
	C.	Intersect at an angle	D.	none of these	
622)	The perpendicular distance of the line $3x+4y+10=0$ from the origin is				C
	A.	0	B.	1	
	C.	2	D.	none of these	
623)	The lines represented by $ax^2+2hxy+by^2=0$ are orthogonal if				B
	A.	$a-b=0$	B.	$a+b=0$	
	C.	$a+b>0$	D.	none of these	
624)	The distance of the point $(3,7)$ from the y-axis is				A
	A.	3	B.	-7	
	C.	-3	D.	none of these	
625)	The equation $9x^2+24xy+16y^2=0$ represents a pair of lines which are				C
	A.	Real and distinct	B.	imaginary	
	C.	Real and coincident	D.	none of these	
626)	If a straight line is parallel to x-axis then its slope is				B
	A.	-1	B.	0	
	C.	undefined	D.	none of these	
627)	Intercept form of equation of line is				A
	A.	$\frac{x}{a}+\frac{y}{b}=1$	B.	$\frac{x}{a}-\frac{y}{b}=0$	
	C.	$\frac{x}{a}+\frac{y}{b}=0$	D.	none of these	
628)	The perpendicular distance of a line $12x+5y=7$ from $(0,0)$ is				B
	A.	$\frac{1}{13}$	B.	$\frac{7}{13}$	
	C.	$\frac{13}{7}$	D.	none of these	
629)	Line passes through the point of intersection of two lines l_1 and l_2 is				C
	A.	$k_1l_1=k_2l_2$	B.	$l_1+kl_2=2$	
	C.	$l_1+kl_2=0$	D.	none of these	
630)	If $2x+5y+k=0$ and $kx+10y+3=0$ are parallel lines then $k=$				C

	A.	25	B.	2	
	C.	3	D.	none of these	
631)	The solution of $ax+by<c$ is				B
	A.	Closed half plane	B.	Open half plane	
	C.	parabola	D.	none of these	
632)	The symbols used for inequality are				C
	A.	1	B.	2	
	C.	4	D.	none of these	
633)	$ax+by<c$ is not a linear inequality if				A
	A.	$a=0, b=0$	B.	$a\neq 0, b\neq 0$	
	C.	$a=0, b\neq 0$	D.	none of these	
634)	$x=0$ is the solution of the inequality				B
	A.	$x<0$	B.	$2x+3>0$	
	C.	$x+4<0$	D.	none of these	
635)	The angle inscribed in a semi-circle is				C
	A.	$\frac{\pi}{3}$	B.	π	
	C.	$\frac{\pi}{2}$	D.	none of these	
636)	The number of tangents that can be drawn from a point $P(x_1, y_1)$ to a circle are				B
	A.	One	B.	Two	
	C.	More than two	D.	none of these	
637)	Congruent chords of a circle are equi-distant form the				A
	A.	Center	B.	Origin	
	C.	Tangent	D.	none of these	
638)	$x=a\cos t, y=a\sin t$ are the parametric equations of				C
	A.	parabola	B.	ellipse	
	C.	circle	D.	none of these	
639)	$x=a\sec t, y=b\tan t$ are the parametric equations of				B
	A.	parabola	B.	hyperbola	
	C.	ellipse	D.	none of these	
640)	The parabola $y^2=-12x$ opens				C
	A.	upwards	B.	downwards	
	C.	leftward	D.	none of these	
641)	In the case of an ellipse it is always true that				A
	A.	$a^2>b^2$	B.	$a^2<b^2$	
	C.	$a^2=b^2$	D.	none of these	

642)	If the associative law holds in a set, the set				B
	A.	Is a group	B.	May be a group	
	C.	Is not a group	D.	none of these	
643)	An example of a group under multiplication is the set of				C
	A.	Integers	B.	Whole numbers	
	C.	4^{th} roots of unity	D.	none of these	
644)	A group				A
	A.	Is closed set	B.	May not be closed	
	C.	May be an empty set	D.	none of these	
645)	Which one is not true				D
	A.	$Z \subset Q$	B.	$Q \subset R$	
	C.	$R \subset C$	D.	none of these	
646)	An example of a vector space is				B
	A.	$Q(R)$	B.	$R(Q)$	
	C.	$Q'(Q)$	D.	none of these	
647)	A rational number				C
	A.	May not be a real number	B.	Is not a real number	
	C.	Is a real number	D.	none of these	
648)	A real number				C
	A.	Is a rational number	B.	Is not an irrational number	
	C.	May be an irrational number	D.	none of these	
649)	The set of real numbers is a subset of				C
	A.	Z	B.	Q	
	C.	C	D.	none of these	
650)	$[0,1] =$				D
	A.	$[1,2]$	B.	$[0,\infty[$	
	C.	$]-\infty,0]$	D.	none of these	
651)	$a_n = \dfrac{2}{\sqrt{n^2+3}}$ is the nth term of a sequence. The sequence $(a_n)_{n=1}^{\infty}$				A
	A.	Converges	B.	Diverges	
	C.	May or may not converge	D.	None of these	
652)	$a_n = \dfrac{\sqrt{n+1}}{n}$ is the nth term of a sequence. The sequence $(a_n)_{n=1}^{\infty}$				B
	A.	Diverges	B.	Converges	
	C.	May or may not converge	D.	None of these	

653)	$a_n = \frac{1+(-1)^n}{n}$ is the nth term of a sequence. The sequence $(a_n)_{n=1}^{\infty}$				A
	A.	converges	B.	diverges	
	C.	may not converge	D.	None of these	
654)	$a_n = \frac{5^n}{(n+1)^2}$ is the nth term of a sequence. The sequence $(a_n)_{n=1}^{\infty}$				B
	A.	converges	B.	diverges	
	C.	may not diverge	D.	None of these	
655)	The series $\sum_{1}^{\infty} \frac{5n+2}{3n-1}$				B
	A.	converges	B.	diverges	
	C.	may not diverge	D.	None of these	
656)	The series $\sum_{1}^{\infty} a_n$ converges if $\int_{1}^{\infty} f(x)dx$ ----------				B
	A.	Diverges	B.	Converges	
	C.	May not converges	D.	None of these	
657)	$\sum_{1}^{\infty} a_n$ diverges if $\int_{1}^{\infty} f(x)dx$ --------				A
	A.	Diverges	B.	Converges	
	C.	May not diverge	D.	None of these	
658)	$\sum \frac{1}{n^p}$ is convergent for -----				B
	A.	$p<1$	B.	$p>1$	
	C.	$p=1$	D.	None of these	
659)	$\sum \frac{1}{n^p}$ is divergent for --------				A

	A.	$p \le 1$	B.	$p \ge 1$	
	C.	$p = 1$	D.	None of these	
660)	Find the sum of th$1+\frac{\sqrt{2}}{3}+\left(\frac{\sqrt{2}}{3}\right)^2+\left(\frac{\sqrt{2}}{3}\right)^3+\cdots$				C
	A.	$\frac{3}{3+\sqrt{2}}$	B.	$\frac{\sqrt{3}}{3-\sqrt{2}}$	
	C.	$\frac{3}{3-\sqrt{2}}$	D.	None of these	
661)	The series $\sum_{1}^{\infty}\frac{\ln\ n}{n}$ -------				B
	A.	Converges	B.	Diverges	
	C.	May not converge	D.	None of these	
662)	The series $\sum_{1}^{\infty}\frac{\ln\ n}{1+\ln\ n}$ ---------				A
	A.	Diverges	B.	Converges	
	C.	May not converge	D.	None of these	
663)	A sparse matrix has most of its entries are				A
	A.	zero	B.	positive	
	C.	negative	D.	None of these	
664)	A dense matrix has most of its entries are				A
	A.	non-zero	B.	positive	
	C.	negative	D.	None of these	
665)	A system of linear equation is said to be consistent if it has either one solution or				B
	A.	no solution	B.	infinitely many solution	
	C.	two solutions	D.	None of these	
666)	A system of linear equation is inconsistent if it has				A
	A.	no solution	B.	infinitely many solution	
	C.	two solutions	D.	None of these	
667)	For what values of h and k is the system $2x_1 - x_2 = h,\ -6x_1 + x_2 = k$ consistent?				A
	A.	$h=-3,\ k=1$	B.	$h=-3,\ k=2$	
	C.	$h=3,\ k=1$	D.	None of these	
668)	A linear system $x_1 + x_2 = 4,\ 3x_1 + 3x_2 = 6$ has				A
	A.	no solution	B.	infinitely many solution	
	C.	two solutions	D.	None of these	
669)	A linear system $2x_1 - 3x_2 = a,\ 4x_1 - 6x_2 = b$ has infinitely many solutions if				A

	A.	$2a-b=0$	B.	$2a+b=0$	
	C.	$a=b$	D.	None of these	
670)	One of the solutions of the $10x_1-3x_2-2x_3=0$ is				C
	A.	$\left(\frac{1}{3},1,1\right)$	B.	$\left(\frac{1}{2},1,3\right)$	
	C.	$\left(\frac{1}{2},1,1\right)$	D.	None of these	
671)	Which of the following is a diagonal matrix?				C
	A.	$\begin{bmatrix}1&0&0\\0&2&6\\0&8&0\end{bmatrix}$	B.	$\begin{bmatrix}1&0&0\\0&2&0\\6&8&0\end{bmatrix}$	
	C.	$\begin{bmatrix}0&0&0\\0&0&0\\0&0&0\end{bmatrix}$	D.	None of these	
672)	If $A^2=\begin{bmatrix}0&1\\0&0\end{bmatrix}$ then which of the following is true for A?				D
	A.	$A=\begin{bmatrix}0&1\\0&0\end{bmatrix}$	B.	$A=\begin{bmatrix}0&-1\\0&0\end{bmatrix}$	
	C.	$A=\begin{bmatrix}0&1\\1&0\end{bmatrix}$	D.	None of these	
673)	Let $A=\left[a_{ij}\right]_{m\times n}$ and $B=\left[b_{ij}\right]_{n\times p}$, then $(i,j)th$ element of AB is				A
	A.	$\sum_{k=1}^{n}a_{ik}b_{kj}$	B.	$\sum_{k=1}^{n}a_{ki}b_{kj}$	
	C.	$\sum_{k=1}^{n}a_{ik}b_{jk}$	D.	None of these	
674)	If order of A is 8×7, then the order of AA^t is:				C
	A.	7×7	B.	7×8	
	C.	8×8	D.	None of these	
675)	The rank of the matrix $A=\begin{bmatrix}4&1&8\\0&7&7\\0&0&3\\0&0&1\end{bmatrix}$ is				C
	A.	1	B.	2	
	C.	3	D.	None of these	

<table>
<tr><td rowspan="3">676)</td><td colspan="4">The rank of the matrix $A=\begin{bmatrix}1&3\\0&-2\\5&-1\\-2&3\end{bmatrix}$ is</td><td rowspan="3">B</td></tr>
<tr><td>A.</td><td>1</td><td>B.</td><td>2</td></tr>
<tr><td>C.</td><td>3</td><td>D.</td><td>None of these</td></tr>
<tr><td rowspan="3">677)</td><td colspan="4">Which of the following is an involutory matrix</td><td rowspan="3">B</td></tr>
<tr><td>A.</td><td>$\begin{bmatrix}1&1&-1\\4&-3&4\\3&1&1\end{bmatrix}$</td><td>B.</td><td>$\begin{bmatrix}0&1&-1\\4&-3&4\\3&-3&4\end{bmatrix}$</td></tr>
<tr><td>C.</td><td>$\begin{bmatrix}4&1&-1\\0&-1&0\\3&0&4\end{bmatrix}$</td><td>D.</td><td>None of these</td></tr>
<tr><td rowspan="3">678)</td><td colspan="4">The matrix $A=\begin{bmatrix}1&-2&-6\\-3&2&9\\2&0&-3\end{bmatrix}$ is periotic matrix having period</td><td rowspan="3">A</td></tr>
<tr><td>A.</td><td>1</td><td>B.</td><td>2</td></tr>
<tr><td>C.</td><td>3</td><td>D.</td><td>None of these</td></tr>
<tr><td rowspan="3">679)</td><td colspan="4">Let $x=\begin{bmatrix}x_1&x_2&x_3\end{bmatrix}$, $y=\begin{bmatrix}y_1&y_2&y_3\end{bmatrix}$ be two 1×3 matrices. Its product is
$x\times y=\begin{bmatrix}x_2y_3-y_2x_3&x_3y_1-y_3x_1&x_1y_2-y_1x_2\end{bmatrix}$, then $x\times x=$</td><td rowspan="3">A</td></tr>
<tr><td>A.</td><td>0</td><td>B.</td><td>2</td></tr>
<tr><td>C.</td><td>3</td><td>D.</td><td>None of these</td></tr>
<tr><td rowspan="3">680)</td><td colspan="4">The echelon form of matrix $A=\begin{bmatrix}6&3&-4\\-4&1&-6\\1&2&-5\end{bmatrix}$ is</td><td rowspan="3">B</td></tr>
<tr><td>A.</td><td>$\begin{bmatrix}1&0&\frac{7}{9}\\0&1&\frac{2}{9}\\0&0&0\end{bmatrix}$</td><td>B.</td><td>$\begin{bmatrix}1&0&\frac{7}{9}\\0&1&-\frac{26}{9}\\0&0&0\end{bmatrix}$</td></tr>
<tr><td>C.</td><td>$\begin{bmatrix}1&0&\frac{7}{9}\\1&1&-\frac{6}{9}\\0&0&0\end{bmatrix}$</td><td>D.</td><td>None of these</td></tr>
</table>

681)	The invers of the matrix $A=\begin{bmatrix}1&0&3\\2&4&1\\1&3&0\end{bmatrix}$ is				A
	A.	$A^{-1}=\begin{bmatrix}-1&3&-4\\ \frac{1}{3}&-1&\frac{5}{3}\\ \frac{2}{3}&-1&\frac{4}{3}\end{bmatrix}$	B.	$A^{-1}=\begin{bmatrix}-1&3&-4\\ 3&-1&\frac{5}{3}\\ \frac{2}{3}&-4&9\end{bmatrix}$	
	C.	$A^{-1}=\begin{bmatrix}-1&3&-4\\3&-1&2\\2&-4&1\end{bmatrix}$	D.	None of these	
682)	Which of the following is diagonal matrix?				D
	A.	$A=\begin{bmatrix}1&0&0\\0&2&6\\0&8&0\end{bmatrix}$	B.	$A=\begin{bmatrix}1&0&0\\0&2&0\\6&8&0\end{bmatrix}$	
	C.	$A=\begin{bmatrix}1&0&1\\0&0&0\\1&0&1\end{bmatrix}$	D.	None of these	
683)	If a $m\times n$ matrix B is obtain from a $m\times n$ matrix A by a finite number of elementary row and column operations, then B is said to be … to A.				B
	A.	Equal	B.	Equivalent	
	C.	Not equal	D.	None of these	
684)	Every nonzero $m\times n$ matrix is equivalent to a $m\times n$ matrix $D=\begin{bmatrix}I_r&0\\0&0\end{bmatrix}$. Then D is called ... form of A.				C
	A.	Normal	B.	Canonical	
	C.	Both A and B	D.	None of these	
685)	A system of m linear equations $Ax=B$ in n unknowns has a unique solution if and only if $\text{rank}(A)=\text{rank}(B)=$				A
	A.	m	B.	n	
	C.	0	D.	None of these	
686)	If A and B be $m\times n$ matrices over a field F and $a,b\in F$. Then				A
	A.	$(a+b)A=aA+bA$	B.	$a(A+B)\neq aA+aB$	
	C.	$a(bA)\neq(ab)A$	D.	None of these	
687)	If the matrices A and B are conformable for addition and multiplication, then				C
	A.	$(A+B)^2=A^2+2AB+B^2$	B.	$A^2-B^2=(A-B)(A+B)$	

	C.	$(A+B)^2 \neq A^2+2AB+B^2$	D.	None of these	
688)	Write the matrix A that is idempotent				A
	A.	$A=\begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$	B.	$A=\begin{bmatrix} 2 & 2 & 4 \\ 1 & 3 & 4 \\ 1 & 2 & -3 \end{bmatrix}$	
	C.	$A=\begin{bmatrix} 2 & 2 & 4 \\ 1 & 0 & 0 \\ 0 & 2 & 3 \end{bmatrix}$	D.	None of these	
689)	The matrix $A=\begin{bmatrix} 1 & -3 & -4 \\ -1 & 3 & 4 \\ 1 & -3 & -4 \end{bmatrix}$ is nilpotent. What is its nilpotency index?				B
	A.	1	B.	2	
	C.	3	D.	None of these	
690)	If A is matrix over R and $AA^T=0$ then				A
	A.	$A=0$	B.	$A\neq 0$	
	C.	$A=I$	D.	None of these	
691)	If A is matrix over $\mathbb{C}$ and $A\left(\overline{A}\right)^T=0$ then				B
	A.	$\overline{A}\neq 0\neq A$	B.	$\overline{A}=0=A$	
	C.	$\overline{A}\neq 0, A=0$	D.	None of these	
692)	If $\text{rank}(A)=\text{rank}(A_b)$, then the system $Ax=b$				A
	A.	Is consistent	B.	has unique solution	
	C.	has infinite solutions	D.	None of these	
693)	Let $Ax=b$ be a system of 3 linear equations in 7 variables, then which of the following can be the maximum value of $\text{rank}(A_b)$?				A
	A.	3	B.	4	
	C.	6	D.	None of these	
694)	Let A be a matrix of order 4×5 and $\text{rank}(A)=\text{rank}(A_b)=3$, then the system $Ax=b$ has				C
	A.	Unique solution	B.	no solution	
	C.	infinitely many solutions	D.	None of these	
695)	The system $\begin{bmatrix} -3 & 3 \\ 1 & -1 \end{bmatrix}\begin{bmatrix} x_1 \\ x_2 \end{bmatrix}=\begin{bmatrix} 0 \\ 0 \end{bmatrix}$ has				C
	A.	Unique solution	B.	no solution	
	C.	infinitely many solutions	D.	None of these	

696)	If the augmented matrix of a system is $\begin{bmatrix} 1 & 2 & 1 & 0 \\ 1 & 1 & 0 & 2 \\ 0 & 1 & 1 & 1 \end{bmatrix}$, then the system has				B
	A.	Unique solution	B.	no solution	
	C.	infinitely many solutions	D.	None of these	
697)	A system $Ax = b$ of n equations and n unknowns has a unique solution if A is				B
	A.	Singular	B.	non-singular	
	C.	non invertible	D.	None of these	
698)	Let A and B are square matrices such that $AB = I$, then zero is an eigen value of				B
	A.	A but not of B	B.	neither A nor B	
	C.	both A and B	D.	None of these	
699)	The eigen values of a skew-symmetric matrix are				C
	A.	negative	B.	real	
	C.	purely imaginary or zero	D.	None of these	
700)	If $\lim\limits_{n\to\infty} a_n = l$, $a_n \to l$ as				A
	A.	$n \to \infty$	B.	$n \to 0$	
	C.	$n \to 1$	D.	None of these	
701)	The sequence $\left(\frac{1}{n}\right)_{n=1}^{\infty}$ is				B
	A.	divergent	B.	convergent	
	C.	oscillating	D.	None of these	
702)	$\log_3(27) =$				D
	A.	9	B.	24	
	C.	6	D.	None of these	
703)	A bounded sequence of real numbers				C
	A.	converges	B.	diverges	
	C.	may converge	D.	None of these	
704)	A Cauchy sequence of real numbers is				D
	A.	not bounded	B.	oscillating	
	C.	divergent	D.	None of these	
705)	Which of the following is a linear equation?				B
	A.	$xy = e^{\pi}$	B.	$x + y = e^{\pi}$	
	C.	$y = \sqrt{3x}$	D.	None of these	
706)	Let $A = \begin{bmatrix} 3 & 2 & 1 & -1 \\ 4 & 5 & 1 & 2 \\ -2 & 3 & 0 & 1 \\ 2 & 1 & 3 & 5 \end{bmatrix}$, then $\lvert A \rvert =$				C

	A.	141	B.	139	
	C.	149	D.	None of these	
707)	Let A and B be matrices of order 6 such that $\det\left(AB^2\right)=72$, $\det\left(A^2B^2\right)=144$. Then $\det\left(A\right)=$				C
	A.	0	B.	1	
	C.	2	D.	None of these	
708)	$\begin{vmatrix}1 & a & a^2\\1 & b & b^2\\1 & c & c^2\end{vmatrix}=?$				B
	A.	$(a-b)(a-c)(b-c)$	B.	$(a-b)(b-c)(c-a)$	
	C.	$(a-b)(c-b)(c-a)$	D.	None of these	
709)	If $A=\begin{bmatrix}1 & 2 & 3\\2 & 3 & 1\\3 & 1 & 2\end{bmatrix}$, then $\operatorname{adj} A=$				A
	A.	$\begin{bmatrix}5 & -1 & -7\\-1 & -7 & 5\\-7 & 5 & -1\end{bmatrix}$	B.	$\begin{bmatrix}5 & -1 & 0\\1 & -7 & 5\\7 & 6 & -8\end{bmatrix}$	
	C.	$\begin{bmatrix}1 & 2 & 3\\2 & 3 & 1\\3 & 1 & 2\end{bmatrix}$	D.	None of these	
710)	$\begin{vmatrix}a-b & b-c & c-a\\b-c & c-a & a-b\\c-a & a-b & b-c\end{vmatrix}=$				A
	A.	0	B.	1	
	C.	2	D.	None of these	
711)	$\begin{vmatrix}\frac{1}{2!} & 1 & 0\\\frac{1}{3!} & \frac{1}{2!} & 1\\\frac{1}{4!} & \frac{1}{3!} & \frac{1}{2!}\end{vmatrix}=$				D
	A.	0!	B.	1!	
	C.	2!	D.	None of these	

712)	If $\begin{vmatrix} 1 & 2+x & 3 \\ 2 & 1 & 3+x \\ 3 & 2+x & 1 \end{vmatrix} = 0$, then the values of x				A
	A.	$x=-1,\ x=-6$	B.	$x=1,\ x=6$	
	C.	$x=2,\ x=3$	D.	None of these	
713)	The eigenvalues of the matrix $\begin{bmatrix} 3 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 3 \end{bmatrix}$ are				B
	A.	1, 2, 3	B.	1, 3, 4	
	C.	1, 4, 5	D.	None of these	
714)	Let A be a square matrix of order 4×4, then $\lvert A\rvert =$				C
	A.	$-\lvert A\rvert$	B.	$-\lvert A^t\rvert$	
	C.	$\lvert A^t\rvert$	D.	None of these	
715)	Row expansion of $\lvert A\rvert$ ------------ column expansion of $\lvert A\rvert$				A
	A.	$=$	B.	$\neq$	
	C.	There is no comparison	D.	None of these	
716)	Let $A=\left[a_{ij}\right]$ be a $n\times n$ triangular matrix, then $\lvert A\rvert =$				A
	A.	$a_{11}a_{22}\cdots a_{nn}$	B.	$a_{11}+a_{22}+\cdots+a_{nn}$	
	C.	$a_{11}-a_{22}-\cdots-a_{nn}$	D.	None of these	
717)	For an invertible matrix A, $\lvert A^{-1}\rvert =$				C
	A.	$\lvert A\rvert$	B.	$-\lvert A\rvert$	
	C.	$\lvert A\rvert^{-1}$	D.	None of these	
718)	Let A be a square matrix of order n. A matrix obtained from A by deleting its ith row and jth column is again a matrix of order $n-1$ which is called				A
	A.	$ijth$ minor of A	B.	$ijth$ cofactor of A	
	C.	Determinant of A	D.	None of these	
719)	Let M_{ij} be the $ijth$ minor of a square matrix A of order n. Then $ijth$ cofactor of A is				C
	A.	$\lvert M_{ij}\rvert$	B.	$\pm\lvert M_{ij}\rvert$	
	C.	$(-1)^{i+j}\lvert M_{ij}\rvert$	D.	None of these	
720)	If A is any matrix of order $n\times n$ and k is a nonzero real number, then				C
	A.	$\lvert kA\rvert = k\lvert A\rvert$	B.	$\lvert kA\rvert = \lvert k\rvert\lvert A\rvert$	
	C.	$\lvert kA\rvert = k^n\lvert A\rvert$	D.	None of these	
721)	$\begin{vmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{vmatrix} + \begin{vmatrix} a_{11} & b_{12} \\ a_{21} & b_{22} \end{vmatrix} =$				B

	A.	$\begin{vmatrix} a_{11} & a_{12} \\ a_{21} & b_{22} \end{vmatrix}$	B.	$\begin{vmatrix} a_{11} & a_{12}+b_{12} \\ a_{21} & a_{22}+b_{22} \end{vmatrix}$	
	C.	0	D.	None of these	
722)	Let $A=\begin{bmatrix} 3 & 2 & 1 & -1 \\ 4 & 5 & 1 & 2 \\ -2 & 3 & 0 & 1 \\ 2 & 1 & 3 & 5 \end{bmatrix}$, then 33th cofactor of A is				B
	A.	43	B.	34	
	C.	56	D.	None of these	
723)	$\begin{vmatrix} 1 & 0 & 5 & 6 \\ 0 & 5 & 0 & 8 \\ 0 & 0 & -1 & 8 \\ 0 & 0 & 0 & 3 \end{vmatrix} =$				B
	A .	3	B.	-15	
	C.	28	D.	None of these	
724)	$\begin{vmatrix} 0 & a & -b \\ -a & 0 & c \\ b & -c & 0 \end{vmatrix} =$				B
	A.	1	B.	0	
	C.	-1	D.	None of these	
725)	If a,b,c are different numbers. For what value of x, the matrix $\begin{bmatrix} 0 & x+b & x^2+c \\ x-b & 0 & x^2-c \\ x^3-c & x+a & 0 \end{bmatrix}$ is singular?				A
	A.	0	B.	a	
	C.	b	D.	None of these	
726)	Let $A=\begin{bmatrix} k & 4k & 4 \\ 0 & 4 & 4k \\ 0 & 0 & 4 \end{bmatrix}$. If $\lvert A^2 \rvert = 16$, then value of k is				B
	A.	1	B.	$\frac{1}{4}$	
	C.	16	D.	None of these	
727)	The discrete matrix on a non-empty set X is defined as				A
	A.	$d(x,y)=\begin{cases} 0 & \text{if } x=y \\ 1 & \text{if } x\neq y \end{cases}$	B.	$d(x,y)=\begin{cases} 0 & \text{if } x\neq y \\ 1 & \text{if } x=y \end{cases}$	
	C	$d(x,y)=\begin{cases} 0 & \text{if } x=y \\ -1 & \text{if } x\neq y \end{cases}$	D.	None of these	

728)	$\sum_{k=1}^{n} \lvert x_k y_k \rvert \le \left(\sum_{k=1}^{n} \lvert x_k \rvert^2 \right)^{\frac{1}{2}} \left(\sum_{k=1}^{n} \lvert y_k \rvert^2 \right)^{\frac{1}{2}}$, it is called				B
	A.	Cauchy inequality	B.	Cauchy-Schwarz inequality	
	C.	Minkowski's inequality	D.	None of these	
729)	Which of the following is a system of nonhomogeneous linear equations?				C
	A.	$x_1 + 2x_2 = 1$ $2x_1 + x_2 = 2$	B.	$x_1 - 6x_2 = 0$ $6x_1 + x_2 = 20$	
	C.	$x_1 + 2x_2 = 0$ $2x_1 + x_2 = 0$	D.	None of these	
730)	If $x_1 - x_2 + 2x_3 = 0, 4x_1 + x_2 + 2x_3 = 1, x_1 + x_2 + x_3 = -1$, then				A
	A.	$x_1 = 1,\ x_2 = -1, x_3 = -1$	B.	$x_1 = 0,\ x_2 = 1, x_3 = -1$	
	C.	$x_1 = 1,\ x_2 = 1, x_3 = 1$	D.	None of these	
731) 732) 733)	The system $Ax = 0$ of m equations and n unknowns has nontrivial solution if and only if $\text{rank}(A)$------$\text{rank}(A_b)$.				B
	A.	$=$	B.	$<$	
	C.	$>$	D.	None of these	
734)	If $c \ne 2a - 3b$ then this system of linear equations $2x_1 - x_2 + 3x_3 = a, 3x_1 + x_2 - 5x_3 = b,$ $-5x_1 - 5x_2 + 21x_3 = c$ is called				B
	A.	is consistent	B.	is inconsistent	
	C.	A and B both	D.	None of these	
735)	This matrix $\left[\begin{array}{ccc\|c} 1 & 2 & 4 & 0 \\ 1 & 1 & 1 & 0 \\ 1 & 2 & 1 & 0 \\ 1 & 3 & 3 & 0 \end{array}\right]$ has				B
	A.	trivial solutions	B.	nontrivial	
	C.	no solution	D.	None of these	
736)	For any matrix A the collection $\{x:\ Ax = 0\}$ is called ----- of A				B
	A.	rank	B.	solution space	
	C.	both A and B	D.	None of these	
737)	Which of the following is a linear equation in the variables x, y, z ?				A
	A.	$x - 2y = 0$	B.	$x + \cos y = z$	
	C.	$\sin x + \cos y + \tan z = 0$	D.	None of these	
738)	If a system of 2 equations and 2 unknown has no solution, then the graph looks like				B
	A.	intersecting lines	B.	non intersecting lines	
	C.	same lines	D.	None of these	
739)	In Gauss-Jordan elimination method, we reduce the augmented matrix into				B
	A.	Echelon form	B.	Reduced echelon form	

	C. both A and B	D. None of these	
740)	Every homogenous system of linear equations		A
	A. is consistent	B. is inconsistent	
	C. has only trivial solution	D. None of these	
741)	Let A be a 4×4 matrix and the system $Ax=b$ has infinitely many solutions, then		C
	A. $\operatorname{rank}(A)=4$	B. $\operatorname{rank}(A)\neq 4$	
	C. $\operatorname{rank}(A)<4$	D. None of these	
742)	If $Ax=b$ does not have any solution, then the system is called		B
	A. consistent	B. inconsistent	
	C. both A and B	D. None of these	
743)	The equations of the type $a_{11}x_1+a_{12}x_2=b_1, a_{21}x_1+a_{22}x_2=b_2$, with $b=0$ are called a system of....		A
	A. homogeneous linear equations	B. non-homogeneous linear equations	
	C. non-linear equations	D. None of these	
744)	The solution of system of equations $x_1+5x_2+2x_3=9, x_1+x_2+7x_3=6, -3x_2+4x_3=-2$ is		A
	A. $x_1=-3, x_2=2, x_3=1$	B. $x_1=-3, x_2=1, x_3=0$	
	C. $x_1=1, x_2=1, x_3=0$	D. None of these	
745)	The solution of system of equations $2x_1-x_2+3x_3=3, 3x_1+x_2-5x_3=0, 4x_2-x_3+x_3=3$ is		A
	A. $x_1=1, x_2=2, x_3=1$	B. $x_1=-3, x_2=1, x_3=0$	
	C. $x_1=1, x_2=1, x_3=0$	D. None of these	
746)	The solution of this matrix $\left[\begin{array}{ccc\|c} 2 & -1 & 3 & 4 \\ 0 & 4 & 1 & 8 \\ 0 & 0 & 2 & 0 \end{array}\right]$ is		A
	A. $x_1=3, x_2=2, x_3=0$	B. $x_1=-3, x_2=1, x_3=0$	
	C. $x_1=1, x_2=1, x_3=0$	D. None of these	
747)	Let W be the set of all points (x,y) in R^2 for which $x\ \geq\ 0$ and $y\ \geq\ 0$ is		A
	A. subspace of R^2	B. not subspace of R^2	
	C. not defined	D. None of these	
748)	The dimension of the subspace of $M_{2\times 2}$ spanned by $\begin{pmatrix} 1 & -5 \\ -4 & 2 \end{pmatrix}, \begin{pmatrix} 1 & 1 \\ -1 & 5 \end{pmatrix}$ and $\begin{pmatrix} 2 & -4 \\ -5 & 7 \end{pmatrix}$ is		B
	A. 1	B. 2	
	C. 3	D. None of these	
749)	A is an upper triangular with all diagonal entries zero, then $I+A$ is		C
	A. invertible	B. Idempotent	
	C. nilpotent	D. None of these	
750)	A Newtonian fluid is defined as the fluid which		C
	A. obeys Hook's law	B. is incompressible	

	C.	obeys Newton's law of viscosity	D.	None of these	
751)	If the Reynolds number is less than 2000, the flow in a pipe is				B
	A.	Turbulent	B.	Laminar	
	C.	Transition	D.	None of these	
752) 00)	The continuity equation is the result of application of the following law to the flow field				A
	A.	Conservation of mass	B.	Conservation of energy	
	C.	Newton's second law of motion	D.	None of these	
753)	When a problem states "The velocity of the water flow in a pipe is 20 m/s", which of the following velocities is it talking about?				B
	A.	RMS velocity	B.	Average velocity	
	C.	Relative velocity	D.	None of these	
754)	Power set topology is ----------- then any other.				A
	A.	finer	B.	coarser	
	C.	weaker topology	D.	None of these	
755)	Let τ_1 & τ_2 are two topologies on X $\tau_1 \subseteq \tau_2$ then τ_1 is said to -------------.				C
	A.	stronger topology	B.	finer topology	
	C.	coarser topology	D.	None of these	
756)	Let τ_1 & τ_2 are two topologies on X $\tau_1 \nsubseteq \tau_2$ then they are said to be -------------.				A
	A.	In compare able topology	B.	Compare able topology	
	C.	Finer topology	D.	None of these	
757)	$\tau = \{\varphi, X\}$ be indiscrete topological space $A \subseteq X$ then relative topology on A is ------.101				C
	A.	$\tau_A = \{\varphi, X\}$	B.	$\tau_A = \{X\}$	
	C.	$\tau_A = \{\varphi, A\}$	D.	None of these	
758)	1) A={a,b} X={a,b,c} and $\tau = \{\varphi, \{b, c\}, X\}$ then $\bar{A}$ is equal to ------------.				B
	A.	{b}	B.	X	
	C.	{a}	D.	None of these	
759)	2) Let (X, τ) be a topological space and $A \subseteq X$ then A is closed iff -----------------.				C
	A.	$\bar{\bar{A}} = \bar{A}$	B.	$\bar{\bar{A}} = A$	
	C.	$A = \bar{A}$	D.	None of these	
760)	Interior of A is union of all open set contain in -----------				B
	A.	$\bar{A}$	B.	A	
	C.	A^d	D.	None of these	
761)	3) Let (X, τ) be a topological space and $A \subseteq X$ then A is open iff -----------------.				A
	A.	$A^\circ = A$	B.	$\bar{\bar{A}} = \bar{A}$	
	C.	$A^\circ = \bar{A}$	D.	None of these	
762)	Let (X, τ) be a topological space Ext A is the largest open set contain in ---------.				B
	A.	X	B.	$\bar{A}$	
	C.	A°	D.	None of these	
763)	Int(X-A) is equal to ------------------.				A
	A.	X	B.	Int(A)	
	C.	Ext(A)	D.	None of these	

764)	Let (X, τ) be a topological space and $A \subseteq X$ then($\overline{X - A}$) =----------------.				C
	A.	X-A	B.	Int(A)	
	C.	X-Int(A)	D.	None of these	
765)	Disjoint union of B and A^d = -------------------.				A
	A.	$\bar{A}$	B.	Ext(A)	
	C.	A	D.	None of these	
766)	Every $\tau_1 - space$ is also a				C
	A.	$\tau_1 - space$	B.	$\tau_4 - space$	
	C.	$\tau_2 - space$	D.	None of these	
767)	If $\lim_{n\to\infty} a_n = l$, $a_n \to l$ as				A
	A.	$n \to \infty$	B.	$n \to 0$	
	C.	$n \to 1$	D.	None of these	
768)	The sequence $\left(\frac{1}{n}\right)_{n=1}^{\infty}$ is				B
	A.	divergent	B.	convergent	
	C.	oscillating	D.	None of these	
769)	$\log_3(27) =$				D
	A.	9	B.	24	
	C.	6	D.	None of these	
770)	A bounded sequence of real numbers				C
	A.	converges	B.	diverges	
	C.	may converge	D.	None of these	
771)	A Cauchy sequence of real numbers is				D
	A.	not bounded	B.	oscillating	
	C.	divergent	D.	None of these	
772)	The set R^+ is equivalent to				C
	A.	Q	B.	Q^+	
	C.	R	D.	None of these	
773)	The interval $[0,1]$ is equivalent to				B
	A.	Q	B.	$[2,5]$	
	C.	Z	D.	None of these	
774) 22)	The area bounded by the curves $y = \sin x$, $y = 0$, $x = 0$ and $x = \pi$ is				A
	A.	2	B.	0	
	C.	undefined	D.	None of these	
775)	The area bounded by the curves $y = \sin x$, $y = 0$, $x = 0$ and $x = 2\pi$ is				B
	A.	2	B.	4	

	C.	0	D.	None of these	
776)	If $a \le b$ and $c \le d$,				C
	A.	$a+c \ge b+d$	B.	$a+c < b+d$	
	C.	$a+c \le b+d$	D.	None of these	
777)	A part of many complex valued function which is single value and analytic is known as				A
	A.	Branch	B.	Point	
	C.	Section	D.	None of these	
778)	A function is analytic if it is a function of				B
	A.	$\lvert z \rvert$ *alone*	B.	z alone	
	C.	$\bar{z}$ alone	D.	None of these	
779)	Piecewise smooth curve is also known as				C
	A.	Smooth Curve	B.	Regular Curve	
	C.	Contour	D.	None of these	
780)	The product of complex number z and its conjugate is				C
	A.	$\lvert z \rvert^3$	B.	$\lvert z \rvert^1$	
	C.	$\lvert z \rvert^2$	D.	None of these	
781)	Every entire bounded function is				A
	A.	Constant	B.	Polynomial	
	C.	Monomial	D.	None of these	
782)	The Singularity of $f(z) = \frac{z+3}{(z-1)(z-2)}$ are				C
	A.	z = 1 ,3	B.	z = 1 ,0	
	C.	z = 1 ,2	D.	None of these	
783)	An integral curve along a simple closed curve is called a				C
	A.	Multiple Curve	B.	Jordan Curve	
	C.	Contour Curve	D.	None of these	
784)	Bernoulli's equation cannot be applied when the flow is				D
	A.	rotational	B.	turbulent	
	C.	unsteady	D.	all of the above	
785)	If a vector space V has a basis $B = \{b_1, \dots, b_n\}$ then any set in V containing more than n vectors must				B

	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	
786)	A finite set that contains 0 is				B
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	
787)	If $x = 10^y$, $y =$				D
	A.	$\frac{1}{\ln(10)}$	B.	$\frac{1}{\ln(x)}$	
	C.	e	D.	None of these	
788)	A decreasing sequence				C
	A.	is convergent	B.	is divergent	
	C.	may diverge	D.	None of these	
789)	For two non-empty sets A and B, the Cartesian product of A and B is denoted by				A
	A.	$A \times B$	B.	$B \times A$	
	C.	AB	D.	None of these	
790)	If x_0 is an element of a metric space (X, d) and $r > 0$, $\{x \in X : d(x, x_0) > r\} =$				B
	A.	$X - B(x_0; r)$	B.	$X - \overline{B}(x_0; r)$	
	C.	$X - S(x_0; r)$	D.	None of these	
791)	If a convergent sequence $(a_n)_{n=1}^{\infty}$ consists of finitely many distinct elements and $A = \{a_1, a_2, a_3, ...\}$, the limit of the sequence				A
	A.	$\in A$	B.	$\notin A$	
	C.	is undefined	D.	None of these	
792)	Which of the following is true				D
	A.	$\pi < e$	B.	$\pi = \frac{22}{7}$	
	C.	π is rational	D.	None of these	
793)	A convergent sequence of real numbers is				B
	A.	unbounded	B.	Cauchy	
	C.	oscillating	D.	None of these	
794) 42)	$\lim_{x \to 0} \frac{\sin(2x)}{3x} =$				D
	A.	1	B.	0	
	C.	$\frac{3}{2}$	D.	None of these	

795)	The function $f : R^{+} \to R$ defined by $f(x) = \ln x$ is				C
	A.	decreasing	B.	constant	
	C.	increasing	D.	None of these	
796)	The function $f : R \to R^{+}$ defined by $f(x) = e^{x}$ is				A
	A.	one to one	B.	not one to one	
	C.	decreasing	D.	None of these	
797)	$\int_0^{\pi/4} \theta sec^2\theta \, d\theta =$				C
	A.	$\frac{\pi}{4} + \frac{1}{2} ln2$	B.	$\frac{\pi}{4} + log2$	
	C.	$\frac{\pi}{4} + \frac{1}{2} ln2$	D.	None of these	
798)	The partial differential equations in $p + q = z^2$, is -------				A
	A.	of order 1 and is linear	B.	of order 1 and is not linear	
	C.	of order 2 and is not linear	D.	None of these	
799)	The vertex of the equation $y^2 = 4ax$ is?				C
	A.	(1, 1)	B.	(2, 2)	
	C.	(0, 0)	D.	None of these	
800)	What is the axis of the parabola $y^2 = 4ax$?				B
	A.	x=0	B.	y=0	
	C.	x=a	D.	None of these	
801)	If $\sum a_k$ diverges then				A
	A.	$\sum\lvert a_k\rvert$ diverges	B.	$\sum\lvert a_k\rvert$ converges	
	C.	$\sum\lvert a_k\rvert$ absolutely converges	D.	None of these	
802)	Which of the following statement is not true?				B
	A.	Any sequence has a unique limit.	B.	The set S = {0, 1} has exactly two accumulation points.	
	C.	There exist a sequence of rational numbers that has an irrational limit.	D.	None of these	
803)	The continuity equation is the result of application of the following law to the flow field				A
	A.	Conservation of mass	B.	Conservation of energy	
	C.	Newton's second law of motion	D.	None of these	
804)	The series converges absolutely if				A
	A.	$\lvert x\rvert < 1$	B.	$\lvert x\rvert > 1$	
	C.	both A and B	D.	None of these	
805)	The series diverges absolutely if				B
	A.	$\lvert x\rvert < 1$	B.	$\lvert x\rvert > 1$	
	C.	both A and B	D.	None of these	
806)	If the power series $\sum_{n=0}^{\infty} c_n x^n$ converges for $x = x_1$, then it converges absolutely for all x such that				A
	A.	$\lvert x\rvert < \lvert x_1\rvert$	B.	$\lvert x\rvert > \lvert x_1\rvert$	
	C.	$\lvert x\rvert = \lvert x_1\rvert$	D.	None of these	

807)	If the power series $\sum_{n=0}^{\infty} c_n x^n$ diverges for $x = x_1$, then it diverges for all x such that				B
	A.	$\lvert x\rvert < \lvert x_1\rvert$	B.	$\lvert x\rvert > \lvert x_1\rvert$	
	C.	$\lvert x\rvert = \lvert x_1\rvert$	D.	None of these	
808)	Let the power series $\sum_{n=0}^{\infty} c_n x^n$ radius convergence R and $f(x) = c_0 + c_1 x + c_2 x^2 + \cdots + c_n x^n + \cdots$ then				D
	A.	f is continuous	B.	f is differentiable	
	C.	f is integrable	D.	all of these	
809)	$\sum_{n=0}^{\infty} \frac{x^n}{n!} = \ldots$				A
	A.	e^x	B.	e^{2x}	
	C.	0	D.	∞	
810)	$\frac{1}{1-x} = \ldots$				A
	A.	$1 + x + x^2 + x^3 + \cdots$	B.	$1 - x - x^2 - x^3 - \cdots$	
	C.	Both A and B	D.	None of these	
811)	$\tan^{-1}(x) = x - \frac{x^3}{3} + \frac{x^5}{5} - \frac{x^7}{7} + \cdots + (-1)^n \frac{x^{2n+1}}{2n+1} + \cdots, \quad -1 < x < 1$ This is known as …				B
	A.	Cauchy series	B.	Gregory's Series	
	C.	both A and B	D.	None of these	
812)	$\sum_{n=0}^{\infty} a_n x^n + \sum_{n=0}^{\infty} b_n x^n =$				B
	A.	$\sum_{n=0}^{\infty} (a_n - b_n) x^n$	B.	$\sum_{n=0}^{\infty} (a_n + b_n) x^n$	
	C.	both A and B	D.	None of these	
813)	$\left(\sum_{n=0}^{\infty} a_n x^n\right)\left(\sum_{n=0}^{\infty} b_n x^n\right) =$				A
	A.	$\sum_{n=0}^{\infty} (c_n) x^n$	B.	$\sum_{n=0}^{\infty} x^n$	
	C.	both A and B	D.	None of these	
814)	$\int_0^1 x^2 e^{-x^2}\, dx =$				C
	A.	0.155	B.	0.167	
	C.	0.187	D.	None of these	

815)	$\int_0^{\frac{1}{2}} \frac{1}{1+x^4} dx =$				A
	A.	0.494	B.	1.454	
	C.	2.434	D.	None of these	
816)	Let U and V be two vector spaces over the same field F. Then a map $T:U\to V$ is called a linear transformation if:				D
	A.	a) $T(u+v)=T(u)+T(v)$ for all $u,v\in U$ $T(au)=aT(u)$ for all $a\in F$, $u\in U$	B.	a) $T(au+v)=aT(u)+T(v)$ for all $a\in F$ and $u,v\in U$	
	C.	a) $T(au+bv)=aT(u)+bT(v)$ for all $a\in F$ and $u,v\in U$	D.	All of these	
817)	The linear transformation is called				D
	A.	Linear mapping	B.	linear function	
	C.	vector space homomorphism	D.	all of these	
818)	A linear transformation $T:V\to V$ is called a zero transformation if:				A
	A.	$T(v)=v$ for all $v\in V$	B.	$T(v)=0$ for all $v\in V$	
	C.	$T(v)=v^2$ for all $v\in V$	D.	$T(v)=1$ for all $v\in V$	
819)	$T:U\to V$ be linear transformation then:				C
	A.	$T(u+v)=T(u)+T(v)$ for all $u,v\in U$	B.	$T(u-v)=T(u)-T(v)$ for all $u,v\in U$	
	C.	both A and B	D.	None of these	
820)	A mapping $T:R^3\to R^3$ is not a linear transformation if:				C
	A.	$T(x,y,z)=(x-y,y-z,z-x)$	B.	$T(x,y,z)=(x+y,3z,0)$	
	C.	$T(x,y,z)=(x+y,x-y,z+1)$	D.	None of these	
821)	A one-one linear transformation is called …				A
	A.	Injective linear transformation	B.	bijective linear transformation	
	C.	surjective linear transformation	D.	None of these	
822)	A onto linear transformation is called …				B
	A.	Injective linear transformation	B.	bijective linear transformation	
	C.	surjective linear transformation	D.	None of these	
823)	A one-one and onto linear transformation is called …				C
	A.	Injective linear transformation	B.	bijective linear transformation	
	C.	surjective linear transformation	D.	None of these	
824)	A one-one and onto linear transformation is called …				C
	A.	bijective linear transformation	B.	vector space homomorphism	
	C.	both A and B	D.	None of these	
825)	$T_1:U\to V$ and $T_2:U\to V$ are said to be equal linear transformations if				B

	A.	$T_1(u) \neq T_2(u)$ for all $u \in U$	B.	$T_1(u) = T_2(u)$ for all $u \in U$	
	C.	$T_1(u) < T_2(u)$ for all $u \in U$	D.	$T_1(u) > T_2(u)$ for all $u \in U$	
826)	For any field F, $F^n \cong F^m$ if and only if				A
	A.	$n = m$	B.	$n \neq m$	
	C.	both A and B	D.	None of these	
827)	Two finite dimensional vector spaces U and V over F are isomorphic and $\dim U = 5$ then				A
	A.	$\dim V = 5$	B.	$\dim V = 4$	
	C.	$\dim V = 3$	D.	None of these	
828)	There is no one-one onto linear transformation from				C
	A.	R^2 to R^3	B.	R^3 to R^4	
	C.	both A and B	D.	None of these	
829)	The vectors $(1,-2,3),(5,6,-1)$ and $(3,2,1)$ are				B
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	
830)	The vectors $(1,2,2,-1),(4,9,9,-4)$ and $(5,8,9,-5)$ are				A
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	
831)	The polynomials $p_1 = 1 - x, p_2 = 5 + 3x - 2x^2$ and $p_3 = 1 + 3x - x^2$ are				B
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of the	
832)	A finite set that contains 0 is				B
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	
833)	A set of vectors $\{x, sinx\}$ is				A
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	
834)	A set of vectors $\{sin2x, sinxcosx\}$ is				B
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	
835)	For what value(s) of h will y be in the subspace of R^3 spanned by v_1, v_2, v_3 if $v_1 = \begin{pmatrix} 1 \\ -1 \\ -2 \end{pmatrix}, v_2 = \begin{pmatrix} 5 \\ -4 \\ -7 \end{pmatrix}, v_3 = \begin{pmatrix} -3 \\ 1 \\ 0 \end{pmatrix}$ and $y = \begin{pmatrix} -4 \\ 3 \\ h \end{pmatrix}$				B
	A.	$h = -5,5$	B.	$h = 5$	
	C.	$h = -1,0,-1$	D.	None of these	
836)	The set of all solutions of the homogenous equation $Ax = 0$ is known as				A
	A.	Null set	B.	trivial solution	
	C.	Non trivial	D.	None of these	
837)	$Null(A) = \{0\}$ if and only if the equation $Ax = 0$has only the				B
	A.	Null set	B.	trivial solution	
	C.	Non trivial	D.	None of these	
838)	$Null(A) = \{0\}$ if and only if the linear transformation $x \rightarrow Ax$ is				A

	A.	one-one	B.	onto	
	C.	Subspace	D.	None of these	
839)	If a vector space V has a basis $B = \{b_1, \dots, b_n\}$ then any set in V containing more than n vectors must				B
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	
840)	If a vector space V has a basis of n vectors, then every basis of V must consist of exactly				A
	A.	n vectors	B.	$n-1$ vectors	
	C.	$n+1$ vectors	D.	None of these	
841)	The dimension of zero vector space is				A
	A.	Zero	B.	Infinite	
	C.	Not defined	D.	None of these	
842)	The standard basis for the polynomial of degree n has				B
	A.	n vectors	B.	$n+1$ vectors	
	C.	infinite vectors	D.	None of these	
843)	Any subspace spanned by a single nonzero vector. Such subspaces are				A
	A.	lines through origin	B.	planes through origin	
	C.	not defined	D.	None of these	
844)	The rank of A is the dimension of the				A
	A.	column space of A	B.	planes through origin	
	C.	Polynomials	D.	None of these	
845)	The dimensions of the column space and the row space of an $m \times n$ matrix A are				A
	A.	Equal	B.	Not equal	
	C.	m and n	D.	None of these	
846)	If A is a 7×9 matrix with a two-dimensional null space, then rank of A is				D
	A.	3	B.	5	
	C.	8	D.	None of these	
847)	Could a 6×9 matrix have a two dimensional null space				B
	A.	Yes	B.	No	
	C.	may or may not be	D.	None of these	
848)	Let A be a an $n \times n$ invertible matrix then Null(A) is				A
	A.	$\{0\}$	B.	$\{\}$	
	C.	Infinite	D.	None of these	
849)	$u = \begin{pmatrix} 6 \\ -5 \end{pmatrix}$ is an eigen vector of $A = \begin{pmatrix} 1 & 6 \\ 5 & 2 \end{pmatrix}$ or not?				A
	A.	Yes	B.	No	
	C.	may or may not be	D.	None of these	
850)	$u = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$ is an eigen vector of $A = \begin{pmatrix} 1 & 6 \\ 5 & 2 \end{pmatrix}$ or not?				B
	A.	Yes	B.	No	
	C.	may or may not be	D.	None of these	
851)	The set $\{\sin^2 x, \cos^2 x, 5\}$ is				B
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	
852)	If $u_1 = (-1,2,4)$ and $u_2 = (5,-10,-20)$then the set $\{u_1, u_2\}$ is				B
	A.	Linearly independent	B.	Linearly dependent	
	C.	Both A and B	D.	None of these	

853)	If $u_1 = (3,-1), u_2 = (4,5)$ and $u_3 = (-4,7)$ then the set $\{u_1, u_2, u_3\}$ is				B
	A. Linearly independent		B. Linearly dependent		
	C. Both A and B		D. None of these		
854)	If $p_1 = 3 - 2x + x^2$ and $p_2 = 6 - 4x + 2x^2$ then the set $\{p_1, p_2\}$ is				B
	A. Linearly independent		B. Linearly dependent		
	C. Both A and B		D. None of these		
855)	If $A = \begin{pmatrix} -3 & 4 \\ 2 & 0 \end{pmatrix}$ and $B = \begin{pmatrix} 3 & -4 \\ -2 & 0 \end{pmatrix}$ in M_{22} , then the set $\{A, B\}$ is				B
	A. Linearly independent		B. Linearly dependent		
	C. Both A and B		D. None of these		
856)	The vectors $(3,8,7,-3), (1,5,3,-1), (2,-1,2,6), (4,2,6,4)$in $R^4$are				A
	A. Linearly independent		B. Linearly dependent		
	C. Both A and B		D. None of these		
857)	The Wronskian of $f_1 = \sin x$, $f_2 = \cos x$ and $f_3 = x \cos x$ is				A
	A. $2 \sin x$		B. $\sin 2x$		
	C. zero		D. None of these		
858)	The Wronskian of $f_1 = 1, f_2 = x$ and $f_3 = e^x$ is				B
	A. xe^x		B. e^x		
	C. zero		D. None of these		
859)	The Wronskian of $f_1 = 1, f_2 = x$ and $f_3 = x^2$ is				A
	A. 2		B. e^x		
	C. Zero		D. None of these		
860)	If $\left(\lambda, -\frac{1}{2}, -\frac{1}{2}\right), \left(-\frac{1}{2}, \lambda, -\frac{1}{2}\right), \left(-\frac{1}{2}, -\frac{1}{2}, \lambda\right)$ are linearly independent then				A
	A. $\lambda = 1, -\frac{1}{2}$		B. $\lambda = 1, -1$		
	C. $\lambda = -\frac{1}{2}$		D. None of these		
861)	The vectors $(-3,7)$ and $(5,5)$ in R^2 form				A
	A. Basis for R^2		B. Linearly dependent set		
	C. Infinite set		D. None of these		
862)	If W is subspace of a finite dimensional vector space V then W is				A
	A. finite dimensional		B. Infinite dimensional		
	C. Basis for V		D. None of these		
863)	v_3 can be added to linearly independent sets $(1,-2,3), (0,5,-3)$ to form basis then				A
	A. $v_3 = (0,0,1)$		B. $v_3 = (0,0,0)$		
	C. Both A and B		D. None of these		
864)	The area of the triangle formed by the tangent and the normal to the parabola $y^2 = 4ax$ both drawn at the same end of the latus rectum and the axis of the parabola is				C

	A.	$\sqrt{2}$ 2 a^2	B.	$2a^2$	
	C.	$4a^2$	D.	None of these	
865)	The locus of the point from which tangents to a parabola are at right angles is a				A
	A.	Straight line	B.	Circle	
	C.	Pair of straight line	D.	None of these	
866)	Given the two ends of the latus rectum, the maximum number of parabolas that can be drawn is				B
	A.	1	B.	2	
	C.	0	D.	Infinity	
867)	If the focus of the parabola is (–2, 1) and the directrix has the equation $x + y = 3$ then the vertex is				C
	A.	(0, 3)	B.	(–1, 1/2)	
	C.	(–1, 2)	D.	(2, –1)	
868)	The shortest distance between the parabola $y^2 = 4x$ and the circle $x^2 + y^2 + 6x – 12y + 20 = 0$ is				A
	A.	$\sqrt{2} - 5$ 4	B.	0	
	C.	$\sqrt{2}$ 3 +5	D.	1	
869)	If line $y = 2x + 1/4$ is tangent to $y^2 = 4ax$, then a is equal to				A
	A.	1/ 2	B.	1	
	C.	2	D.	None of these	
870)	The Cartesian equation of the curve whose parametric equations are $x = t^2 + 2t + 3$ and $y = t + 1$ is				C
	A.	$y = (x– 1)^2 + 2(y–1) + 3$	*B.*	$x = (y – 1)^2 + 2(y–1) +5$	
	C.	$x = y^2 +2$	D.	None of these	
871)	Normal at point to the parabola $y^2 = 4ax$ where abscissa is equal to ordinate, will meet the parabola again at a point				D

	A.	(6a, – 9a)	B.	(–6a, 9a)	
	C.	(–9a, 6a)	D.	(9a, – 6a)	
872)	The tangents from the origin to the parabola $y^2 + 4 = 4x$ inclined of				B
	A.	$\pi/6$	B.	$\pi/4$	
	C.	$\pi/3$	D.	$\pi/2$	
873)	If the line $y = x + k$ is a normal to the parabola $y^2 = 4x$ then k can have the value				C
	A.	$2\sqrt{2}$	B.	4	
	C.	-3	D.	3	
874)	The number of tangents to the parabola $y^2 = 8x$ through (2, 1) is				A
	A.	0	B.	1	
	C.	2	D.	None of these	
875)	The graph represented by the equations $x = sin^2t, y = 2$ cost is				A
	A.	Parabola	B.	Circle	
	C.	Hyperbola	D.	None of these	
876)	The point of intersection of the tangents of the parabola $y^2 = 4x$ at the points, where the parameter t has the value 1 and 2 are				C
	A.	(3, 8)	B.	(4, 5)	
	C.	(2, 3)	D.	(4, 6)	
877)	If (2, 0) is the vertex and y– axis the directrix of the parabola, then the focus is				C
	A.	(2, 0)	B.	(-2, 0)	
	C.	(4, 0)	D.	(-4, 0)	
878)	The equation of the parabola whose vertex and focus lie on the x– axis at distances a and a_1 from the origin respectively, is				B
	A.	$y^2 = 4(a_1 – a)x$	B.	$y^2 = 4(a_1 – a) (x – a)$	
	C.	$y^2 = 4(a_1 – a) (x – a_1)$	D.	None of these	

879)	If the line $x - 1 = 0$ is the directrix of the parabola $y^2 - kx + 8 = 0$, then one of the values of k is				C
	A.	1/8	B.	8	
	C.	4	D.	1/4	
880)	If the point $P\ (4, -2)$ is one end of the focal chord PQ of the parabola $y^2 = x$, then the slope of the tangent at Q is				C
	A.	-1/4	B.	1/4	
	C.	4	D.	-4	
881)	The line $y = mx + c$ intersects the circle $x^2 + y^2 = a^2$ at the most of ------------points.				B
	A.	1	B.	2	
	C.	3	D.	4	
882)	The eccentricity of an ellipse is				D
	A.	$e = 1$	*B.*	$e < 1$	
	C.	$e > 1$	*D.*	$0 < e < 1$	
883)	The perpendicular distance from the point (3,–4) to the line $3x^2 - 4x + 10 = 0$				A
	A.	7	B.	8	
	C.	9	D.	10	
884)	What is the length of latus rectum If the distance between vertex and focus is 3?				B
	A.	8	B.	12	
	C.	4	D.	None of these	
885)	The line perpendicular to the tangent line is called				A
	A.	normal line	B.	secant line	
	C.	limit	D.	derivative	
886)	The point of a parabola which is closest to the focus is the ___________ of the parabola.				A
	A.	vertex	B.	latus rectum	
	C.	directrix	D.	eccentricity	

887)	The center of the circle $4x^2+4y^2-8x+12y-25=0$ is ?				D
	A.	(2,−3)	B.	(−2,3)	
	C.	(−4,6)	D.	(4,−6)	
888)	Which point of a parabola is closest to the focus is?				A
	A.	directrix	B.	vertex	
	C.	eccentricity	D.	latus rectum	
889)	If the distance between vertex and focus is 3, then the length of latus rectum is?				D
	A.	6	B.	8	
	C.	10	D.	12	
890)	The focus of the parabola $y^2=-8(x-3)$ is ?				B
	A.	(0,0)	B.	(1,0)	
	C.	(0,1)	D.	(1,1)	
891)	If the discriminant of a conic is $h^2-ab=0$, then it represents a				B
	A.	circle	B.	parabola	
	C.	hyperbola	D.	ellipse	
892)	The radius of the circle $4x^2+4y^2-8x+12y-25=0$ is ?				C
	A.	$\sqrt{57}$	B.	$\sqrt{67}$	
	C.	$\sqrt{77}$	D.	$\sqrt{87}$	
893)	A line which is perpendicular to base of cone and passes through vertex of cone is called........... of cone				D
	A.	rulings	B.	nap	
	C.	vertex	D.	axis	
894)	If the cutting plane is parallel to the generator of the cone and cut only one nap is called				
	A.	Circle	B.	hyperbola	
	C.	parabola	D.	ellipse	

895)	The perpendicular distance from the point (3, -4) to the line $3x - 4y + 10 = 0$				A
	A.	7	B.	8	
	C.	9	D.	10	
896)	The locus of the point from which the tangent to the circles $x^2 + y^2 - 4 = 0$ and $x^2 + y^2 - 8x + 15 = 0$ are equal is given by the equation				B
	A.	$8x + 19 = 0$	B.	$8x - 19 = 0$	
	C.	$4x - 19 = 0$	D.	$4x + 19 = 0$	
897)	The number of tangents that can be drawn from (1, 2) to $x^2 + y^2 = 5$ is				B
	A.	0	B.	1	
	C.	2	D.	More than 2	
898)	The equation of parabola whose focus is (3, 0) and directrix is $3x + 4y = 1$ is				D
	A.	$16x^2 - 9y^2 - 24xy - 144x + 8y + 224 = 0$	B.	$16x^2 + 9y^2 - 24xy - 144x + 8y - 224 = 0$	
	C.	$16x^2 + 9y^2 - 24xy - 144x - 8y + 224 = 0$	D.	$16x^2 + 9y^2 - 24xy - 144x + 8y + 224 = 0$	
899)	The center of the ellipse $(x + y - 2)^2 /9 + (x - y)^2 /16 = 1$ is				D
	A.	(0, 0)	B.	(0, 1)	
	C.	(1, 0)	D.	(1, 1)	
900)	The equation of parabola with vertex at origin the axis is along x-axis and passing through the point (2, 3) is				B
	A.	$y^2 = 9x$	B.	$y^2 = 9x/2$	
	C.	$y^2 = 2x$	D.	$y^2 = 2x/9$	
901)	At what point of the parabola $x^2 = 9y$ is the abscissa three times that of ordinate				B
	A.	(1, 1)	B.	(3, 1)	
	C.	(-3, 1)	D.	(-3, -3)	
902)	A man running a race course notes that the sum of the distances from the two flag posts from him is always 10 meter and the distance between the flag posts is 8 meter. The equation of posts traced by the man is				D
	A.	$x^2/9 + y^2/5 = 1$	B.	$x^2/9 + y2 /25 = 1$	

	C.	$x^2/5 + y^2/9 = 1$	D.	$x^2/25 + y^2/9 = 1$	
903)	In an ellipse, the distance between its foci is 6 and its minor axis is 8 then its eccentricity is				C
	A.	4/5	B.	$1/\sqrt{52}$	
	C.	3/5	D.	1/2	
904)	If the length of the tangent from the origin to the circle centered at (2, 3) is 2 then the equation of the circle is				C
	A.	$(x + 2)^2 + (y - 3)^2 = 3^2$	B.	$(x - 2)^2 + (y + 3)^2 = 3^2$	
	C.	$(x - 2)^2 + (y - 3)^2 = 3^2$	D.	$(x + 2)^2 + (y + 3)^2 = 3^2$	
905)	The parametric representation $(2 + t^2, 2t + 1)$ represents				A
	A.	a parabola	B.	a hyperbola	
	C.	an ellipse	D.	a circle	
906)	If a parabolic reflector is 20 cm in diameter and 5 cm deep then the focus of parabolic reflector is				C
	A.	(0 0)	B.	(0 5)	
	C.	(5 0)	D.	(5 5)	
907)	The parametric coordinate of any point of the parabola $y^2 = 4ax$ is				C
	A.	$(-at^2, -2at)$	B.	$(-at^2, 2at)$	
	C.	$(a \sin^2 t, -2a \sin t)$	D.	$(a \sin t, -2a \sin t)$	
908)	The equation of parabola with vertex (-2, 1) and focus (-2, 4) is				B
	A.	$10y = x^2 + 4x + 16$	B.	$12y = x^2 + 4x + 16$	
	C.	$12y = x^2 + 4x$	D.	$12y = x^2 + 4x + 8$	
909)	The equation of a hyperbola with foci on the x-axis is				B
	A.	$x^2/a^2 + y^2/b^2 = 1$	B.	$x^2/a^2 - y^2/b^2 = 1$	
	C.	$x^2 + y^2 = (a^2 + b^2)$	D.	$x^2 - y^2 = (a^2 + b^2)$	
910)	The line $lx + my + n = 0$ will touches the parabola $y^2 = 4ax$ if				A
	A.	$ln = am^2$	B.	$ln = am$	
	C.	$ln = a^2 m^2$	D.	$ln = a^2 m$	

911)	The center of the circle $4x^2 + 4y^2 - 8x + 12y - 25 = 0$ is				A
	A.	(2,-3)	B.	(-2,3)	
	C.	(-4,6)	D.	(4,-6)	
912)	The radius of the circle $4x^2 + 4y^2 - 8x + 12y - 25 = 0$ is				C
	A.	$\sqrt{57}/4$	B.	$\sqrt{77}/4$	
	C.	$\sqrt{77}/2$	D.	$\sqrt{87}/4$	
913)	If (a, b) is the mid point of a chord passing through the vertex of the parabola $y^2 = 4x$, then				D
	A.	$a = 2b$	B.	$2a = b$	
	C.	$a^2 = 2b$	D.	$2a = b^2$	
914)	A rod of length 12 CM moves with its and always touching the co-ordinate Axes. Then the equation of the locus of a point P on the road which is 3 cm from the end in contact with the x-axis is				A
	A.	$x^2/81 + y^2/9 = 1$	B.	$x^2/9 + y^2/81 = 1$	
	C.	$x^2/169 + y^2/9 = 1$	D.	$x^2/9 + y^2/169 = 1$	
915)	If the diameter of cylinder is 8cm and its height is 16cm then the volume of cylinder is				A
	A.	804.352cm³	B.	1000cm³	
	C.	900cm³	D.	850cm³	
916)	If the volume of cylinder is 900cm² with the height of 20cm then the diameter of the cylinder is				B
	A.	24cm²	B.	7.57cm²	
	C.	9.57cm²	D.	12.23cm²	
917)	If a rectangular tank is 21cm long, 13cm wide and 18cm high and contains water up to a height of 11cm then the total surface area is				D
	A.	1450cm²	B.	1350cm²	

	C.	1200cm²	D.	1021cm²	
918)	If circular metal sheet is 0.65cm thick and of 50cm in diameter is melted and recast into cylindrical bar with 8cm diameter then the length of bar will be				A
	A.	24.41cm	B.	35.41cm	
	C.	40.41cm	D.	30.41cm	
919)	If a cuboid is 3.2 cm high, 8.9cm long and 4.7 wide then total surface area is				A
	A.	170.7cm²	B.	180cm²	
	C.	205.7cm²	D.	325.8cm²	
920)	By converting the 5.6m² into the cm², the answer will be				B
	A.	0.0056cm²	B.	5600cm²	
	C.	56000cm²	D.	560cm²	
921)	A rectangular field is 40m long and 30m wide. The perimeter of rectangular field is				D
	A.	200m²	B.	180m²	
	C.	160m²	D.	140m²	
922)	By converting the 0.96km² into m²(meter square), the answer will be				B
	A.	9600m²	B.	960m²	

	C.	0.96m²	D.	960000m²	
923)	By converting the 4.8mm² into the cm², the answer will be				A
	A.	0.048cm²	B.	0.48cm²	
	C.	48cm²	D.	480cm²	
924)	By converting the 80.2km² into the hectare, the answer will be				B
	A.	0.08020ha	B.	8020ha	
	C.	802ha	D.	0.802ha	
925)	The flat surface in which two points are joined by using straight line is classified as				D
	A.	line	B.	ray	
	C.	intersecting line	D.	plane	
926)	If the line segment is extended in two directions indefinitely from each of the two points then it is classified as				C
	A.	intersecting line	B.	plane	
	C.	line	D.	ray	
927)	The type of quadrilateral which has one pair of parallel sides is called				D
	A.	triangle	B.	semi-circle	

	C.	parallelogram	D.	trapezium	
928)	If the base of parallelogram is 19cm and the height is 11cm then the area of parallelogram is				B
	A.	$105cm^2$	B.	$209cm^2$	
	C.	110^2	D.	$170cm^2$	
929)	If the width of rectangle is 10cm lass than its length and its perimeter is 50cm then the width of rectangle is				C
	A.	$58cm^2$	B.	$64cm^2$	
	C.	$15cm^2$	D.	$30cm^2$	
930)	Converting the cm^2 into the m^2, the $6.5cm^2$ is equal to				A
	A.	$0.00065m^2$	B.	$0.0065m^2$	
	C.	$0.65m^2$	D.	$65m^2$	
931)	By converting the $78580m^2$ into hectare(ha), the answer will be				B
	A.	785.80ha	B.	0.0007858ha	
	C.	0.07858ha	D.	78.580ha	
932)	If the length of a square field is 12cm then the perimeter of square will be				A
	A.	$48cm^2$	B.	$24cm^2$	

	C.	$36cm^2$	D.	$50cm^2$	
933)	If the area of circle is $112m^2$ then the circumference of the circle is				B
	A.	$27.68m^2$	B.	$37.68m^2$	
	C.	$50.68m^2$	D.	$55.68m^2$	
934)	By converting the $62.7m^2$ into km^2, the answer will be				A
	A.	$0.0000627km^2$	B.	$0.0627km^2$	
	C.	$0.00627km^2$	D.	$6270km^2$	
935)	If the length of rectangle is 15cm and width of rectangle is 5cm then the area of rectangle is				C
	A.	$35cm^2$	B.	$40cm^2$	
	C.	$75cm^2$	D.	$70cm^2$	
936)	By converting the $85600mm^2$ into m^2(meter square), the answer will be				C
	A.	$8560m^2$	B.	$856m^2$	
	C.	$0.0856m^2$	D.	$8560000m^2$	
937)	By converting the $60.8cm^2$ into the mm^2, the answer will be				C
	A.	$0.0608mm^2$	B.	$0.608mm^2$	

	C.	$6080mm^2$	D.	$608mm^2$	
938)	If the diameter of a truck wheel is 0.65m and truck is travelling at 40km/h then the number of revolutions per minute made by truck wheel is				A
	A.	3223	B.	5223	
	C.	6223	D.	8500	
939)	If the height of trapezium is 8cm and the sum of parallel sides is 16cm then the area of trapezium is				C
	A.	$85cm^2$	B.	$54cm^2$	
	C.	$64cm^2$	D.	$32cm^2$	
940)	The kind of quadrilateral in which opposite pairs of the sides are parallel and equal is called				A
	A.	parallelogram	B.	trapezium	
	C.	triangle	D.	semi-circle	
941)	Volume of seashells, pebbles and keys can be measured by				B
	A.	measuring cylinder	B.	displacement method	
	C.	Vernier caliper	D.	measuring flask	
942)	The apparatus commonly used to measure volume of liquids is				A
	A.	measuring cylinder	B.	measuring tapes	

	C.	jar	D.	cylinder	
943)	The amount of 1 liter contains				B
	A.	100ml	B.	1000ml	
	C.	10mm	D.	10kg	
944)	The volume is measured by help of a curve made in measuring cylinder called				A
	A.	meniscus curve	B.	round curve	
	C.	slanting curve	D.	volume curve	
945)	The volume of liquids can be measured by using different instruments which includes				D
	A.	cylinders	B.	volumetric flasks	
	C.	burettes or pipettes	D.	all of them	
946)	A cylindrical pencil sharpened at one edge is the combination of				A
	A.	a cone and a cylinder	B.	frustum of a cone and a cylinder	
	C.	a hemisphere and a cylinder	D.	two cylinders	
947)	A cone is cut through a plane parallel to its base and then the cone that is for medon one side of that plane is removed. The new part that is left over on the other side of the plane is called				A
	A.	a frustum of a cone	B.	cone	
	C.	cylinder	D.	sphere	
948)	During conversion of a solid from one shape to another, the volume of the new shape will				C

	A.	increase	B.	decrease	
	C.	remain unaltered	D.	be doubled	
949)	A right circular cylinder of radius r cm and height h cm ($h>2r$) just encloses a sphere of diameter				B
	A.	r cm	B.	2r cm	
	C.	h cm	D.	2h cm	
950)	A hollow cube of internal edge 22cm is filled with spherical marbles of diameter 0.5 cm and it is assumed that 1/8th space of the cube remains unfilled. Then the number of marbles that the cube can accommodate is				A
	A.	142244	B.	142396	
	C.	142496	D.	142596	
951)	. A metallic spherical shell of internal and external diameters 4 cm and 8 cm respectively, is melted and recast into the form of a cone with base diameter 8cm. The height of the cone is				B
	A.	12cm	B.	14cm	
	C.	15cm	D.	18cm	
952)	A solid piece of iron in the form of a cuboid of dimensions 49cm × 33cm × 24cm, is mound to form a solid sphere. The radius of the sphere is				A
	A.	21cm	B.	23cm	
	C.	25cm	D.	19cm	
953)	If two solid hemispheres of same base radii r, are joined together along their bases, then curved surface area of this new solid is				A
	A.	$4\pi r^2$	B.	$6\pi r^2$	
	C.	$3\pi r^2$	D.	$8\pi r^2$	
954)	A solid cylinder of radius r and height h is placed over other cylinder of same height and radius. The total surface area of the shape so formed is				C
	A.	$4\pi rh + 4\pi r^2$	B.	$4\pi rh - 4\pi r^2$	
	C.	$4\pi rh + 2\pi r^2$	D.	$4\pi rh - 2\pi r^2$	
955)	The radii of the top and bottom of a bucket of slant height 45cm are 28cm and 7 cm respectively. The curved surface area of the bucket is				A

	A.	4950 cm^2	B.	4951 cm^2	
	C.	4952 cm^2	D.	4953 cm^2	
956)	A medicine-capsule is in the shape of a cylinder of diameter 0.5 cm with two hemispheres stuck to each of its ends. The length of entire capsule is 2 cm. The capacity of the capsule is				A
	A.	0.36 cm^3	B.	0.35 cm^3	
	C.	0.34 cm^3	D.	0.33 cm^3	
957)	Twelve solid spheres of the same size are made by melting a solid metallic cylinder of base diameter 2 cm and height 16 cm. The diameter of each sphere is				C
	A.	4 cm	B.	3 cm	
	C.	2 cm	D.	6 cm	
958)	The diameters of the two circular ends of the bucket are 44 cm and 24 cm. The height of the bucket is 35 cm. The capacity of the bucket is				A
	A.	32.7 litres	B.	33.7 litres	
	C.	34.7 litres	D.	31.7 litres	
959)	Volumes of two spheres are in the ratio 64:27. The ratio of their surface areas is				D
	A.	3 : 4	B.	4 : 3	
	C.	9 : 16	D.	16 : 9	
960)	A mason constructs a wall of dimensions 270cm× 300cm × 350cm with the bricks each of size 22.5cm × 11.25cm × 8.75cm and it is assumed that 1/8 space is covered by the mortar. Then the number of bricks used to construct the wall is:				B
	A.	11100	B.	11200	
	C.	11000	D.	11300	
961)	O is the point of intersection of two equal chords ABand CD such that OB = OD, then triangles OAC and ODB are				D
	A.	Equilateral but not similar	B.	Isosceles but not similar	
	C.	Equilateral and similar	D.	Isosceles and similar	
962)	D and E are respectively the midpoints on the sides AB and AC of a triangle ABC and BC = 6 cm. If DE || BC, then the length of DE (in cm) is				B

	A.	2.5	B.	3	
	C.	5	D.	6	
963)	Areas of two similar triangles are 36 cm2 and 100 cm2. If the length of a side of the larger triangle is 20 cm, then the length of the corresponding side of the smaller triangle is				C
	A.	12cm	B.	13cm	
	C.	14cm	D.	15cm	
964)	Inverse Laplace transformation $f(s) = 4/(s^2 - 2s - 3)$ of				C
	A.	$2e^{3t-}e^{t}$ a^2	B.	$e^{-3t-}e^{t}$	
	C.	$e^{-3t}e^{-t}$	D.	$e^{3t-}e^{-t}$	
965)	Divergence operation result will always				B
	A.	vector	B.	Scalar	
	C.	Vector or Scalar	D.	None of these	
966)	The rectangular coordinate system is also called				B
	A.	Polar coordinate system	B.	Cartesian coordinate system	
	C.	Cylindrical coordinate system	D.	Spherical coordinate system	
967)	What is the minimum number of coplanar vectors with different magnitudes that can be added to get a resultant of zero?				C
	A.	$\hat{\imath} + \hat{\jmath} + 5\hat{k}$	B.	$2\hat{\imath} + 4\hat{\jmath} + 6\hat{k}$	
	C.	$\hat{\imath} + \hat{\jmath}$	D.	$\hat{\imath} + \hat{\jmath} + 10\hat{k}$	
968)	---------- is a scalar quantity				B
	A.	Distance	B.	Momentum	
	C.	Torque	D.	Acceleration	
969)	Cross product is also known as?				B
	A.	scalar product	B.	vector product	

	C.	dot product	D.	multiplication	
970)	What is the area of the parallelogram which represented by vectors $\vec{P} = 2\hat{\imath} + 3\hat{\jmath}$ and $\vec{Q} = \hat{\imath} + 4\hat{\jmath}$				A
	A.	5 units	B.	10 units	
	C.	15 units	D.	20 units	
971)	If it is not possible to draw any tangent from the point (1/4, 1) to the parabola $y^2 = 4x \cos\theta + \sin^2\theta$, then θ belongs to				C
	A.	[-π/2 π/2]	B.	[-π/2 π/2] – {0}	
	C.	(-π/2 π/2) – {0}	D.	none of these	
972)	The number of focal chord(s) of length 4/7 in the parabola $7y^2 = 8x$ is				B
	A.	1	B.	zero	
	C.	infinite	D.	none of these	
973)	The ends of line segment are *P (1, 3)* and *Q (1, 1)*. R is a point on the line segment PQ such that $PR : RQ = 1 : \lambda$. If R is an interior point of parabola $y^2 = 4x$, then				A
	A.	$\lambda \in (0, 1)$	B.	$\lambda \in (-3/5, 1)$	
	C.	$\lambda \in (1/2, 3/5)$	D.	none of these	
974)	A set of parallel chords of the parabola $y^2 = 4ax$ have their mid points on				C
	A.	any straight line through the vertex	B.	any straight line through the focus	
	C.	a straight line parallel to the axis	D.	another parabola	
975)	The equation of the line of the shortest distance between the parabola $y^2 = 4x$ and the circle $x^2 + y^2 – 4x – 2y + 4 = 0$ is				A
	A.	$x + y = 3$	B.	$x – y = 3$	

	C.	$2x + y = 5$	D.	none of these	
976)	If normals are drawn from the extremities of the latus rectum of a parabola then normals are				B
	A.	parallel to each other	B.	perpendicular to each other	
	C.	intersect at the 450	D.	none of these	
977)	The triangle formed by the tangent to the parabola $y = x^2$ at the point whose abscissa is k where $k \in [1, 2]$ the y-axis and the straight line $y = k^2$ has greatest area if k is equal to				C
	A.	1	B.	3	
	C.	2	D.	none of these	
978)	A parabola $y^2 = 4ax$ and $x^2 = 4by$ intersect at two points. A circle is passed through one of the intersection point of these parabola and touch the directrix of first parabola then the locus of the centre of the circle is				D
	A.	straight line	B.	ellipse	
	C.	circle	D.	parabola	
979)	A circle with centre lying on the focus of the parabola $y^2 = 2px$ such that it touches the directrix of the parabola. Then a point of intersection of the circle and the parabola is				A
	A.	(p/2 , p)	B.	(p/2 , 2p)	
	C.	(-p/2 , p)	D.	(-p/2 , -p)	
980)	The point (1, 2) is one extremity of focal chord of parabola $y^2 = 4x$. The length of this focal chord is				B
	A.	2	B.	4	
	C.	6	D.	none of these	
981)	If AFB is a focal chord of the parabola $y^2 = 4ax$ and AF = 4, FB = 5, then the latus-rectum of the parabola is equal to				A

	A.	80/9	B.	9/80	
	C.	9	D.	80	
982)	If three normals can be drawn from (h, 2) to the parabola $y^2 = -4x$, then				A
	A.	$h < -2$	B.	$h > 2$	
	C.	$-2 < h < 2$	D.	h is any real number	
983)	If the line $y - \sqrt{x} + 3 = 0$ cuts the parabola $y^2 = x + 2$ at A and B, and if $P \equiv (\sqrt{3}, 0)$, then PA. PB is equal to				D
	A.	$2(\sqrt{3}+2)/3$	B.	$4\sqrt{3}/2$	
	C.	$4(2-\sqrt{3})/3$	D.	$4(\sqrt{3}+2)/3$	
984)	If the normal to the parabola $y^2 = 4ax$ at the point $(at^2, 2at)$ cuts the parabola again at $(aT^2, 2aT)$, then				A
	A.	$T^2 \geq 8$	B.	$T \in (-\infty, -8) \cup (8, \infty)$	
	C.	$-2 \leq T \leq 2$	D.	$T^2 < 8$	
985)	The locus of point of intersection of any tangent to the parabola $y^2 = 4a(x - 2)$ with a line perpendicular to it and passing through the focus, is				B
	A.	$x = 1$	B.	$x = 2$	
	C.	$x = 0$	D.	none of these	
986)	The set $\{1, -1, i, -i\}$				B
	A.	Is a group under '+'	B.	Is a group under '.'	
	C.	Is not a group	D.	none of these	
987)	If $w = \frac{-1+\sqrt{-3}}{2}$, the set $\{1, w, w^2\}$				A
	A.	Is a group under '.'	B.	Is a group under '+'	
	C.	Is not a group	D.	none of these	

988)	The set of complex numbers is				C
	A.	Not a group under '+'	B.	Not a group under '+'	
	C.	Is a filed	D.	none of these	
989)	Which one is not a filed				A
	A.	Z	B.	Q	
	C.	R	D.	none of these	
990)	The set $\{1,-1,i,-i\}$				B
	A.	Not a group	B.	Is a cyclic group	
	C.	In not abelian group	D.	none of these	
991)	Which one is a semi group				B
	A.	P under '+'	B.	N under '+'	
	C.	P under '.'	D.	none of these	
992)	Over the field of real numbers,				D
	A.	Z is a vector space	B.	N is a vector space	
	C.	E is a vector space	D.	none of these	
993)	A group $(G,*)$				C
	A.	Is not closed under '$*$'	B.	May not be closed under '$*$'	
	C.	Is closed under '$*$'	D.	none of these	
994)	The set G is a group under '+' for				C
	A.	$G=N$	B.	$G=W$	
	C.	$G=Z$	D.	none of these	
995)	A set which is a group under '+',				B
	A.	is a group under "."	B.	is not a group under "."	
	C.	May not be a group under "."	D.	none of these	
996)	A cyclic group				C

	A.	Is not abelian group	B.	May not be an abelian group	
	C.	Is an abelian group	D.	none of these	
997)	A group generated by one of its elements, is called				B
	A.	An abelian group	B.	A cyclic group	
	C.	A filed	D.	none of these	
998)	Which one is not true				D
	A.	A field is a ring	B.	A ring may not be a field	
	C.	A ring is a group under '+'	D.	none of these	
999)	The set $\{-3n : n \in Z\}$ is an abelian group under				A
	A.	Addition	B.	Subtraction	
	C.	Multiplication	D.	none of these	
100(	A monoid is always				C
	A.	a group	B.	a commutative group	
	C.	Groupoid	D.	none of these	