(DO NOT OPEN THIS QU	SET-"X" (Total ESTION BOOKLET BEFORE TIME OR UNTIL	No. of printed pages : 21) L YOU ARE ASKED TO DO SO)
UG	-EE-June, 2025 (Mathematics	<b>4 year)</b>
Code	opened for Scanning pur at 11:25 AM on 2018/25 Total Questions: 100	Max. Marks : 100
Roll No	(in figure)	(in words)
Name :	Date of Bir	th :
Father's Name :	Mother's N	Name :
Date of Examination :		

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CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along-with answer key of all the A,B,C and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
- 5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers MUST NOT be ticked in the Question book-let.
- 6. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue <u>BALL POINT PEN</u> of good quality in the OMR Answer-Sheet.
- 8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

SET-X Code-A Question Questions No. If  $\cos \theta = \frac{1}{2}\left(x + \frac{1}{x}\right)$ , then  $\frac{1}{2}\left(x^2 + \frac{1}{x^2}\right)$  is equal to : 1.  $\sin 2\theta$ (1) $\cos 2\theta$ (2)(3)  $\tan 2\theta$  $\cot 2\theta$ (4)If  $\frac{3\pi}{4} < \alpha < \pi$ , then  $\sqrt{\csc^2 \alpha + 2 \cot \alpha}$  is equal to : 2. (1)  $-1 - \cot \alpha$ (2) $1 + \cot \alpha$ (3)  $1 - \cot \alpha$  $-1 + \cot \alpha$ (4) If  $\tan 2\theta \, \tan \theta = 1$ , then the general value of  $\theta$  is : 3. (2)  $(2n \pm \frac{1}{2})\frac{\pi}{3}$ (1)  $\left(n+\frac{1}{2}\right)\pi$ (3)  $\left(n+\frac{1}{2}\right)\frac{\pi}{2}$ (4) None of these If  $(w \neq 1)$  is a cube root of unity and  $(1 + w)^7 = A + Bw$ , then A and B 4. are given by : (2)1,0 (1) 0, 1(4) 1,1 (3) -1,1 If  $z = \left(\frac{\sqrt{3}}{2} + \frac{i}{2}\right)^5 + \left(\frac{\sqrt{3}}{2} - \frac{i}{2}\right)^5$ , then : 5.  $\operatorname{Re}(z) = 0$ (2)  $(1) \quad \operatorname{Im}(z) = 0$ None of these (3)  $\operatorname{Re}(z) > 0, \operatorname{Im}(z) > 0$ (4)

UG-EE-June-2025(Mathematics) Code-A

(1)

Γ	Question	Questions
. 1	6.	The number of real roots of $3^{2x^2-7x+7} = 9$ is :
		(1) 2 (2) 1
1		(3) Zero (4) 4
	7.	If the roots of the equation $qx^2 + px + q = 0$ are complex, where $p, q$
1.		are real, then the roots of the equation $x^2 - 4qx + p^2 = 0$ are :
		(1) Imaginary (2) Real and equal
	. (	3) Real and unequal (4) None of these
8	. I:	$f 2 + i\sqrt{3}$ is a root of the equation $x^2 + px + q = 0$ where p and q are
	re	eal, then $(p, q)$ is equal to :
	(1	) (4,-7) (2) (4,7)
	(3)	) (-4,7) (4) (-4,-7)
9.	If	eleven members of a Committee at a round table, so that the
uth h	Ch	airman and Secretary always sit together, then the number of
	arra	angements is :
	(1)	<u>[10</u> (2) <u>[9</u>
	(3)	$\lfloor \underline{10} \times 2 \qquad (4)  \lfloor \underline{9} \times 2 \\$
10.	A ma	an has 7 friends. In how many ways, he can invite one or more of
	them	to a tea party :
	(1) 1	27 (2) 128 (2) (1)
	(3) 2.	56 (4) 130

G-EE-June-2025(Mathematics) Code-A (2)

Code-A Questions Question No. How many words can be made from the letters of the word DELHI, if L 11. comes in the middle of every word? (1) 24 (2) 12 (4) 60 (3) 6 The number of ways of distributing 8 identical balls in 3 distinct boxes 12. so that none of the boxes is empty, is : (2)38 (1) 5 (4) (3) 21 If the 4<sup>th</sup> term in the expansion of  $\left(\frac{2}{3}x - \frac{3}{2x}\right)^n$  is independent of x, then 13. n is equal to: (2)(1) 5 None of these (4) (3) 9 The coefficient of  $x^n$  in the expansion of  $(1 + x + x^2 + \dots)^{-n}$  is : 14. (2) (1) n+1n (4)  $(-1)^n$ (3) 1 The middle term in the expansion of  $\left(x^2 + \frac{1}{x^2} + 2\right)^n$  is : 15.  $\frac{\lfloor 2n}{(\lfloor n \rfloor)(\lfloor n \rfloor)}$ .(2) (1)  $\frac{\lfloor n \\ \lfloor 2n \rfloor}$ (4) (3) <u>|</u>2n n --UG-EE-June-2025(Mathematics) Code-A

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SET-X

Questio	m	Questions
16.	The sum of <i>n</i> terms of the	e series 1.4 + 3.04 + 5.004 + is :
	(1) $n^2 + \frac{4}{9} \left( 1 - \frac{1}{10^n} \right)$	(2) $\frac{4}{9} + n^2 \left(1 - \frac{1}{10^n}\right)$
	(3) $n^2 + \frac{9}{4} \left( \frac{1}{10^n} - 1 \right)$	(4) $n^2 + \frac{4}{3}\left(1 - \frac{1}{10^n}\right)$
17.	If the pth term of an A.P.	is $q$ , $q$ th term is $p$ , then its $r$ th term is :
	(1) $p+q+r$	(2)  p+q-r
	(3)  p+r-q	(4)  p-q-r
18.	Fifth term of a G.P. is 2, th	en the product of its nine term is :
	(1) 1024	(2) 256
	(3) 512	(4) None of these
19.	Let $a_n$ be <i>n</i> th term of a G	P. of positive numbers. If $\sum_{n=1}^{100} a_{2n} = \alpha$ and
1	$\sum_{n=1}^{100} a_{2n-1} = \beta$ , then the commute	non ratio of G.P. is :
. (1	1) $\sqrt{\frac{\alpha}{\beta}}$	(2) $\sqrt{\frac{\beta}{\alpha}}$
(3	$\frac{\beta}{\alpha}$	(4) $\frac{\alpha}{\beta}$
Th	e sum of cubes of n natura	al numbers is :
(1)	$(\sum n)^2$	(2) $(\sum n)^3$
the second se	A REAL AND A REAL AND A REAL AND A	

UG-EE-June-2025(Mathematics) Code-A (4) SET-X Code-A

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Question No.	Questions
21.	The value of $\lambda$ for which the lines $3x + 4y = 5, 5x + 4y = 4$ and
	$\lambda x + 4y = 6$ meet at a point is :
	(1) 4 (2) 3
	(3) 2 (4) 1
22.	A straight line through $P(1,2)$ is such that its intercept between the
	axes is bisected at P. Its equation is :
	(1) $x + y = -1$ (2) $2x + y = 4$
	(3) $x + y = 3$ (4) $x + 2y = 5$
23.	Equation of a straight line perpendicular to the line $3x - y + 7 = 0$ and
(G).	passing through (5,2) is :
	(1) $3x + y - 11 = 0$ (2) $x - 3y - 11 = 0$
	(3) $x + 3y - 11 = 0$ (4) $x - 3y + 11 = 0$
24.	For what value of K, the points $(K, 2-2K), (-K+1, 2K)$ and
	(-4 - K, 6 - 2K) are collinear?
	(1) $K = -1$ (2) $K = -2$
	(3) $K = 1$ (4) $K = 2$
25.	The point of the parabola $y^2 = 18x$ for which the ordinate is three
	times the abscissa, is :
	(1) (2,6) (2) (6,2)
	(3) (3,18) (4) (-2,-6)

UG-EE-June-2025(Mathematics) Code-A (5)

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Question	on Questions	nd interest
No.		$\sqrt{5}$ The
26.	In an ellipse, length of minor axis is 8 an	d eccentricity is 3. The
	length of major axis is :	A TO A TO A
	(1) 6 (2) 12	
edime	(3) 10 (4) 16	Land Broker All 190
27.	The eccentricity of a rectangular hyperbola 15	hotophiller and the
	(1) $\frac{1}{\sqrt{2}}$ (2) $-\sqrt{2}$	2
	(3) $\sqrt{2}$ (4) $-\frac{1}{\sqrt{2}}$	2
28	The equation of circle whose centre is $(0,0)$	and area of the circle is
		hughligen and
1.1.1.1.1	154 sq unit is given by :	
	(1) $x^2 + y^2 = 7$ (2) $x^2 - x^2 = 7$	$-y^2 = 22$
	(3) $x^2 + y^2 = 11$ (4) $x^2 - 11$	$-y^2 = 49$
29.	$\lim_{x \to \infty} \frac{\sin x}{x}$ is equal to :	The Contract of the second
1. 1. 1. 1.	at's collition?	(25-0.01-0-)
1.10	(1) 0 (2) 1	$i = x^{i} (t) + x^{i}$
	(3) ∞ (4) Doe	sn't exist
30.	$\lim_{x \to 2} \left( \frac{3^{x/2} - 3}{3^x - 9} \right)$ is equal to :	26. The portion D
.R	(1) 0 (2) $\frac{1}{6}$	fittings the absolu
	(3) $\frac{1}{3}$ (4) log 3	(18] (2) (8)

UG-EE-June-2025(Mathematics) Code-A (6)

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Question No.		Questions	and and a second s
31.	If $f(x) = \begin{cases} \frac{x^2 - 9}{x - 3}, \\ 2x + k, \end{cases}$	if $x \neq 3$ is continuou otherwise	s at $x = 3$ , then k is equal to :
	(1) 3	(2)	1 6
	(3) 0	(4)	-6
32.	A set contains $n$	elements. Then the nur	nber of elements in Power Set
	are :	i os laupa el d	as The value of an (out )
	(1) $n^2$	(2)	n tatly (1)
	(3) $(2^n - 1)$	(4)	2 <sup>n</sup>
33.	Two sets A and E	are called Disjoint sets	s, if $A \cap B$ is :
	(1) φ	(2)	0
	(3) 1	(4)	None of these
34.	If $A = \{1, 2, 3, 4\}$	and $B = \{4, 5, 6, 7\}$ , then	B - A is given by :
	(1) φ	(2)	{5, 6, 7}
	(3) {1,2,3}	(4)	None of these
35.	In a city 20% of	the population travels	by Metro, 50% by Taxi and 109
in you.	travels by both	Metro and Taxi. Then	persons travelling by Metro o
The second	Taxi is :	1	12 24
	(1) 60%	(2)	70%
	(3) 40%	(4)	80%

SET-X

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UG-EE-June-2025(Mathematics) Code-A (7) A-Ide.

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SET-X Code-A

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C	ode	

C. S. S. F. W.

$(2)4^{2n+1} + 3^{3n+1}$ (1) 2 (3) 3 If $\cos^{-1} x - \sin^{-1} x$ (1) $\frac{1}{2}$	<sup>1</sup> is divisible b $x^{1} x = 0$ , then $x$	y which of (2) (4)	the following for all $n \in N$ : 9 11
(1) 2 (3) 3 If $\cos^{-1} x - \sin^{-1} (1) \frac{1}{2}$	x = 0, then $x$	(2) (4)	9 11
(1) 2 (3) 3 If $\cos^{-1} x - \sin^{-1} (1) \frac{1}{2}$	$x^{1} = 0$ , then x	(4)	11
(3) 3 If $\cos^{-1} x - \sin^{-1} (1) \frac{1}{2}$	$x^{1} x = 0$ , then $x$	(4)	
If $\cos^{-1} x - \sin^{-1} (1)$	x = 0, then $x$	and the second	and the second second
(1) $\frac{1}{1}$		is equal to	):
$\sqrt{2}$	e (1)	(2)	$-\frac{1}{\sqrt{2}}$
(3) $\sqrt{2}$	n nation and	(4)	
The value of sin(	$(\cot^{-1} x)$ is equ	al to :	
(1) $\sqrt{1+x^2}$	(2) 6	(2)	$(1+x^2)^{-1/2}$
(3) x	(4)	(4)	$\frac{1}{x}$ (1 - (c))
The value of sin [	$\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)$	] is equal t	to:
(1) 0	· · · · · · · · · · · · · · · · · · ·	(2)	$\frac{1}{2}$
3) 1 dinavig at	7), here B A	(4)	
$an^{-1}\frac{1}{2} + tan^{-1}\frac{1}{5} +$	$\tan^{-1}\frac{1}{8}$ is equal	al to :	i o n
1) $\pi$ beaming on	이성. (1)	(2)	$\frac{\pi}{2}$
3) $\frac{\pi}{3}$	M vd eloveit	(4)	$\frac{\pi}{4}$ is a subsection of $\frac{\pi}{2}$
$A = \begin{bmatrix} a & b \\ b & a \end{bmatrix} \text{ and } A$	$A^2 = \begin{bmatrix} \alpha & \beta \\ \beta & \alpha \end{bmatrix}, tH$	nen the val	lue of $\alpha$ and $\beta$ is :
$\alpha = a^2 + b^2, \beta$	= 2 <i>ab</i>	(2)	$\alpha = \frac{a^2}{b^2}, \beta = \frac{2}{3}ab$
$\alpha = a^2 b^2, \beta =$	2ab	(4) (	$\alpha = a^2 - b^2, \beta = \frac{ab}{2}$
	(3) $\sqrt{2}$ The value of sin( (1) $\sqrt{1 + x^2}$ (3) x The value of sin [ 1) 0 3) 1 $an^{-1}\frac{1}{2} + tan^{-1}\frac{1}{5} + tan^{-1}\frac{1}{$	(3) $\sqrt{2}$ The value of $\sin(\cot^{-1}x)$ is equ (1) $\sqrt{1 + x^2}$ (3) $x$ The value of $\sin\left[\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right]$ (3) $1$ (3) $1$ (3) $1$ (4) $1$ (5) $1$ (6) $1$ (7)	(3) $\sqrt{2}$ (4) The value of $\sin(\cot^{-1} x)$ is equal to: (1) $\sqrt{1 + x^2}$ (2) (3) x (4) The value of $\sin\left[\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right]$ is equal to (4) (4) (4) (5) $\pi$ (2) (5) $\pi$ (4) (4) $an^{-1}\frac{1}{2} + \tan^{-1}\frac{1}{5} + \tan^{-1}\frac{1}{8}$ is equal to: (2) $\pi$ (2) (3) $\frac{\pi}{3}$ (4) $A = \begin{bmatrix} a & b \\ b & a \end{bmatrix}$ and $A^2 = \begin{bmatrix} \alpha & \beta \\ \beta & \alpha \end{bmatrix}$ , then the value of $a = a^2 + b^2, \beta = 2ab$ (2) $a = a^2 b^2, \beta = 2ab$ (3) $a = a^2 b^2, \beta = 2ab$ (4) $a = a^2 b^2, \beta = 2ab$ (5) $a = a^2 b^2, \beta = 2ab$ (7) $a = a^2 b^2, \beta = 2ab$ (8) $a = a^2 b^2, \beta = 2ab$ (7) $a = a^2 b^2, \beta = 2ab$ (8) $a = a^2 b^2, \beta = 2ab$ (9) $a = a^2 b^2, \beta = 2ab$ (1) $a = a^2 b^2, \beta = a^2 $

Question No.	Ques	stions	nottend
42. Each diagonal element of a skew-syn			ric matrix is :
	(1) Always zero	(2)	Always imaginary
	(3) Always one	(4)	None of these
43.	The matrix A which satisfies the o	conditi	on $\begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix} A = \begin{bmatrix} 1 & 1 \\ 0 & -1 \end{bmatrix}$ is given
	by:		
	(1) $\begin{bmatrix} 1 & 0 \\ 4 & -1 \end{bmatrix}$	(2)	$\begin{bmatrix} 1 & 4 \\ 0 & -1 \end{bmatrix}$
	$(3) \begin{bmatrix} 1 & 0 \\ -1 & 4 \end{bmatrix}$	(4)	None of these
44.	If a square matrix $A$ is such that $A$	A' = I	= A'A, then $ A $ is equal to :
	(1) ±2	(2)	0 Rein a
	(3) ±1	(4)	None of these
45.	$\begin{vmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{vmatrix}$ is equal to :	Tuniv	and a map and the
	(1) abc	- (2)	a+b+c
	(3) 1	(4)	0
46.	If $-9$ is a root of the equation $\begin{vmatrix} x \\ 2 \\ 7 \end{vmatrix}$	3 7 x 2 6 x	= 0, then the other two root
	(1) 2, -7	(2)	2,7
	(3) -2, -7	(4)	-2,7

UG-EE-June-2025(Mathematics) Code-A (9)



Question No.	200114	Question	15
47.	If $A = \begin{bmatrix} 1 & 2 \\ 3 & -5 \end{bmatrix}$ , then adj A is gi	ven by :	
	(1) $\begin{bmatrix} 5 & 2 \\ 3 & 1 \end{bmatrix}$	(2)	$\begin{bmatrix} 5 & -2 \\ 3 & 1 \end{bmatrix}$
novie i	$(3) \begin{bmatrix} -5 & 2 \\ 3 & 1 \end{bmatrix}$	(4)	$\begin{bmatrix} -5 & -2 \\ -3 & 1 \end{bmatrix}$
48.	If $A = \begin{bmatrix} \lambda & 2 \\ 2 & \lambda \end{bmatrix}$ and $ A^3  = 125$ , the	ien the va	lue of $\lambda$ is :
	(1) ±3	(2)	±5
	(3) ±1	(4)	±2
49.	If $xy = e^{x-y}$ , then $\frac{dy}{dx}$ is equal to	0:	
	(1) $\frac{y}{x(1+y)}$	(2)	$\frac{(x-1)y}{x(1+y)}$
	(3) $\frac{(x-1)}{x(1+y)}$	(4)	$\frac{(x+1)y}{x(1-y)}$
50.	If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x}}}$	∞,	then $\frac{dy}{dx}$ is equal to :
	(1) $\frac{\sin x}{2y-1}$	(2)	$\frac{\cos x}{2y-1}$
loon (	$3)  \frac{\sin x}{1-2y}$	(4)	$\frac{\cos x}{1-2y}$
51. I	$f x = at^2$ , $y = 2at$ , then $\frac{d^2y}{dx^2}$ at	t = 2 is :	
. (	1) 16a	(2)	1 16a
. (	3) $-\frac{1}{16a}$	(4)	None of these

UG-EE-June-2025(Mathematics) Code-A (10)

SET-X SEL-X Code-A Biobo. Question Questions No. The derivative of  $\log \sqrt{\frac{1+\cos x}{1-\cos x}}$  is : 52. (1)  $-\csc x$ (2) cosec x (3) cot x (4)  $-\cot x$ The interval in which the function  $y = x^3 + 5x^2 - 1$  is decreasing is 53. given by : (1)  $\frac{10}{3} < x < 0$ (2)  $0 < x < \frac{10}{3}$ (4)  $-\frac{10}{3} < x < 0$ (3) 10 < 3x < 054. The minimum value of  $x^2 + \frac{1}{1+x^2}$  is, at : (1) x = 1(2) x = 0(3) x = -1(4) None of these The point on the curve  $\sqrt{x} + \sqrt{y} = \sqrt{a}$  at which the normal is parallel to 55. the x-axis, is : (1) (0,a) (2) (a,0)(3) (a,a) <sup>·</sup> (4) (0,0) 56. For the curve  $y = e^{2x}$ , the equation of tangent at (0, 1) is : (1) y = -2x + 1 (2) y = -1 + 2x(3) y = 2x + 1 (4)  $y = -\frac{2}{3}x - 1$ 

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No.	Questions
62.	The order of the differential equation $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^3 = 0$ is :
	(1) 1 (2) 2
	(3) 3 (4) 0
63.	The solution of the differential equation $\frac{dy}{dx} = \frac{x(2\log x+1)}{\sin y+y\cos y}$ is :
	(1) $y = x^2 \log x + c$ (2) $y = x^2 \sin x + c$
	(3) $y \sin y = x^2 \log x + c$ (4) $y \sin y = \log x + c$
64.	The integrating factor for solving the differential equation
	$\frac{dy}{dx} - \frac{y}{x} = 2x^2 + 3x + 4$ is :
	(1) $\frac{1}{x^2}$ (2) $-\frac{1}{x}$
	(3) $x$ (4) $\frac{1}{x}$
65.	$\frac{xdy-ydx}{x^2} \text{ is equal to :}$
	(1) $d\left(\frac{x}{y}\right)$ (2) $d(xy)$
	(3) $d(x+y)$ (4) $d\left(\frac{y}{x}\right)$
66.	If $\vec{u}$ , $\vec{v}$ and $\vec{w}$ are three vectors such that $\vec{u} + \vec{v} + \vec{w} = \vec{0}$ , then fin
i cyst	$\vec{u}.\vec{v}+\vec{v}.\vec{w}+\vec{w}.\vec{u}$ , if $ \vec{u} =3$ , $ \vec{v} =4$ and $ \vec{w} =5$ :
	(1) $5^2$ (2) $-5^2$
1	(3) 2 <sup>5</sup> (4) 5 <sup>3</sup>

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UG-EE-June-2025(Mathematics) Code-A
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SET-X Code-A Question Questions No. The triangle formed by the points (0, 7, 10), (-1, 6, 6), (-4, 9, 6) is : 72. (1) Right angled (2) Equilateral (3) Isosceles (4) **Right angled isosceles** The distance of the point (2, 3, -5) from the plane x + 2y - 2z = 9 is : 73. (1) 3 (2)4 (3) 1 (4) 2 If R is a relation on a set A such that  $R = R^{-1}$ , then R is : 74. (1) Transitive (2)Symmetric (3) Reflexive None of these (4) The function  $f(x) = \log(x + \sqrt{x^2 + 1})$  is: 75. (1) A periodic function An even function (2) (3) An odd function (4) None of these Let R be a relation on N defined by x + 2y = 8. The domain of R is : 76. (1) {2, 4, 8} (2)  $\{1, 2, 3, 4\}$ (3) {2, 4, 6} (4) {2,4,6,8} R is called a symmetric relation on A, if : 77. (1)  $(x, y) \in R \implies (y, x) \notin R$  (2)  $(x, y) \in R \implies \left(\frac{1}{x}, \frac{1}{y}\right) \in R$ (3)  $(x, y) \in R \implies (y, x) \in R$ (4) None of these Five boys and three girls are seated at random in a row. The 78. probability that no boy sits between two girls is :  $\frac{1}{28}$ (1) 28 (2) (3)  $\frac{2}{28}$ 3 28 (4)

UG-EE-June-2025(Mathematics) Code-A (15)

79.	Two cards are drawn at random from a pack of 52 cards. The
	probability that these two being aces is :
Tai De	(1) $\frac{1}{221}$ (2) $\frac{1}{122}$
	(3) $\frac{1}{212}$ (4) $\frac{1}{222}$
80.	A bag contains 8 red and 5 white balls. Three balls are drawn a
	random. The probability that one ball is red and two balls are white is
	(1) $\frac{40}{139}$ (2) $\frac{40}{143}$
	(3) $\frac{4}{139}$ (4) $\frac{4}{143}$
81.	A coin is tossed and a die is rolled. The probability that the coin show
Car A	a head and the die shows 3 is :
	(1) $\frac{1}{3}$ (2) $\frac{1}{6}$
1	(3) $\frac{1}{12}$ (4) $\frac{1}{24}$
82.	The probability that at least one of the events A and B occurs is $\frac{3}{r}$ . If A
a	nd B occur simultaneously with probability $\frac{1}{5}$ , then $P(A') + P(B')$ is :
	(2) $\frac{6}{5}$
(3	) $\frac{7}{5}$ (4) $\frac{2}{5}$

XITAN

No.	Qu	estions	
83.	If two coins are tossed 5 times, t	hen the	probability of getting 5 heads
	and 5 tails is :	iich the	probability of getting o heads
		(2)	2 205
	(3) 1 1024	(4)	<u>63</u> 256
84.	A Coin is tossed 10 times. The p is :	orobabili	ity of getting exactly six heads
	(1) $\frac{100}{153}$	(2)	10 <sub>C6</sub>
	(3) $\frac{105}{512}$	(4)	<sup>10</sup> C4
OF	Above the second		
00.	A box contains 3 white and 2 red	balls.	f we draw one ball and without
00.	replacing the first ball the pro-	l balls. ]	f we draw one ball and withou
00.	A box contains 3 white and 2 red replacing the first ball, the pro draw is :	l balls. I bability	f we draw one ball and withou of drawing red ball in secon
89.	A box contains 3 white and 2 red replacing the first ball, the pro draw is : (1) $\frac{8}{25}$	l balls. ] bability (2)	If we draw one ball and without of drawing red ball in secon $\frac{2}{5}$
<b>bb</b> .	A box contains 3 white and 2 red replacing the first ball, the pro draw is : (1) $\frac{8}{25}$ (3) $\frac{3}{5}$	l balls. ] bability (2) (4)	If we draw one ball and without of drawing red ball in secon $\frac{2}{5}$ $\frac{21}{25}$
86.	A box contains 3 white and 2 red replacing the first ball, the pro draw is : (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs to :	l balls. ] bability (2) (4)	If we draw one ball and without of drawing red ball in secon $\frac{2}{5}$ $\frac{21}{25}$
86.	A box contains 3 white and 2 red replacing the first ball, the pro- draw is : (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs to : (1) $(-6, -3) \cup (3, 6)$	l balls. ] bability (2) (4) : (2)	If we draw one ball and without of drawing red ball in secon $\frac{2}{5}$ $\frac{21}{25}$ (-6,6)
86.	A box contains 3 white and 2 red replacing the first ball, the pro- draw is : (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs to : (1) $(-6, -3) \cup (3, 6)$ (3) $(-3, -3) \cup (3, 6)$	l balls. ] bability (2) (4) : (2) (4)	If we draw one ball and without of drawing red ball in secon $\frac{2}{5}$ $\frac{21}{25}$ (-6,6) None of these
86.	A box contains 3 white and 2 red replacing the first ball, the pro- draw is : (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs to : (1) $(-6, -3) \cup (3, 6)$ (3) $(-3, -3) \cup (3, 6)$ If $ab = 4$ and $a, b \in R^+$ , then :	l balls. ] bability (2) (4) : (2) (4)	If we draw one ball and without of drawing red ball in secon 2 5 21 25 (-6,6) None of these
86.	A box contains 3 white and 2 red replacing the first ball, the pro draw is : (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs to : (1) $(-6, -3) \cup (3, 6)$ (3) $(-3, -3) \cup (3, 6)$ If $ab = 4$ and $a, b \in \mathbb{R}^+$ , then : (1) $a + b \le 4$	l balls. ] bability (2) (4) : (2) (4) (2)	If we draw one ball and without of drawing red ball in secon $\frac{2}{5}$ $\frac{21}{25}$ $(-6,6)$ None of these (a+b) = 4



Question No.	Questions
93.	In the formula of mode given by $l + h\left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right)$ , frequency of the modal class is :
	(1) $f_2$ (2) $f_1$
	(3) $f_0$ (4) h
94.	In the formula of median given by $l + \left(\frac{n}{2} - cf}{f}\right) \times h$ , the class size is :
	(1) cf (2) l
	(3) h (4) n
95.	The empirical relation between the three measures of central tendency
	is:
	(1) Median = Mode + 2 Mean (2) Mode = 3 Median + Mean
	(3) 3 Median = 2 Mode + Mean (4) 3 Median = Mode + 2 Mean
96.	Standard deviation is a measure which shows how much variation from the :
	(1) Mean exists (2) Mode exists
	(3) Variance exists (4) None of these
97.	The angle between the planes $\vec{r}.(2\hat{\imath}-\hat{\jmath}+\hat{k})=6$ and $\vec{r}.(\hat{\imath}+\hat{\jmath}+2\hat{k})=$
· · · · · · · · · · · · · · · · · · ·	is:
	(1) $\frac{\pi}{3}$ (2) $\frac{\pi}{6}$
	(2) $\frac{\pi}{2}$

(19)

SET-X

		tions Ode A
Question		Question of plane is $\vec{r}$ . $\vec{r}$ -
No.		$\vec{a} + \lambda \vec{b}$ and equation of provide the q, the
<b>98.</b>	If equation of a line is $r = 0$	hy i
	he hatmoon line and plan	ane is given by .
	angle between mie das 1	$\sin \theta = \frac{b \cdot n}{ f  _{ f  }}$
	<b>b</b> . <b>n</b>	$(2)  \lim  b \mid  n $
	(1) $\cos\theta = \overline{ \vec{b}  \vec{n} }$	
		(4) None of these
	(2) $\cos \theta = \frac{b \times \vec{n}}{b \times \vec{n}}$	
	$(3)$ $\cos v = b \times \overline{n}$	
	the contence V	which is:
99.	A statement is a sentence	
	(1) Almore True	
	(1) Always If uc	물건 이 같은 것이 잘 많이 잘 많이 같다.
	(2) Always False	이렇지 않아요. 이 이렇는 것이 같아.
·	(2) Aiwayo I an	that hath simultaneously
	(3) Either True or False, b	but not both size
1	(0)	
	(4) None of these	
	(4) None of these	-totoment is:
00.	(4) None of these Negation of negation of a s	statement is :
00.	(4) None of these Negation of negation of a s	statement is : (2) True and False
00.	<ul> <li>(4) None of these</li> <li>Negation of negation of a s</li> <li>(1) Not defined</li> </ul>	statement is : (2) True and False
00.	<ul> <li>(4) None of these</li> <li>Negation of negation of a s</li> <li>(1) Not defined</li> </ul>	statement is : (2) True and False (4) None of these

UG-EE-June-2025(Mathematics) Code-A (20)

SET-"X" (Total No.	. of printed pages : 21) NARE ASKED TO DO SO)
UG-EE-June, 2025 (Mathematics 4)	year)
opened for scanning purp	Sr. No.10042
Code B at 11:25 Am on 2016/25	
Time : 14 Hours Total Questions : 100	<b>Max. Marks : 100</b>
Roll No (in figure)	(in words)
Name : Date of Birth : _	
Fother's Name : Mother's Name	e:
Data of Examination :	
Date of Examination .	
(Signature of the candidate) (Signa	ture of the Invigilator)
<ul> <li>CANDIDATES MUST READ THE FOLLOWING INSTRUCTIONS BEFORE STARTING THE QUESTION</li> <li>1. All questions are compulsory.</li> <li>2. The candidates must return the Question book- answer-sheet to the Invigilator concerned before leaving failing which a case of use of unfair-means / mis-behav- against him / her, in addition to lodging of an FIR with answer-sheet of such a candidate will not be evaluated.</li> <li>3. Keeping in view the transparency of the examination sy Sheet is provided to the candidate so that a copy of OM the candidate.</li> <li>4. Question Booklet along-with answer key of all the A, B, C uploaded on the University Website immediately after t Examination. Candidates may raise valid objection/comp to discrepancy in the question booklet/answer key withit the same on the University website. The complaint be the Controller of Examinations by hand or through complaint in any case will be considered.</li> <li>5. The candidate MUST NOT do any rough work or writh Sheet. Rough work, if any, may be done in the question MUST NOT be ticked in the Question book-let.</li> <li>6. There will be no negative marking. Each correct ar one full mark. Cutting, erasing, overwriting and r in OMR Answer-Sheet will be treated as incorrect.</li> <li>7. Use only Black or Blue <u>BALL POINT PEN</u> of good quat Sheet.</li> <li>8. BEFORE ANSWERING THE QUESTIONS, THE CA ENSURE THAT THEY HAVE BEEN SUPPLIED CORI BOOK-LET. COMPLAINTS, IF ANY, REGARDING MIS NOT BE ENTERTAINED 30 MINUTES AFTER EYAMINATION</li> </ul>	-let as well as OMR g the Examination Hall, viour will be registered the police. Further the ystem, carbonless OMR R Sheet may be kept by C and D code shall be got the conduct of Entrance olaint if any, with regard in 24 hours of uploading sent by the students to a email. Thereafter, no ng in the OMR Answer- book-let itself. Answers nswer will be awarded nore than one answer t answer. lity in the OMR Answer- SPRINTING ETC. WILL STARTING OF THE

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Question No.	Questions		
1.	The equation of the plane passing through the intersection of the		
	planes $x + 2y + 3z + 4 = 0$ and $4x + 3y + 2z + 1 = 0$ and the origin is :		
	(1)  2x + 3y + z = 0	(2) $3x + 2y + z = 0$	
	(3)  x+y+z=0	(4) $3x + 2y + z + 1 = 0$	
2.	The triangle formed by the points $(0, 7, 10), (-1, 6, 6), (-4, 9, 6)$ is :		
is, The	(1) Right angled	(2) Equilateral	
	(3) Isosceles	(4) Right angled isosceles	
3.	The distance of the point $(2, 3, -5)$	b) from the plane $x + 2y - 2z = 9$ is :	
•	(1) 3	(2) 4	
	(3) 1	(4) 2	
4.	If $R$ is a relation on a set $A$ such	that $R = R^{-1}$ , then R is :	
ar sou	(1) Transitive	(2) Symmetric	
	(3) Reflexive	(4) None of these	
5.	The function $f(x) = \log(x + \sqrt{x^2})$	+1) is:	
	(1) A periodic function	(2) An even function	
	(3) An odd function	(4) None of these	
6.	Let R be a relation on N defined by $x + 2y = 8$ . The domain of R is :		
	(1) {2,4,8}	(2) {1,2,3,4}	
	(3) {2,4,6}	(4) {2, 4, 6, 8}	
7.	R is called a symmetric relation	on A, if:	
	(1) $(x,y) \in R \implies (y,x) \notin R$	(2) $(x, y) \in R \Rightarrow \left(\frac{1}{x}, \frac{1}{y}\right) \in R$	
	(3) $(x,y) \in R \implies (y,x) \in R$	(4) None of these	
10. 1. 1	State and the second	THE THE BOOK AND THE THE	

UG-EE-June-2025(Mathematics) Code-B

SET-X

(1)

Question	CO CO	Questions	(and a strain of
No	Skiller Ma	- All and a second s	t mandom in a row Th
8.	Five boys and three girls	are seated	at random in a low. The
	probability that no boy sits b	etween two	gii 10 10 .
	(1) 28	(2)	$\frac{1}{28}$
in it	$(3) \frac{2}{28}$	(4)	3 28
9.	Two cards are drawn at	random from	m a pack of 52 cards. The
	probability that these two be	ing aces is :	- Salephart May
	$(1) \frac{1}{224}$	(2)	1 122 10 10 10 10 10 10 10 10 10 10 10 10 10
	$(3) \frac{1}{1}$	(4)	$\frac{1}{222}$
	212	The second	
10.	A bag contains 8 red and	5 white bal	lls. Three balls are drawn a
	non-dom. The machability that	t one hall is r	ed and two balls are white is
	random. The probability that		1.9071(20031-117)
	(1) $\frac{40}{139}$	(2)	40 143
	(3) $\frac{4}{139}$	(4)	$\frac{4}{143}$
11.	If $x = at^2$ , $y = 2at$ , then $\frac{d^2y}{dx^2}$	at $t = 2$ is :	neithigh the na thus
	(1) 16a	(2)	1 16a
110 -	(3) $-\frac{1}{16a}$	(4)	None of these
12.	The derivative of $\log \sqrt{\frac{1+\cos}{1-\cos}}$	$\frac{x}{x}$ is :	A scalled a symptotr
	(1) $-\csc x$	(2)	cosec x

(2)

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		actions and see
No.	Qu	estions
13.	The interval in which the func	tion $y = x^3 + 5x^2 - 1$ is decreasing is
	given by :	
	10 (1) (1) (1)	(3) 0 $(7)$ $(10)$
	(1) $\frac{1}{3} < x < 0$	(2) 0 < x < 3
2.4	(3) $10 < 3x < 0$	$(4)  -\frac{10}{3} < x < 0$
14.	The minimum value of $x^2 + \frac{1}{1+x}$	$\overline{x^2}$ is, at:
24	(1) $x = 1$	(2) $x = 0$
	(3) $x = -1$	(4) None of these
15.	The point on the curve $\sqrt{x} + \sqrt{x}$	$\sqrt{y} = \sqrt{a}$ at which the normal is parall
	the x-axis, is :	
	(1) (0, <i>a</i> )	(2) (a, 0)
	(3) (a,a)	(4) (0,0)
16.	For the curve $y = e^{2x}$ , the equation $y = e^{2x}$ , the equation $y = e^{2x}$ , the equation $y = e^{2x}$ is the equation $y = e^{2x}$ .	quation of tangent at (0,1) is :
1	(1) $y = -2x + 1$	(2) $y = -1 + 2x$
	(3) $y = 2x + 1$	(4) $y = -\frac{2}{3}x - 1$
-1'	7. $\int \frac{e^x(1+\sin x)}{(1+\cos x)} dx$ is given by	A set continue aluments Then S.Y
	(1) $e^x \tan \frac{x}{2} + c$	(2) $e^x \cot \frac{x}{2} + c$
	$(3) e^x \cos \frac{x}{2} + c$	(4) $e^x \sin \frac{x}{2} + c$

Ale	bon		The same and the same and the	(matterne)
Questi	and least	Question	15	
18.	$\int \frac{dx}{x + \sqrt{x}}$ is given by :	in di d	The sale of a state	101
	(1) $\log(\sqrt{x}+1)+c$	(2)	$2\log(\sqrt{x}+1)+c$	
	$(3)  \frac{1}{2}\log(\sqrt{x}+1)+c$	(4)	$\log(x+1) + c$	
19.	$\int \frac{e^x}{(2+e^x)(1+e^x)} dx \text{ is equal to :}$		The minutes of the	
	(1) $\log\left(\frac{1-e^x}{2+e^x}\right) + c$	(2)	$\log\left(\frac{1+e^x}{2-e^x}\right) + c$	
	(3) $\log\left(\frac{1-e^x}{2-e^x}\right) + c$	(4)	$\log\left(\frac{1+e^x}{2+e^x}\right) + c$	
20.	$\int \frac{x^2}{x^2+4} dx \text{ is equal to :}$			
	(1) $x - 2\tan^{-1}\frac{x}{2} + c$	(2)	$x + 2\tan^{-1}\frac{x}{2} + c$	
	(3) $\frac{x}{2} - \tan^{-1}\frac{x}{2} + c$	(4)	$\frac{x}{2} + \tan^{-1}\frac{x}{2} + c$	
21.	If $f(x) = \begin{cases} \frac{x^2 - 9}{x - 3}, & \text{if } x \neq 3\\ 2x + k, & \text{otherwise} \end{cases}$ is a	continuou	as at $x = 3$ , then k is e	equal to :
	(1) 3	(2)	$\frac{1}{6}$	
	(3) 0	(4)	-6	
2.	A set contains $n$ elements. Then	the num	nber of elements in H	ower Se
	are :			
ST. N. SAL		(9)		distant and
	(1) $n^2$	(2)	n	and the star

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(4)

SET-X

No		Questions
23.	Two sets $A$ and $B$ a	re called Disjoint sets, if $A \cap B$ is :
	(1) <b>φ</b>	(2) 0
	(3) 1	(4) None of these
24.	If $A = \{1, 2, 3, 4\}$ and	d $B = \{4, 5, 6, 7\}$ , then $B - A$ is given by :
333	(1) <b>φ</b>	(2) {5,6,7}
	(3) {1,2,3}	(4) None of these
25.	In a city 20% of the	he population travels by Metro, 50% by Taxi and 10%
••••	travels by both M	letro and Taxi. Then persons travelling by Metro or
( 11 . IH.	Taxi is :	Add . How many worsts and the mude from the letter
	(1) 60%	(2) 70%
	(3) 40%	(4) 80%
26.	$(2)4^{2n+1}+3^{3n+1}$	is divisible by which of the following for all $n \in N$ :
eoxod a	(1) 2	(2) 9
	(3) 3	(4) 11
27.	If $\cos^{-1}x - \sin^{-1}x$	x = 0, then x is equal to :
	(1) $\frac{1}{\sqrt{2}}$	$(2)  -\frac{1}{\sqrt{2}}$
north of	(3) √2	(4) −√2
28.	The value of sir	$n(\cot^{-1} x)$ is equal to :
	(1) $\sqrt{1+x^2}$	(2) $(1+x^2)^{-1/2}$
	(3) x	$(4)  \frac{1}{x}$
UG-J	EE-June-2025(M	athematics) Code-B (5)



#### SET-X Code-B 8-obco Questions The coefficient of $x^n$ in the expansion of $(1 + x + x^2 + \dots)^{-n}$ is : (1), n+1(2)n (4) $(-1)^{n}$ (3) 1 The middle term in the expansion of $\left(x^2 + \frac{1}{x^2} + 2\right)^n$ is : (2) $\frac{\lfloor 2n}{(\lfloor n \rfloor)(\lfloor n \rfloor)}$ (1) $\frac{\lfloor n \rfloor}{\lfloor 2n \rfloor}$ (4) $\frac{\lfloor 2n \rfloor}{\lfloor n-1 \rfloor}$ (3) <u>|</u>2 n The sum of n terms of the series $1.4 + 3.04 + 5.004 + \dots$ is : (2) $\frac{4}{9} + n^2 \left(1 - \frac{1}{10^n}\right)$ (1) $n^2 + \frac{4}{9} \left( 1 - \frac{1}{10^n} \right)$ (3) $n^2 + \frac{9}{4} \left( \frac{1}{10^n} - 1 \right)$ (4) $n^2 + \frac{4}{3} \left( 1 - \frac{1}{10^n} \right)$ If the pth term of an A.P. is q, qth term is p, then its rth term is : (1) p + q + r (2) p + q - r $(4) \quad p-q-r$ (3) p + r - qFifth term of a G.P. is 2, then the product of its nine term is : (2) . 256 (1) 1024 None of these (4) (3) 512

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Question

No.

34.

35.

36.

37.

38.



	SET-X
	Code-B
Quest	ions
In the formula of median given by $l$	$+\left(\frac{\frac{n}{2}-cf}{f}\right) \times h$ , the class size is :
(1) cf	(2) l
(3) h	(4) n
The empirical relation between the	three measures of central tendency
is:	(d) Nous of these
(1) Median = Mode + 2 Mean	(2) Mode = 3 Median + Mean
(3) 3 Median = 2 Mode + Mean	(4) 3 Median = Mode + 2 Mean
Standard deviation is a measure	which shows how much variation
from the :	The Land a franch of the second
(1) Mean exists	(2) Mode exists
(3) Variance exists	(4) None of these
The angle between the planes $\vec{r}$ .	$(2\hat{\imath} - \hat{\jmath} + \hat{k}) = 6$ and $\vec{r} \cdot (\hat{\imath} + \hat{\jmath} + 2\hat{k}) = 5$
is: 1000000 (1)	1.4+4mm = 100 = (*)
$(1)$ $\frac{\pi}{-}$	(2) $\frac{\pi}{2}$
	(2) 6 6
(3) $\frac{\pi}{4}$	(4) $\frac{\pi}{2}$
If equation of a line is $\vec{r} = \vec{a} + 2\vec{b}$	and equation of plane is $\vec{x} = a$ then
angle between line and plane is	$\frac{1}{1000}$ has a second of plane is $T_{1}R = q$ , then
	inven by :
(1) $\cos \theta = \frac{b \cdot n}{ \vec{b}   \vec{n} }$	(2) $\sin \theta = \frac{b \cdot \overline{n}}{ \overline{b}   \overline{n} }$
(3) $\cos \theta = \frac{\vec{b} \times \vec{n}}{ \vec{b} \times \vec{n} }$	(4) None of these
	QuestIn the formula of median given by l(1) cf(3) hThe empirical relation between theis:(1) Median = Mode + 2 Mean(3) 3 Median = 2 Mode + MeanStandard deviation is a measurefrom the :(1) Mean exists(3) Variance existsThe angle between the planes $\vec{r}$ .is:(1) $\frac{\pi}{3}$ (3) $\frac{\pi}{4}$ If equation of a line is $\vec{r} = \vec{a} + \lambda \vec{b}$ angle between line and plane is g(1) $\cos \theta = \frac{\vec{b} \cdot \vec{n}}{ \vec{b}   \vec{n} }$ (3) $\cos \theta = \frac{\vec{b} \times \vec{n}}{ \vec{b} \times \vec{n} }$

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#### SET-X Code-B

Question	Questions	4
No. 54.	The integrating factor for solving the differential equation	on
	$\frac{dy}{dx} - \frac{y}{x} = 2x^2 + 3x + 4$ is :	
	(1) $\frac{1}{x^2}$ (2) $-\frac{1}{x}$	
	(3) $x$ and a second s	
55.	$\frac{xdy-ydx}{x^2}$ is equal to :	
	(1) $d\left(\frac{x}{y}\right)$ (2) $d(xy)$	
	(3) $d(x+y)$ (4) $d\left(\frac{y}{x}\right)$	3
56.	If $\vec{u}$ , $\vec{v}$ and $\vec{w}$ are three vectors such that $\vec{u} + \vec{v} + \vec{w} = \vec{0}$ , then f	find
	$\vec{u} \cdot \vec{v} + \vec{v} \cdot \vec{w} + \vec{w} \cdot \vec{u}$ , if $ \vec{u}  = 3$ , $ \vec{v}  = 4$ and $ \vec{w}  = 5$ :	
	(1) $5^2$ (2) $-5^2$	
	(3) 2 <sup>5</sup> (4) 5 <sup>3</sup>	1
57.	If $ \vec{a}  =  \vec{b} $ , then $(\vec{a} + \vec{b}) \cdot (\vec{a} - \vec{b})$ is :	
AH Sit	(1) Positive A and a second (2) Negative	0
	(3) Zero (4) None of these	
58.	If $\theta$ is the angle between the vectors $\vec{a} = 2\hat{\imath} + 2\hat{\jmath} - \hat{k}$ and $\vec{b} = 6\hat{\imath} - 3\hat{\jmath}$ .	+ 2k
	then:	
	(1) $\cos \theta = \frac{4}{21}$ (2) $\cos \theta = \frac{3}{19}$	
	(3) $\cos \theta = \frac{2}{19}$ (4) $\cos \theta = \frac{2}{21}$	
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Question No.	Questions	uestions	5 →2		
59.	If $\vec{a}$ is any vector, then $(\vec{a} \times i)^2 + (\vec{a} \times \vec{j})^2 + (\vec{a} \times k)$ is:				
	(1) 2 <i>ā</i> <sup>2</sup>	(2)	$\frac{\vec{a}^2}{2}$		
	(3) $\vec{a}^2 + 2$	(4)	<i>ā</i> <sup>2</sup> – 2		
60.	If a line makes angles $\alpha, \beta, \gamma$ with	th coordin	nate axes, then		
	$\cos 2\alpha + \cos 2\beta + \cos 2\gamma$ is:		35. <u>4 47 - 9700</u> 1- 90101 m		
	(1) 3	(2)	- <b>1</b> . (*) (* (0)		
	(3) -2	(4)	2		
61.	A coin is tossed and a die is rol	led. The	probability that the coin show		
and ine	a head and the die shows 3 is :		and the second s		
	(1) $\frac{1}{3}$	(2)	1 6		
	(3) $\frac{1}{12}$	(4)	<u>1</u> 24		
		a tol rates and			
62.	The probability that at least or	ne of the	events A and B occurs is $\frac{3}{5}$ . If		
62.	The probability that at least of and <i>B</i> occur simultaneously wi	ne of the th probat	events A and B occurs is $\frac{3}{5}$ . If pility $\frac{1}{5}$ , then $P(A') + P(B')$ is :		
62.	The probability that at least of and <i>B</i> occur simultaneously with (1) $\frac{6}{5}$	ne of the th probat (2)	events A and B occurs is $\frac{3}{5}$ . If polity $\frac{1}{5}$ , then $P(A') + P(B')$ is : $\frac{4}{5}$		

Juestion	uest sus	duestions	Question		
63.	If two coins are tossed 5 times, then the probability of getting 5 head				
	and 5 tails is :		10 U 10 U		
	9	21	2 a a a a a a a a a a a a a a a a a a a		
	$(1) \frac{1}{64}$	(2)	205		
	(2) 1		63		
	(3) 1024	(4)	256		
64.	A Coin is tossed 10 times. The	e probabili	ty of getting exactly six head		
	is:				
	100	(2)	- (0)		
	(1) $\frac{100}{153}$	(2)	<sup>10</sup> C <sub>6</sub>		
	105		10 -		
	(3) 512	(4)	4		
65.	(3) 512 A box contains 3 white and	(4) 2 red ba	lls. If we draw one ball an		
65.	$\begin{array}{c} (3) \\ \hline 512 \\ \hline A \text{ box contains 3 white and} \\ \hline without replacing the first background in $	(4) 2 red ba	lls. If we draw one ball a		
65.	$\begin{array}{c} (3) \\ \hline 512 \\ \hline \\ A \text{ box contains 3 white and} \\ without replacing the first back in the set of the$	(4) 2 red ba all, the pro	Let us draw one ball as bability of drawing red ball		
65.	<ul> <li>(3) 512</li> <li>A box contains 3 white and without replacing the first basecond draw is :</li> </ul>	(4) 2 red ba all, the pro	lls. If we draw one ball at bability of drawing red ball		
65.	(3) $\frac{512}{512}$ A box contains 3 white and without replacing the first ba second draw is : (1) $\frac{8}{25}$	(4) 2 red ba all, the pro (2)	$c_4$ Ils. If we draw one ball and bability of drawing red ball $\frac{2}{5}$		
65.	(3) $\frac{1}{512}$ A box contains 3 white and without replacing the first basecond draw is : (1) $\frac{8}{25}$	(4) 2 red ba all, the pro (2)	$r_4$ lls. If we draw one ball and bability of drawing red ball $\frac{2}{5}$		
65.	(3) $\frac{1}{512}$ A box contains 3 white and without replacing the first base second draw is : (1) $\frac{8}{25}$ (3) $\frac{3}{5}$	(4) 2 red ba all, the pro (2) (4)	$r_4$ Ils. If we draw one ball at bability of drawing red ball $\frac{2}{5}$ $\frac{21}{25}$		
65.	(3) $\frac{1}{512}$ A box contains 3 white and without replacing the first base second draw is: (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 \le  x  \le 6$ then x belongs	(4) 2 red ba all, the pro (2) (4)	$r_4$ lls. If we draw one ball as bability of drawing red ball $\frac{2}{5}$ $\frac{21}{25}$		
65. 66.	(3) $\frac{1}{512}$ A box contains 3 white and without replacing the first base second draw is: (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs	(4) 2 red ba all, the pro (2) (4) to :	$\frac{2}{5}$		
<b>65.</b> <b>66.</b>	(3) $\frac{1}{512}$ A box contains 3 white and without replacing the first base second draw is: (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs (1) $(-6, -3) \cup (3, 6)$	(4) 2 red ba all, the pro (2) (4) to : (2)	$rac{c_4}{lls. If we draw one ball at bability of drawing red ball}$ $\frac{2}{5}$ $\frac{21}{25}$ (-6, 6)		
<b>65</b> . <b>66</b> .	(3) $\frac{1}{512}$ A box contains 3 white and without replacing the first base second draw is: (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs (1) $(-6, -3) \cup (3, 6)$ (3) $(-3, -3) \cup (3, 6)$	(4) 1 2 red ba all, the pro (2) (4) to: (2) (4) (4)	$c_4$ Ils. If we draw one ball at bability of drawing red ball $\frac{2}{5}$ $\frac{21}{25}$ (-6,6) None of these		
<ul><li>65.</li><li>66.</li><li>67.</li></ul>	(3) $\frac{1}{512}$ A box contains 3 white and without replacing the first base second draw is: (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs (1) $(-6, -3) \cup (3, 6)$ (3) $(-3, -3) \cup (3, 6)$ If $ab = 4$ and $a, b \in R^+$ , then :	(4) 2 red ba all, the pro (2) (4) to : (2) (4)	$c_4$ Ils. If we draw one ball at bability of drawing red ball $\frac{2}{5}$ $\frac{21}{25}$ (-6,6) None of these		
<ul><li>65.</li><li>66.</li><li>67.</li></ul>	(3) $\frac{1}{512}$ A box contains 3 white and without replacing the first base second draw is: (1) $\frac{8}{25}$ (3) $\frac{3}{5}$ If $3 <  x  < 6$ , then x belongs (1) $(-6, -3) \cup (3, 6)$ (3) $(-3, -3) \cup (3, 6)$ If $ab = 4$ and $a, b \in R^+$ , then : (1) $a + b \le 4$	(4) 2 red ba all, the pro (2) (4) to: (2) (4) (2)	$\frac{c_4}{lls. If we draw one ball at bability of drawing red ball}$ $\frac{2}{5}$ $\frac{21}{25}$ $(-6,6)$ None of these $(a+b) = 4$		

. .

SET-X

UG-EE-June-2025(Mathematics) Code-B (13)

(12)



Question No.	Ques	tions	and the second second
73.	The matrix A which satisfies the co	onditio	on $\begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix} A = \begin{bmatrix} 1 & 1 \\ 0 & -1 \end{bmatrix}$ is given
	by:		
	(1) $\begin{bmatrix} 1 & 0 \\ 4 & -1 \end{bmatrix}$	(2)	$\begin{bmatrix} 1 & 4 \\ 0 & -1 \end{bmatrix}$
	$(3) \begin{bmatrix} 1 & 0 \\ -1 & 4 \end{bmatrix}$	(4)	None of these
74.	If a square matrix A is such that A	A' = I	= A'A, then $ A $ is equal to :
	(1) ±2	(2)	0
	(3) ±1	(4)	None of these
75.	$\begin{vmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{vmatrix}$ is equal to :		180, 11 1 - 1865 - Van 1
	(1) abc	(2)	a + b + c
	(3) 1	(4)	0
<b>76.</b>	If $-9$ is a root of the equation $\begin{vmatrix} x \\ 2 \\ 7 \end{vmatrix}$	3 7 x 2 6 x	= 0, then the other two root
	are:	alog	a in count of map + etc.
	(1) 2,-7	(2)	2,7
	(3) -2, -7	(4)	-2,7
77. If $A = \begin{bmatrix} 1 & 2 \\ 3 & -5 \end{bmatrix}$ , then adj A is given by :		ouilt ani, Materia é	
	(1) $\begin{bmatrix} 5 & 2 \\ 3 & 1 \end{bmatrix}$	(2)	$\begin{bmatrix} 5 & -2 \\ 3 & 1 \end{bmatrix}$
	$(3) \begin{bmatrix} -5 & 2\\ 3 & 1 \end{bmatrix}$	(4)	$\begin{bmatrix} -5 & -2 \\ -3 & 1 \end{bmatrix}$

SET-X

Questio	n Questions			
78.	If $A = \begin{bmatrix} \lambda & 2 \\ 2 & \lambda \end{bmatrix}$ and $ A^3  = 125$ , then the value of $\lambda$ is :			
	(1) ±3	(2)	±5	
	(3) ±1	(4)	±2	
79.	If $xy = e^{x-y}$ , then $\frac{dy}{dx}$ is equal to :			
	$(1) \frac{y}{x(1+y)}$	(2)	$\frac{(x-1)y}{x(1+y)}$	
	(3) $\frac{(x-1)}{x(1+y)}$	(4)	$\frac{(x+1)y}{x(1-y)}$	
80.	If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x}}}$	∞,	then $\frac{dy}{dx}$ is equal to :	
	$(1)  \frac{\sin x}{2y-1}$	(2)	$\frac{\cos x}{2y-1}$	
	$(3)  \frac{\sin x}{1-2y}$	(4)	$\frac{\cos x}{1-2y}$	
81.	The value of $\lambda$ for which the	lines	3x + 4y = 5, 5x + 4y = 4 and	
	$\lambda x + 4y = 6$ meet at a point is :		A MIS.	
	(1) 4	(2)	3 - (1)	
	(3) 2	(4)	1	
2.	A straight line through $P(1,2)$ is such that its intercept between the			
a	axes is bisected at <i>P</i> . Its equation is :			
(	1)  x+y=-1	(2)	2x + y = 4	
(	3) $x + y = 3$	(4)	x + 2y = 5	

(16)

UG-EE-June-2025(Mathematics) Code-B

Code-B Questions Question No. Equation of a straight line perpendicular to the line 3x - y + 7 = 0 and 83. passing through (5,2) is : (1) 3x + y - 11 = 0(2) x - 3y - 11 = 0(3) x + 3y - 11 = 0(4) x - 3y + 11 = 0For what value of K, the points (K, 2-2K), (-K+1, 2K) and 84. (-4 - K, 6 - 2K) are collinear? (1) K = -1K = -2(2) (3) K = 1(4) K = 2The point of the parabola  $y^2 = 18x$  for which the ordinate is three 85. times the abscissa, is : (1) (2,6) (6,2) (2) (3) (3,18) (4) (-2,-6) In an ellipse, length of minor axis is 8 and eccentricity is  $\frac{\sqrt{5}}{3}$ . The 86. length of major axis is : (1) 6 (2) 12 (3) 10 (4) 16 87. The eccentricity of a rectangular hyperbola is : (1)  $\frac{1}{\sqrt{2}}$ (2)  $-\sqrt{2}$ (4)  $-\frac{1}{\sqrt{2}}$ (3)  $\sqrt{2}$ UG-EE-June-2025(Mathematics) Code-B

(17)

SET-X



gop	CO	10 10		Code-E
Question No.	8R013291	Question	15	Troi.
93.	If $\tan 2\theta  \tan \theta = 1$ , then the ge	eneral valu	ue of $\theta$ is :	36. 112
	(1) $\left(n+\frac{1}{2}\right)\pi$	(2)	$\left(2n\pm\frac{1}{2}\right)\frac{\pi}{3}$	
	(3) $\left(n+\frac{1}{2}\right)\frac{\pi}{3}$ (2)	(4)	None of these	(12)
94.8	If $(w \neq 1)$ is a cube root of u	nity and	$(1+w)^7 = A + Bw,$	then A and E
) requ	are given by : "edtegot the av	tary alwa	rman and Secre	· Chai
	(1) 0,1	(2)	1,0	arra (1)
	(3) -1,1	(4)	1,1	
95. 970 ш	If $z = \left(\frac{\sqrt{3}}{2} + \frac{i}{2}\right)^5 + \left(\frac{\sqrt{3}}{2} - \frac{i}{2}\right)^5$ , the (1) $\lim_{z \to 0}  z  = 0$	en : no word al	an has 7 friends.	. 190. A. m
	(3) $\operatorname{Re}(z) > 0, \operatorname{Im}(z) > 0$	(2) (4)	Re(z) = 0 None of these	(1)
96.	The number of real roots of $3^{2x}$	$x^{2}-7x+7 = 9$	is:	(F)
	(1) 2	(2)	1	
	(3) Zero	(4)	.4	
97.	If the roots of the equation $qx^2$	+px+q	= 0 are complex, v	where <i>p,q</i> are
	real, then the roots of the equat	tion $x^2 - 4$	$qx + p^2 = 0$ are :	
	(1) Imaginary	(2)	Real and equal	
. (	(3) Real and unequal	(4)	None of these	

		SET-) Code-E
Question No. 98.	If $2 \pm i\sqrt{2}$ is a most of the eff	Questions quation $x^2 + px + q = 0$ where p and q are
	real, then $(p,q)$ is equal to: (1) $(4,-7)$ (3) $(-4,7)$	(2) $(4,7)$ (4) $(-4,-7)$ (4) table, so that the second table tab
99.	If eleven members of a Co Chairman and Secretary al arrangements is :	ways sit together, then the number of
	(1) $\lfloor 10 \\ (3) \ \lfloor 10 \times 2 \\ \end{pmatrix}$	(2) $\lfloor \frac{9}{2} \\ (4) \ \lfloor \frac{9}{2} \times 2 \\ \end{pmatrix}$
100.	A man has 7 friends. In how	many ways, he can invite one or more
	(1) 127 (3) 256	<ul><li>(2) 128</li><li>(4) 130</li></ul>

SET—"X" (Total No. of printed pages : 21)				
(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)				
UG-EE-June, 2025 (Mathematics 4 year)				
Code C opened for scanning putpole Sr. No. 10023 at 11:25 Am on 2016/25				
Time : 1¼ Hours Total Questions : 100 Max. Marks : 100				
Roll No (in figure) (in words)				
Name :         Date of Birth :				
Father's Name :         Mother's Name :				
Date of Examination :				
(Signature of the candidate) (Signature of the Invigilator)				
<ul> <li>CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.</li> <li>All questions are compulsory.</li> <li>The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.</li> <li>Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.</li> <li>Question Booklet along-with answer key of all the A, B, C and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.</li> <li>The candidate MUST NOT do any rough work or writing in the OMR Answer- Sheet. Rough work, if any, may be done in the question book-let itself. Answers MUST NOT be ticked in the Question book-let.</li> <li>There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.</li> <li>Use only Black or Blue <u>BALL POINT PEN</u> of good quality in the OMR Answer- Sheet.</li> <li>BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETTE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.</li> </ul>				

Question No.	Questions		
1.	If $A = \begin{bmatrix} a & b \\ b & a \end{bmatrix}$ and $A^2 = \begin{bmatrix} \alpha & \beta \\ \beta & \alpha \end{bmatrix}$ , then the value of $\alpha$ and $\beta$ is :		
. ,	(1) $\alpha = a^2 + b^2, \beta = 2ab$	(2)	$\alpha = \frac{a^2}{b^2}, \beta = \frac{2}{3}ab$
	$(3)  \alpha = a^2 \ b^2, \beta = 2ab$	(4)	$\alpha = a^2 - b^2, \beta = \frac{ab}{2}$
2.	Each diagonal element of a skew-sy	ymme	tric matrix is :
	(1) Always zero	(2)	Always imaginary
•	(3) Always one	(4)	None of these
3.	The matrix A which satisfies the c	conditi	ion $\begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix} A = \begin{bmatrix} 1 & 1 \\ 0 & -1 \end{bmatrix}$ is given
	by:		
	$(1) \begin{bmatrix} 1 & 0 \\ 4 & -1 \end{bmatrix}$	(2)	$\begin{bmatrix} 1 & 4 \\ 0 & -1 \end{bmatrix}$
	$(3) \begin{bmatrix} 1 & 0 \\ -1 & 4 \end{bmatrix}$	(4)	None of these
4.	If a square matrix $A$ is such that $A$ .	A' = I	= A'A, then $ A $ is equal to :
	(1) ±2	(2)	0
	(3) ±1	(4)	None of these
5.	$\begin{vmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{vmatrix}$ is equal to :		
	(1) <i>abc</i>	(2)	a+b+c
	(3) 1	(4)	0

UG-EE-June-2025(Mathematics) Code-C (1)

Question	Questions
6.	If -9 is a root of the equation $\begin{vmatrix} x & 3 & 7 \\ 2 & x & 2 \\ 7 & 6 & x \end{vmatrix} = 0$ , then the other two roots
•	are:
*	(1) 2, -7 (2) 2, 7
	(3) -2, -7 (4) -2, 7
7.	If $A = \begin{bmatrix} 1 & 2 \\ 3 & -5 \end{bmatrix}$ , then adj A is given by :
	(1) $\begin{bmatrix} 5 & 2 \\ 3 & 1 \end{bmatrix}$ (2) $\begin{bmatrix} 5 & -2 \\ 3 & 1 \end{bmatrix}$
	$(3) \begin{bmatrix} -5 & 2 \\ 3 & 1 \end{bmatrix} \qquad (4) \begin{bmatrix} -5 & -2 \\ -3 & 1 \end{bmatrix}$
8.	If $A = \begin{bmatrix} \lambda & 2 \\ 2 & \lambda \end{bmatrix}$ and $ A^3  = 125$ , then the value of $\lambda$ is :
	(1) $\pm 3$ (2) $\pm 5$
	(3) $\pm 1$ (4) $\pm 2$
9.	If $xy = e^{x-y}$ , then $\frac{dy}{dx}$ is equal to :
	(1) $\frac{y}{x(1+y)}$ (2) $\frac{(x-1)y}{x(1+y)}$
	(3) $\frac{(x-1)}{x(1+y)}$ (4) $\frac{(x+1)y}{x(1-y)}$
10.	If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x}}}$ , then $\frac{dy}{dx}$ is equal to :
	(1) $\frac{\sin x}{2y-1}$ (2) $\frac{\cos x}{2y-1}$
	$(3)  \frac{\sin x}{1-2y} \qquad \qquad (4)  \frac{\cos x}{1-2y}$

UG-EE-June-2025(Mathematics) Code-C (2)

Question No.	Questions		
11.	The value of $\lambda$ for which the lines $3x + 4y = 5, 5x + 4y = 4$ and		
	$\lambda x + 4y = 6$ meet at a point is :		
	(1) 4 (2) 3		
	(3) 2 (4) 1		
12.	A straight line through $P(1,2)$ is such that its intercept between the		
	axes is bisected at P. Its equation is :		
•	(1) $x + y = -1$ (2) $2x + y = 4$		
,	(3) $x + y = 3$ (4) $x + 2y = 5$		
13.	Equation of a straight line perpendicular to the line $3x - y + 7 = 0$ and		
	passing through (5,2) is :		
s.	(1) $3x + y - 11 = 0$ (2) $x - 3y - 11 = 0$		
-	(3) $x + 3y - 11 = 0$ (4) $x - 3y + 11 = 0$		
14.	For what value of K, the points $(K, 2-2K), (-K+1, 2K)$ and		
	(-4 - K, 6 - 2K) are collinear?		
	(1) $K = -1$ (2) $K = -2$		
	(3) $K = 1$ (4) $K = 2$		
15.	The point of the parabola $y^2 = 18x$ for which the ordinate is three		
	times the abscissa, is :		
	(1) (2,6) (2) (6,2)		
	(3) (3, 18) (4) (-2, -6)		

### UG-EE-June-2025(Mathematics) Code-C (3)

Question	Questions
16.	In an ellipse, length of minor axis is 8 and eccentricity is $\frac{\sqrt{5}}{3}$ . The
	length of major axis is :
	(1) 6 (2) 12
	(3) 10 (4) 16
17.	The eccentricity of a rectangular hyperbola is :
	(1) $\frac{1}{\sqrt{2}}$ (2) $-\sqrt{2}$
	(3) $\sqrt{2}$ (4) $-\frac{1}{\sqrt{2}}$
18.	The equation of circle whose centre is $(0,0)$ and area of the circle is
	154 sq unit is given by :
	(1) $x^2 + y^2 = 7$ (2) $x^2 + y^2 = 22$
	(3) $x^2 + y^2 = 11$ (4) $x^2 + y^2 = 49$
19.	$\lim_{x \to \infty} \frac{\sin x}{x} \text{ is equal to :}$
÷	(1) 0 (2) 1
	(3) ∞ (4) Doesn't exist
20.	$\lim_{x \to 2} \left( \frac{3^{x/2} - 3}{3^x - 9} \right) $ is equal to :
	(1) 0 (2) $\frac{1}{6}$
	(3) $\frac{1}{3}$ (4) log 3

UG-EE-June-2025(Mathematics) Code-C (4)

Question No.	Questions		
21.	If $\cos \theta = \frac{1}{2}\left(x + \frac{1}{x}\right)$ , then $\frac{1}{2}\left(x^2 + \frac{1}{x^2}\right)$ is equal to :		
-	(1) $\sin 2\theta$ (2) $\cos 2\theta$		
	(3) $\tan 2\theta$ (4) $\cot 2\theta$		
22.	If $\frac{3\pi}{4} < \alpha < \pi$ , then $\sqrt{\csc^2 \alpha + 2 \cot \alpha}$ is equal to :		
	(1) $-1 - \cot \alpha$ (2) $1 + \cot \alpha$		
	(3) $1 - \cot \alpha$ (4) $-1 + \cot \alpha$		
23.	If $\tan 2\theta  \tan \theta = 1$ , then the general value of $\theta$ is :		
	(1) $\left(n+\frac{1}{2}\right)\pi$ (2) $\left(2n\pm\frac{1}{2}\right)\frac{\pi}{3}$		
	(3) $\left(n+\frac{1}{2}\right)\frac{\pi}{3}$ (4) None of these		
24.	If $(w \neq 1)$ is a cube root of unity and $(1 + w)^7 = A + Bw$ , then A and B		
	are given by :		
	(1) 0,1 (2) 1,0		
	(3) -1,1 (4) 1,1		
25.	If $z = \left(\frac{\sqrt{3}}{2} + \frac{i}{2}\right)^5 + \left(\frac{\sqrt{3}}{2} - \frac{i}{2}\right)^5$ , then :		
	(1) $Im(z) = 0$ (2) $Re(z) = 0$		
	(3) $\text{Re}(z) > 0$ , $\text{Im}(z) > 0$ (4) None of these		

#### UG-EE-June-2025(Mathematics) Code-C

(5)

Question	Questions		
No. 26.	The number of real roots of $3^{2x^2-7x+7} = 9$ is :		
	(1) 2 (2) 1	L	
	(3) Zero (4) 4	ł	
27.	If the roots of the equation $qx^2 + px + q$	= 0 are complex, where $p, q$	
	are real, then the roots of the equation $x^2$ -	$-4qx + p^2 = 0$ are :	
	(1) Imaginary (2) H	Real and equal	
	(3) Real and unequal (4) N	None of these	
28.	If $2 + i\sqrt{3}$ is a root of the equation $x^2 + p$	px + q = 0 where $p$ and $q$ are	
	real, then $(p,q)$ is equal to :		
	(1) (4,-7) (2) (	(4,7)	
	(3) (-4,7) (4) (	(-4, -7)	
29.	If eleven members of a Committee at	a round table, so that the	
<b>.</b>	Chairman and Secretary always sit together, then the number of		
	arrangements is :		
	(1) 10 (2)	9	
	$(3)  \underline{10} \times 2 \tag{4}$	9 × 2	
30	A man has 7 friends. In how many ways,	he can invite one or more of	
	them to a tea party :		
	(1) $127$ (2)	128	
	(3) 256 (4)	130	

UG-EE-June-2025(Mathematics) Code-C (6)

Question No.	Questions
31.	Area bounded by the curves $y^2 = x$ and $y = x^2$ is :
	(1) $\frac{2}{3}$ sq. unit (2) 1 sq. unit
	(3) $\frac{1}{2}$ sq. unit (4) None of these
32.	A linear programming problem is concerned with finding the :
	(1) Any value of a linear function
	(2) Unsatisfactorily value of a linear function
	(3) Optimal value of a linear function
	(4) None of these
33.	In the formula of mode given by $l + h\left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right)$ , frequency of the
	modal class is :
	(1) $f_2$ (2) $f_1$
	(3) $f_0$ (4) $h$
34.	In the formula of median given by $l + \left(\frac{\frac{n}{2} - cf}{f}\right) \times h$ , the class size is :
	(1) $cf$ (2) $l$
	(3) $h$ (4) $n$
35.	The empirical relation between the three measures of central tendency
	is:
	(1) Median = Mode + 2 Mean (2) Mode = 3 Median + Mean
	(3) 3 Median = 2 Mode + Mean (4) 3 Median = Mode + 2 Mean
UG-EE	-June-2025(Mathematics) Code-C

(7)

Question	Questions
36.	Standard deviation is a measure which shows how much variation
	from the :
	(1) Mean exists (2) Mode exists
	(3) Variance exists (4) None of these
37.	The angle between the planes $\vec{r}.(2\hat{\imath}-\hat{\jmath}+\hat{k})=6$ and $\vec{r}.(\hat{\imath}+\hat{\jmath}+2\hat{k})=5$
	is:
	(1) $\frac{\pi}{3}$ (2) $\frac{\pi}{6}$
	(3) $\frac{\pi}{4}$ (4) $\frac{\pi}{2}$
38.	If equation of a line is $\vec{r} = \vec{a} + \lambda \vec{b}$ and equation of plane is $\vec{r} \cdot \vec{n} = q$ , then
	angle between line and plane is given by :
	(1) $\cos \theta = \frac{\vec{b} \cdot \vec{n}}{ \vec{b}   \vec{n} }$ (2) $\sin \theta = \frac{\vec{b} \cdot \vec{n}}{ \vec{b}   \vec{n} }$
	(3) $\cos \theta = \frac{\vec{b} \times \vec{n}}{ \vec{b} \times \vec{n} }$ (4) None of these
39.	A statement is a sentence which is :
	(1) Always True
	(2) Always False
	(3) Either True or False, but not both simultaneously
	(4) None of these
UC FF	June-2025(Mathematics) Code-C

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	Code–C
Question No.	Questions
40.	Negation of negation of a statement is :
	(1) Not defined (2) True and False
	(3) The statement ifself (4) None of these
41.	$\int \frac{1 + \tan^2 x}{1 - \tan^2 x} dx$ is given by :
	(1) $\frac{1}{2} \log \left  \frac{1 + \tan x}{1 + \cot x} \right  + c$ (2) $\log \left  \frac{1 + \tan x}{1 - \tan x} \right  + c$
	(3) $\frac{1}{2} \log \left  \frac{1 + \tan x}{1 - \tan x} \right  + c$ (4) $\log \left  \frac{1 + \cot x}{1 - \tan x} \right  + c$
. 42.	The order of the differential equation $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^3 = 0$ is :
	(1) 1 (2) 2
	(3) 3 (4) 0
43.	The solution of the differential equation $\frac{dy}{dx} = \frac{x(2\log x+1)}{\sin y + y\cos y}$ is :
	(1) $y = x^2 \log x + c$ (2) $y = x^2 \sin x + c$
	(3) $y \sin y = x^2 \log x + c$ (4) $y \sin y = \log x + c$
44.	The integrating factor for solving the differential equation
at a sua Angli angli ang	$\frac{dy}{dx} - \frac{y}{x} = 2x^2 + 3x + 4$ is :
	(1) $\frac{1}{x^2}$ (2) $-\frac{1}{x}$
	(3) $x$ (4) $\frac{1}{x}$

SET-X

UG-EE-June-2025(Mathematics) Code-C (9)

Question No.	Questions
45.	$\frac{xdy-ydx}{x^2}$ is equal to :
	(1) $d\left(\frac{x}{y}\right)$ (2) $d(xy)$
	(3) $d(x+y)$ (4) $d\left(\frac{y}{x}\right)$
46.	If $\vec{u}$ , $\vec{v}$ and $\vec{w}$ are three vectors such that $\vec{u} + \vec{v} + \vec{w} = \vec{0}$ , then find
	$\vec{u}.\vec{v}+\vec{v}.\vec{w}+\vec{w}.\vec{u}$ , if $ \vec{u}  = 3$ , $ \vec{v}  = 4$ and $ \vec{w}  = 5$ :
	(1) $5^2$ (2) $-5^2$
	(3) $2^5$ (4) $5^3$
47.	If $ \vec{a}  =  \vec{b} $ , then $(\vec{a} + \vec{b}) \cdot (\vec{a} - \vec{b})$ is:
	(1) Positive (2) Negative
	(3) Zero (4) None of these
48.	If $\theta$ is the angle between the vectors $\vec{a} = 2\hat{\imath} + 2\hat{\jmath} - \hat{k}$ and $\vec{b} = 6\hat{\imath} - 3\hat{\jmath} + 2\hat{k}$ ,
	then :
	(1) $\cos \theta = \frac{4}{21}$ (2) $\cos \theta = \frac{3}{19}$
	(3) $\cos \theta = \frac{2}{19}$ (4) $\cos \theta = \frac{2}{21}$
49.	If $\vec{a}$ is any vector, then $(\vec{a} \times i)^2 + (\vec{a} \times \vec{j})^2 + (\vec{a} \times \vec{k})^2$ is :
	(1) $2\vec{a}^2$ (2) $\frac{\vec{a}^2}{2}$
	(3) $\vec{a}^2 + 2$ (4) $\vec{a}^2 - 2$

UG-EE-June-2025(Mathematics) Code-C (10)

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Question No.	Ques	tions	
50.	If a line makes angles $\alpha, \beta, \gamma$ with co	oordin	ate axes, then
	$\cos 2\alpha + \cos 2\beta + \cos 2\gamma$ is :		
	(1) 3	(2)	-1
	(3) -2	(4)	2
51.	If $f(x) = \begin{cases} \frac{x^2 - 9}{x - 3}, & \text{if } x \neq 3 \\ 2x + k, & \text{otherwise} \end{cases}$ is cont	inuou	as at $x = 3$ , then k is equal to :
	(1) 3	(2)	$\frac{1}{6}$
	(3) 0	(4)	-6
52.	A set contains $n$ elements. Then the	le nun	nber of elements in Power Set
	are :		
	(1) $n^2$	(2)	n
	(3) $(2^n - 1)$	(4)	2 <sup>n</sup>
53.	Two sets A and B are called Disjoin	t sets	, if $A \cap B$ is :
	(1) <b>φ</b>	(2)	0
	(3) 1	(4)	None of these
54.	If $A = \{1, 2, 3, 4\}$ and $B = \{4, 5, 6, 7\}$ ,	then E	B - A is given by :
	(1) φ	(2)	{5, 6, 7}
	(3) {1,2,3}	(4)	None of these

UG-EE-June-2025(Mathematics) Code-C

(11)

Question	Questions
55.	In a city 20% of the population travels by Metro, 50% by Taxi and 10%
	travels by both Metro and Taxi. Then persons travelling by Metro or
	Taxi is :
19 - 19 - 19 - 19 - 19 - 19 - 19 - 19 -	(1) 60% (2) 70%
	(3) 40% (4) 80%
56.	$(2)4^{2n+1} + 3^{3n+1}$ is divisible by which of the following for all $n \in N$ :
	(1) 2 (2) 9
	(3) 3 (4) 11
57.	If $\cos^{-1} x - \sin^{-1} x = 0$ , then x is equal to :
	(1) $\frac{1}{\sqrt{2}}$ (2) $-\frac{1}{\sqrt{2}}$
	(3) $\sqrt{2}$ (4) $-\sqrt{2}$
58.	The value of $sin(cot^{-1}x)$ is equal to :
. A	(1) $\sqrt{1+x^2}$ (2) $(1+x^2)^{-1/2}$
	(3) $x$ (4) $\frac{1}{x}$
59.	The value of $\sin\left[\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right]$ is equal to :
	(1) 0 (2) $\frac{1}{2}$
	(3) 1 (4) -1
60.	$\tan^{-1}\frac{1}{2} + \tan^{-1}\frac{1}{5} + \tan^{-1}\frac{1}{8}$ is equal to :
, , , , , , , , , , , , , , , , , , ,	(1) $\pi$ (2) $\frac{\pi}{2}$
	(3) $\frac{\pi}{3}$ (4) $\frac{\pi}{4}$

UG-EE-June-2025(Mathematics) Code-C (12)

Question No.	Questions
61.	The equation of the plane passing through the intersection of the
	planes $x + 2y + 3z + 4 = 0$ and $4x + 3y + 2z + 1 = 0$ and the origin is .
	(1) $2m + 2m + - 0$
	(1) $2x + 3y + z = 0$ (2) $3x + 2y + z = 0$
	(3) $x + y + z = 0$ (4) $3x + 2y + z + 1 = 0$
62.	The triangle formed by the points $(0, 7, 10), (-1, 6, 6), (-4, 9, 6)$ is :
• • •	(1) Right angled (2) Equilateral
	(3) Isosceles (4) Right angled isosceles
63.	The distance of the point $(2, 3, -5)$ from the plane $x + 2y - 2z = 9$ is :
	(1) 3 (2) 4
	(3) 1 (4) 2
64.	If R is a relation on a set A such that $R = R^{-1}$ , then R is :
	(1) Transitive (2) Symmetric
	(3) Reflexive (4) None of these
65.	The function $f(x) = \log(x + \sqrt{x^2 + 1})$ is :
	(1) A periodic function (2) An even function
	(3) An odd function (4) None of these
66.	Let R be a relation on N defined by $x + 2y = 8$ . The domain of R is :
Yest 1 sta	(1) $\{2, 4, 8\}$ (2) $\{1, 2, 3, 4\}$
	$(3) \{2,4,6\} (4) \{2,4,6,8\}$
67.	R is called a symmetric relation on A, if :
	(1) $(x, y) \in R \implies (y, x) \notin R$ (2) $(x, y) \in R \implies \left(\frac{1}{x}, \frac{1}{y}\right) \in R$
	(3) $(x,y) \in R \implies (y,x) \in R$ (4) None of these

# UG-EE-June-2025(Mathematics) Code-C (13)

Question	Questions
68.	Five boys and three girls are seated at random in a row. The
	probability that no boy sits between two girls is :
	(1) 28 (2) $\frac{1}{28}$
	(3) $\frac{2}{28}$ (4) $\frac{3}{28}$
<b>69.</b>	Two cards are drawn at random from a pack of 52 cards. The
	probability that these two being aces is :
	(1) $\frac{1}{221}$ (2) $\frac{1}{122}$
	(3) $\frac{1}{212}$ (4) $\frac{1}{222}$
70.	A bag contains 8 red and 5 white balls. Three balls are drawn at
	random. The probability that one ball is red and two balls are white is :
	(1) $\frac{40}{139}$ (2) $\frac{40}{143}$
· · ·	(3) $\frac{4}{139}$ (4) $\frac{4}{143}$
71.	A coin is tossed and a die is rolled. The probability that the coin shows
	a head and the die shows 3 is :
	(1) $\frac{1}{3}$ (2) $\frac{1}{6}$
	(3) $\frac{1}{12}$ (4) $\frac{1}{24}$

UG-EE-June-2025(Mathematics) Code-C (14)

Question No.	Questions
72.	The probability that at least one of the events A and B occurs is $\frac{3}{5}$ . If A
	and B occur simultaneously with probability $\frac{1}{5}$ , then $P(A') + P(B')$ is :
	(1) $\frac{6}{5}$ (2) $\frac{4}{5}$
	(3) $\frac{7}{5}$ (4) $\frac{2}{5}$
73.	If two coins are tossed 5 times, then the probability of getting 5 heads
	and 5 tails is :
	(1) $\frac{9}{64}$ (2) $\frac{2}{205}$
	(3) $\frac{1}{1024}$ (4) $\frac{63}{256}$
74.	A Coin is tossed 10 times. The probability of getting exactly six heads
	is:
	(1) $\frac{100}{153}$ (2) ${}^{10}C_6$
	(3) $\frac{105}{512}$ (4) $^{10}C_4$
75.	A box contains 3 white and 2 red balls. If we draw one ball and
	without replacing the first ball, the probability of drawing red ball in
67 12	second draw is :
	(1) $\frac{8}{25}$ (2) $\frac{2}{5}$
	(3) $\frac{3}{5}$ (4) $\frac{21}{25}$

UG-EE-June-2025(Mathematics) Code-C (15)

Question	Ουα	stions	
No.	હ્યાર	SUOIIS	,
76.	If $3 <  x  < 6$ , then x belongs to :		
	(1) $(-6, -3) \cup (3, 6)$	(2)	(-6,6)
	(3) (−3,−3) ∪ (3,6)	(4)	None of these
77.	If $ab = 4$ and $a, b \in R^+$ , then :	۰. ۲	
	(1) $a+b \leq 4$	(2)	(a+b)=4
	$(3)  a+b \geq 4$	(4)	None of these
78.	Area lying between parabola $y^2 =$	4ax ar	nd its latus rectum is :
	(1) $\frac{4}{3}a^2$ sq. unit	(2)	$\frac{8}{3}a^2$ sq. unit
	(3) $\frac{16}{3}a^2$ sq. unit	(4)	None of these
79.	$\int_{-1}^{0} \frac{dx}{x^2 + 2x + 2}$ is equal to :	le I	
· ·	(1) $\frac{\pi}{4}$	(2)	$-\frac{\pi}{4}$
	$(3)  \frac{\pi}{2}$	(4)	0
80.	The value of $\int_{-\pi/4}^{\pi/4} x^3 \sin^4 x  dx$ is equ	al to :	
	(1) $\frac{\pi}{4}$	(2)	$\frac{\pi}{2}$
	(3) $\frac{\pi}{8}$	(4)	0
81.	How many words can be made from	m the	letters of the word DELHI, if L
i. <u>)</u>	comes in the middle of every word	?	•
	(1) 24	(2)	12
	(3) 6	(4)	60

UG-EE-June-2025(Mathematics) Code-C (16)

#### SET–X Code–C

Question No.	Questions
82.	The number of ways of distributing 8 identical balls in 3 distinct boxes
·	so that none of the boxes is empty, is :
х х	(1) 5 (2) 3 <sup>8</sup>
	(3) 21 (4) <sup>8</sup> c <sub>3</sub>
83.	If the 4 <sup>th</sup> term in the expansion of $\left(\frac{2}{3}x - \frac{3}{2x}\right)^n$ is independent of x, then
	n is equal to :
	(1) 5 (2) 6
	(3) 9 (4) None of these
84.	The coefficient of $x^n$ in the expansion of $(1 + x + x^2 + \dots)^{-n}$ is :
	(1) $n+1$ (2) $n$
	(3) 1 (4) $(-1)^n$
85.	The middle term in the expansion of $\left(x^2 + \frac{1}{x^2} + 2\right)^n$ is :
	(1) $\frac{\lfloor \underline{n}}{\lfloor \underline{2} n}$ (2) $\frac{\lfloor \underline{2} n}{(\lfloor \underline{n} )(\lfloor \underline{n} )}$
	(3) $\lfloor 2n$ (4) $\frac{\lfloor 2n}{\lfloor n-1 \rfloor}$
86.	The sum of $n$ terms of the series $1.4 + 3.04 + 5.004 + \dots$ is :
	(1) $n^2 + \frac{4}{9} \left( 1 - \frac{1}{10^n} \right)$ (2) $\frac{4}{9} + n^2 \left( 1 - \frac{1}{10^n} \right)$
	(3) $n^2 + \frac{9}{4} \left( \frac{1}{10^n} - 1 \right)$ (4) $n^2 + \frac{4}{3} \left( 1 - \frac{1}{10^n} \right)$

UG-EE-June-2025(Mathematics) Code-C (17)

Question	Questions
No. 87.	If the pth term of an A.P. is $q$ , $q$ th term is $p$ , then its $r$ th term is :
	(1) $p + q + r$ (2) $p + q - r$
	$(3)  p+r-q \qquad (4)  p-q-r$
88.	Fifth term of a G.P. is 2, then the product of its nine term is :
	(1) 1024 (2) 256
	(3) 512 (4) None of these
89.	Let $a_n$ be nth term of a G.P. of positive numbers. If $\sum_{n=1}^{100} a_{2n} = \alpha$ and
	$\sum_{n=1}^{100} a_{2n-1} = \beta$ , then the common ratio of G.P. is :
	(1) $\sqrt{\frac{\alpha}{\beta}}$ (2) $\sqrt{\frac{\beta}{\alpha}}$
	(3) $\frac{\beta}{\alpha}$ (4) $\frac{\alpha}{\beta}$
90.	The sum of cubes of <i>n</i> natural numbers is :
	(1) $(\sum n)^2$ (2) $(\sum n)^3$
	(3) $(\sum n^2)^3$ (4) None of these
91.	If $x = at^2$ , $y = 2at$ , then $\frac{d^2y}{dx^2}$ at $t = 2$ is :
-	(1) 16a (2) $\frac{1}{16a}$
	(3) $-\frac{1}{16a}$ (4) None of these

UG-EE-June-2025(Mathematics) Code-C (18)

Question No.	Questions
92.	The derivative of $\log \sqrt{\frac{1+\cos x}{1-\cos x}}$ is :
	(1) $-\csc x$ (2) $\csc x$
	(3) $\cot x$ (4) $-\cot x$
93.	The interval in which the function $y = x^3 + 5x^2 - 1$ is decreasing is
	given by :
	(1) $\frac{10}{3} < x < 0$ (2) $0 < x < \frac{10}{3}$
	(3) $10 < 3x < 0$ (4) $-\frac{10}{3} < x < 0$
94.	The minimum value of $x^2 + \frac{1}{1+x^2}$ is, at :
	(1) $x = 1$ (2) $x = 0$
	(3) $x = -1$ (4) None of these
95.	The point on the curve $\sqrt{x} + \sqrt{y} = \sqrt{a}$ at which the normal is parallel to
	the x-axis, is :
	(1) $(0,a)$ (2) $(a,0)$
р. т. 	(3) (a,a) (4) (0,0)
96.	For the curve $y = e^{2x}$ , the equation of tangent at (0, 1) is :
	(1) $y = -2x + 1$ (2) $y = -1 + 2x$
	(3) $y = 2x + 1$ (4) $y = -\frac{2}{3}x - 1$
IG-EE-J	une-2025(Mathematics) Code-C

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Question No.	Questions	
97.	$\int \frac{e^x (1+\sin x)}{(1+\cos x)} dx$ is given by :	
	(1) $e^x \tan \frac{x}{2} + c$ (2) $e^x \cot \frac{x}{2} + c$	
	(3) $e^x \cos \frac{x}{2} + c$ (4) $e^x \sin \frac{x}{2} + c$	
98.	$\int \frac{dx}{x + \sqrt{x}}$ is given by :	
	(1) $\log(\sqrt{x}+1) + c$ (2) $2\log(\sqrt{x}+1) + c$	· C
•	(3) $\frac{1}{2}\log(\sqrt{x}+1) + c$ (4) $\log(x+1) + c$	
99.	$\int \frac{e^x}{(2+e^x)(1+e^x)} dx \text{ is equal to :}$	
	(1) $\log\left(\frac{1-e^x}{2+e^x}\right) + c$ (2) $\log\left(\frac{1+e^x}{2-e^x}\right) + c$	
	(3) $\log\left(\frac{1-e^x}{2-e^x}\right) + c$ (4) $\log\left(\frac{1+e^x}{2+e^x}\right) + c$	
100.	$\int \frac{x^2}{x^2 + 4}  dx  \text{is equal to}:$	
	(1) $x - 2\tan^{-1}\frac{x}{2} + c$ (2) $x + 2\tan^{-1}\frac{x}{2} + c$	C
	(3) $\frac{x}{2} - \tan^{-1}\frac{x}{2} + c$ (4) $\frac{x}{2} + \tan^{-1}\frac{x}{2} + c$	:

UG-EE-June-2025(Mathematics) Code-C (20)

	SET-'	<b>''X''</b> (Total No. o	f printed pages : 21)		
(DO NOT OPEN THIS Q	(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)				
UC	UG-EE-June, 2025 (Mathematics 4 year)				
Code	opened fog Ber at 11:25 AM e	anning purpose on 2016125	Sr. No.		
Time : 1¼ Hours	Total Questi	ons : 100	Max. Marks : 100		
Roll No	(in figure)		(in words)		
Name :		Date of Birth :			
Father's Name :	· · · ·	Mother's Name : _			
Date of Examination	:				
(Signature of the ca	ndidate)	(Signatur	e of the Invigilator)		

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- 1. All questions are compulsory.
- 2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along-with answer key of all the A,B,C and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
- 5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers MUST NOT be ticked in the Question book-let.
- 6. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue <u>BALL POINT PEN</u> of good quality in the OMR Answer-Sheet.
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Question	Questions	
1.	How many words can be made from the letters of the word DELHI, if L	
	comes in the middle of every word?	
	(1) 24 (2) 12	
•	(3) 6 (4) 60	
2.	The number of ways of distributing 8 identical balls in 3 distinct boxes	
	so that none of the boxes is empty, is :	
	(1) 5 (2) $3^8$	
	(3) 21 (4) ${}^{8}c_{3}$	
3,	If the 4 <sup>th</sup> term in the expansion of $\left(\frac{2}{3}x - \frac{3}{2x}\right)^n$ is independent of x, then	
	n is equal to:	
	(1) 5 (2) 6	
	(3) 9 (4) None of these	
4.	The coefficient of $x^n$ in the expansion of $(1 + x + x^2 + \dots)^{-n}$ is :	
	(1) $n+1$ (2) $n$	
	(3) 1 (4) $(-1)^n$	
5.	The middle term in the expansion of $\left(x^2 + \frac{1}{x^2} + 2\right)^n$ is :	
	(1) $\frac{\lfloor \underline{n}}{\lfloor \underline{2} n}$ (2) $\frac{\lfloor \underline{2} n}{(\lfloor \underline{n} )(\lfloor \underline{n} )}$	
	(3) $\lfloor 2n$ (4) $\frac{\lfloor 2n}{\lfloor n-\rfloor}$	
1		

UG-EE-June-2025(Mathematics) Code-D
(1)

Question No.	Questions		
6.	The sum of $n$ terms of the series $1.4 + 3.04 + 5.004 + \dots$ is :		
	(1) $n^2 + \frac{4}{9} \left( 1 - \frac{1}{10^n} \right)$ (2) $\frac{4}{9} + n^2 \left( 1 - \frac{1}{10^n} \right)$		
	(3) $n^2 + \frac{9}{4} \left( \frac{1}{10^n} - 1 \right)$ (4) $n^2 + \frac{4}{3} \left( 1 - \frac{1}{10^n} \right)$		
7.	If the pth term of an A.P. is $q$ , $q$ th term is $p$ , then its $r$ th term is :		
	(1) $p + q + r$ (2) $p + q - r$		
	(3) $p + r - q$ (4) $p - q - r$		
8.	Fifth term of a G.P. is 2, then the product of its nine term is :		
	(1) 1024 (2) 256		
	(3) 512 (4) None of these		
9.	Let $a_n$ be nth term of a G.P. of positive numbers. If $\sum_{n=1}^{100} a_{2n} = \alpha$ and		
	$\sum_{n=1}^{100} a_{2n-1} = \beta$ , then the common ratio of G.P. is :		
	(1) $\sqrt{\frac{\alpha}{\beta}}$ (2) $\sqrt{\frac{\beta}{\alpha}}$		
	(3) $\frac{\beta}{\alpha}$ (4) $\frac{\alpha}{\beta}$		
10.	The sum of cubes of n natural numbers is :		
	(1) $(\sum n)^2$ (2) $(\sum n)^3$		
	(3) $(\sum n^2)^3$ (4) None of these		

UG-EE-June-2025(Mathematics) Code-D (2)

Question	Questions		
11.	Area bounded by the curves $y^2 = x$ and $y = x^2$ is :		
	(1) $\frac{2}{3}$ sq. unit (2) 1 sq. unit		
	(3) $\frac{1}{2}$ sq. unit (4) None of these		
12.	A linear programming problem is concerned with finding the :		
	(1) Any value of a linear function		
6	(2) Unsatisfactorily value of a linear function		
	(3) Optimal value of a linear function		
· · ·	(4) None of these		
13.	In the formula of mode given by $l + h\left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right)$ , frequency of the		
	modal class is :		
	(1) $f_2$ (2) $f_1$		
	(3) $f_0$ (4) h		
14.	In the formula of median given by $l + \left(\frac{\frac{n}{2} - cf}{f}\right) \times h$ , the class size is :		
	$(1) cf \qquad (2) l$		
	$(3) h \qquad (4) n$		
15.	The empirical relation between the three measures of central tendency		
	is:		
	(1) Median = Mode + 2 Mean (2) Mode = 3 Median + Mean		
	(3) 3 Median = 2 Mode + Mean (4) 3 Median = Mode + 2 Mean		

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Question No.	Questions
16.	Standard deviation is a measure which shows how much variation
×	from the :
	(1) Mean exists (2) Mode exists
	(3) Variance exists (4) None of these
17.	The angle between the planes $\vec{r}.(2\hat{\imath}-\hat{\jmath}+\hat{k})=6$ and $\vec{r}.(\hat{\imath}+\hat{\jmath}+2\hat{k})=5$
	is:
	(1) $\frac{\pi}{3}$ (2) $\frac{\pi}{6}$
	(3) $\frac{\pi}{4}$ (4) $\frac{\pi}{2}$
18.	If equation of a line is $\vec{r} = \vec{a} + \lambda \vec{b}$ and equation of plane is $\vec{r} \cdot \vec{n} = q$ , then
	angle between line and plane is given by :
	(1) $\cos\theta = \frac{\vec{b} \cdot \vec{n}}{ \vec{b}   \vec{n} }$ (2) $\sin\theta = \frac{\vec{b} \cdot \vec{n}}{ \vec{b}   \vec{n} }$
	(3) $\cos \theta = \frac{\vec{b} \times \vec{n}}{ \vec{b} \times \vec{n} }$ (4) None of these
19.	A statement is a sentence which is :
	(1) Always True
	(2) Always False
	(3) Either True or False, but not both simultaneously
	(4) None of these

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(4)

Question	Que	stions	3
20.	Negation of negation of a statemen	it is :	
	(1) Not defined	(2)	True and False
	(3) The statement ifself	(4)	None of these
21.	The equation of the plane passi	ng thi	rough the intersection of the
	planes $x + 2y + 3z + 4 = 0$ and $4x - 3z + 4 = 0$	+ 3y +	2z + 1 = 0 and the origin is :
	(1) $2x + 3y + z = 0$	(2)	3x + 2y + z = 0
	(3)  x+y+z=0	(4)	3x + 2y + z + 1 = 0
22.	The triangle formed by the points	(0,7,1	0), (-1, 6, 6), (-4, 9, 6) is :
	(1) Right angled	(2)	Equilateral
	(3) Isosceles	(4)	Right angled isosceles
23.	The distance of the point $(2, 3, -5)$	from t	the plane $x + 2y - 2z = 9$ is :
	(1) 3	(2)	4
	(3) 1	(4)	2
24.	If $R$ is a relation on a set $A$ such the	at $R =$	$R^{-1}$ , then R is :
· · ·	(1) Transitive	(2)	Symmetric
	(3) Reflexive	(4)	None of these
25.	The function $f(x) = \log(x + \sqrt{x^2 + x^2})$	$\overline{1}$ ) is :	
	(1) A periodic function	(2)	An even function
	(3) An odd function	(4)	None of these
26.	Let $R$ be a relation on $N$ defined by	x + 2	y = 8. The domain of $R$ is :
	(1) {2,4,8}	(2)	{1, 2, 3, 4}
	(3) {2,4,6}	(4)	{2, 4, 6, 8}

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Question No.	Questions
27.	R is called a symmetric relation on A, if :
	(1) $(x, y) \in R \implies (y, x) \notin R$ (2) $(x, y) \in R \implies \left(\frac{1}{x}, \frac{1}{y}\right) \in R$
	(3) $(x, y) \in R \implies (y, x) \in R$ (4) None of these
28.	Five boys and three girls are seated at random in a row. The
x	probability that no boy sits between two girls is :
	(1) 28 (2) $\frac{1}{28}$
	(3) $\frac{2}{28}$ (4) $\frac{3}{28}$
29.	Two cards are drawn at random from a pack of 52 cards. The
	probability that these two being aces is :
	(1) $\frac{1}{221}$ (2) $\frac{1}{122}$
	(3) $\frac{1}{212}$ (4) $\frac{1}{222}$
30.	A bag contains 8 red and 5 white balls. Three balls are drawn at
	random. The probability that one ball is red and two balls are white is :
	(1) $\frac{40}{139}$ (2) $\frac{40}{143}$
	(3) $\frac{4}{139}$ (4) $\frac{4}{143}$
31.	If $x = at^2$ , $y = 2at$ , then $\frac{d^2y}{dx^2}$ at $t = 2$ is :
	(1) 16a (2) $\frac{1}{16a}$
	(3) $-\frac{1}{16a}$ (4) None of these

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32. The	derivative of $\log \sqrt{\frac{1+\cos^2 x}{1-\cos^2 x}}$	$\frac{1}{sx}$ is :		
	$-\cos c x$			
(1)		(2)	cosec x	
(3)	cot x	(4)	$-\cot x$	
33. The	e interval in which th	e function $y =$	$x^3 + 5x^2 - 1$ is decreasin	g is
giv	en by :			
(1)	$\frac{10}{3} < x < 0$	(2)	$0 < x < \frac{10}{3}$	
(3)	10 < 3x < 0	(4)	$-\frac{10}{3} < x < 0$	
34. The	e minimum value of $x^2$ .	$+\frac{1}{1+x^2}$ is, at :		
(1)	$\mathbf{x} = 1$	(2)	x = 0	
(3)	x = -1	. (4)	None of these	
35. Th	e point on the curve $\sqrt{x}$	$+\sqrt{y}=\sqrt{a}$ at v	which the normal is parall	el to
the	x-axis, is :			
(1)	(0, <i>a</i> )	(2)	(a, 0)	
(3)	(a, a)	(4)	(0,0)	2
36. Fo	r the curve $y = e^{2x}$ , the	equation of tar	ngent at (0, 1) is :	
(1)	y = -2x + 1	(2)	y=-1+2x	
(3)	y = 2x + 1	(4)	$y=-\frac{2}{3}x-1$	

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Question No.		Questions	
37.	$\int \frac{e^x(1+\sin x)}{(1+\cos x)} dx$ is given by :	-	
	(1) $e^x \tan \frac{x}{2} + c$	(2)	$e^x \cot \frac{x}{2} + c$
	$(3)  e^x \cos \frac{x}{2} + c$	(4)	$e^x \sin \frac{x}{2} + c$
38.	$\int \frac{dx}{x + \sqrt{x}}$ is given by :		
	(1) $\log(\sqrt{x}+1)+c$	(2)	$2\log(\sqrt{x}+1)+c$
	$(3)  \frac{1}{2}\log(\sqrt{x}+1)+c$	(4)	$\log(x+1)+c$
39.	$\int \frac{e^x}{(2+e^x)(1+e^x)} dx \text{ is equal to :}$		
	(1) $\log\left(\frac{1-e^x}{2+e^x}\right) + c$	(2)	$\log\left(\frac{1+e^x}{2-e^x}\right)+c$
•	(3) $\log\left(\frac{1-e^x}{2-e^x}\right) + c$	(4)	$\log\left(\frac{1+e^x}{2+e^x}\right) + c$
40.	$\int \frac{x^2}{x^2+4}  dx \text{ is equal to :}$		
	(1) $x - 2 \tan^{-1} \frac{x}{2} + c$	(2)	$x + 2 \tan^{-1} \frac{x}{2} + c$
	(3) $\frac{x}{2} - \tan^{-1}\frac{x}{2} + c$	(4)	$\frac{x}{2} + \tan^{-1}\frac{x}{2} + c$
41.	If $f(x) = \begin{cases} \frac{x^2 - 9}{x - 3}, & \text{if } x \neq 3\\ 2x + k, & \text{otherwise} \end{cases}$ is	s continuou	is at $x = 3$ , then k is equal to :
	(1) 3	(2)	$\frac{1}{6}$
	(3) 0	(4)	-6

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Question No.	Questions		
42.	A set contains $n$ elements. Then the number of elements in Power Set		
	are :		
	(1) $n^2$ (2) $n$		
	(3) $(2^n - 1)$ (4) $2^n$		
43.	Two sets A and B are called Disjoint sets, if $A \cap B$ is :		
	(1) $\phi$ (2) 0		
	(3) 1 (4) None of these		
44.	If $A = \{1, 2, 3, 4\}$ and $B = \{4, 5, 6, 7\}$ , then $B - A$ is given by :		
	(1) $\phi$ (2) {5, 6, 7}		
	(3) {1,2,3} (4) None of these		
45.	In a city 20% of the population travels by Metro, 50% by Taxi and 10%		
- Sec. 6	travels by both Metro and Taxi. Then persons travelling by Metro or		
	Taxi is :		
	(1) 60% (2) 70%		
	(3) 40% (4) 80%		
46.	$(2)4^{2n+1} + 3^{3n+1}$ is divisible by which of the following for all $n \in N$ :		
	(1) 2 (2) 9		
	(3) 3 (4) 11		
47.	If $\cos^{-1} x - \sin^{-1} x = 0$ , then x is equal to :		
	(1) $\frac{1}{\sqrt{2}}$ (2) $-\frac{1}{\sqrt{2}}$		
	(3) $\sqrt{2}$ (4) $-\sqrt{2}$		

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Question	0		
No.	Ques	tions	
48.	The value of $sin(cot^{-1}x)$ is equal to		
	$(1)  \sqrt{1+x^2}$	(2)	$(1+x^2)^{-1/2}$
	(3) x	(4)	$\frac{1}{x}$
49.	The value of $\sin\left[\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right]$ is e	qual	to:
	(1) 0	(2)	$\frac{1}{2}$
	(3) 1	(4)	- <b>1</b> ,
50.	$\tan^{-1}\frac{1}{2} + \tan^{-1}\frac{1}{5} + \tan^{-1}\frac{1}{8}$ is equal to	•	
	(1) π	(2)	$\frac{\pi}{2}$
	(3) $\frac{\pi}{3}$	(4)	$\frac{\pi}{4}$
51.	The value of $\lambda$ for which the	lines	3r + 4y - 5 5r + 4y - 4
	$\lambda x + 4y = 6$ meet at a point is :		3x + 1y = 3, 3x + 4y = 4 and
	(1) 4	(2)	3
· · ·	(3) 2	(4)	1
52.	A straight line through $P(1,2)$ is s	uch t	hat its intercept between the
	axes is bisected at $P$ . Its equation is	5:	
	(1)  x+y=-1	(2)	2x + y = 4
	(3) $x + y = 3$	(4)	x+2y=5
53.	Equation of a straight line perpend	icula	r to the line $3x - y + 7 = 0$ and
	passing through (5,2) is :		
	(1) $3x + y - 11 = 0$	(2)	x-3y-11=0
	(3) $x + 3y - 11 = 0$	(4)	x-3y+11=0

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Question	Questions
54.	For what value of K, the points $(K, 2 - 2K), (-K + 1, 2K)$ and
	(-4 - K, 6 - 2K) are collinear?
	(1) $K = -1$ (2) $K = -2$
	(3) $K = 1$ (4) $K = 2$
55.	The point of the parabola $y^2 = 18x$ for which the ordinate is three
	times the abscissa, is :
	(1) (2,6) (2) (6,2)
	(3) (3,18) (4) (-2,-6)
56.	In an ellipse, length of minor axis is 8 and eccentricity is $\frac{\sqrt{5}}{3}$ . The
	length of major axis is :
. • .	(1) 6 (2) 12
	(3) 10 (4) 16
57.	The eccentricity of a rectangular hyperbola is :
	(1) $\frac{1}{\sqrt{2}}$ (2) $-\sqrt{2}$
	(3) $\sqrt{2}$ . (4) $-\frac{1}{\sqrt{2}}$
58.	The equation of circle whose centre is $(0,0)$ and area of the circle is
	154 sq unit is given by :
	(1) $x^2 + y^2 = 7$ (2) $x^2 + y^2 = 22$
4	(3) $x^2 + y^2 = 11$ (4) $x^2 + y^2 = 49$

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Question		oouo	
No.	Questions		
59.	$\lim_{x \to \infty} \frac{\sin x}{x} \text{ is equal to }:$		1
	(1) 0 (2) 1		
	(3) $\infty$ (4) Doesn't exist		
60.	$\lim_{x \to 2} \left( \frac{3^{x/2} - 3}{3^x - 9} \right) $ is equal to :		
	(1) 0 (2) $\frac{1}{6}$	·	. *
	(3) $\frac{1}{3}$ (4) log 3		
61.	If $A = \begin{bmatrix} a & b \\ b & a \end{bmatrix}$ and $A^2 = \begin{bmatrix} \alpha & \beta \\ \beta & \alpha \end{bmatrix}$ , then the value of $\alpha$ and $\beta$ is	:	
	(1) $\alpha = a^2 + b^2, \beta = 2ab$ (2) $\alpha = \frac{a^2}{b^2}, \beta = \frac{2}{3}ab$		
	(3) $\alpha = a^2 b^2, \beta = 2ab$ (4) $\alpha = a^2 - b^2, \beta = 2ab$	<u>ab</u> 2	
62.	Each diagonal element of a skew-symmetric matrix is :		
-	(1) Always zero (2) Always imaginar	ry	
	(3) Always one (4) None of these		
63.	The matrix A which satisfies the condition $\begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix} A = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$	$\begin{bmatrix} 1 \\ -1 \end{bmatrix}$ is given by	en
	by:		
	(1) $\begin{bmatrix} 1 & 0 \\ 4 & -1 \end{bmatrix}$ (2) $\begin{bmatrix} 1 & 4 \\ 0 & -1 \end{bmatrix}$		
	(3) $\begin{bmatrix} 1 & 0 \\ -1 & 4 \end{bmatrix}$ (4) None of these		
	· · ·		1

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Question No.	Questions
64.	If a square matrix A is such that $AA' = I = A'A$ , then $ A $ is equal to :
	(1) $\pm 2$ (2) 0
	(3) $\pm 1$ (4) None of these
65.	$\begin{vmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{vmatrix}$ is equal to :
	(1) $abc$ (2) $a + b + c$
	(3) 1 (4) 0
66.	If -9 is a root of the equation $\begin{vmatrix} x & 3 & 7 \\ 2 & x & 2 \\ 7 & 6 & x \end{vmatrix} = 0$ , then the other two roots
	are:
	(1) 2, -7 (2) 2, 7
	(3) -2, -7 (4) -2, 7
67.	If $A = \begin{bmatrix} 1 & 2 \\ 3 & -5 \end{bmatrix}$ , then adj A is given by :
	(1) $\begin{bmatrix} 5 & 2 \\ 3 & 1 \end{bmatrix}$ (2) $\begin{bmatrix} 5 & -2 \\ 3 & 1 \end{bmatrix}$
	$(3) \begin{bmatrix} -5 & 2 \\ 3 & 1 \end{bmatrix} \qquad (4) \begin{bmatrix} -5 & -2 \\ -3 & 1 \end{bmatrix}$
68.	If $A = \begin{bmatrix} \lambda & 2 \\ 2 & \lambda \end{bmatrix}$ and $ A^3  = 125$ , then the value of $\lambda$ is :
	(1) $\pm 3$ (2) $\pm 5$
•	(3) $\pm 1$ (4) $\pm 2$

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Question No.	Questions
69.	If $xy = e^{x-y}$ , then $\frac{dy}{dx}$ is equal to :
	(1) $\frac{y}{x(1+y)}$ (2) $\frac{(x-1)y}{x(1+y)}$
	(3) $\frac{(x-1)}{x(1+y)}$ (4) $\frac{(x+1)y}{x(1-y)}$
70.	If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x}}}$ , then $\frac{dy}{dx}$ is equal to :
	(1) $\frac{\sin x}{2y-1}$ (2) $\frac{\cos x}{2y-1}$
	$(3)  \frac{\sin x}{1-2y} \qquad \qquad (4)  \frac{\cos x}{1-2y}$
71.	$\int \frac{1 + \tan^2 x}{1 - \tan^2 x} dx$ is given by :
	(1) $\frac{1}{2} \log \left  \frac{1 + \tan x}{1 + \cot x} \right  + c$ (2) $\log \left  \frac{1 + \tan x}{1 - \tan x} \right  + c$
	(3) $\frac{1}{2} \log \left  \frac{1 + \tan x}{1 - \tan x} \right  + c$ (4) $\log \left  \frac{1 + \cot x}{1 - \tan x} \right  + c$
72.	The order of the differential equation $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^3 = 0$ is :
	(1) 1 (2) 2
	(3) 3 (4) 0
73.	The solution of the differential equation $\frac{dy}{dx} = \frac{x(2\log x+1)}{\sin y + y\cos y}$ is :
	(1) $y = x^2 \log x + c$ (2) $y = x^2 \sin x + c$
	(3) $y \sin y = x^2 \log x + c$ (4) $y \sin y = \log x + c$

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(14)

Question	Questions		
<b>NO.</b> 74	The integrating factor for solving the differential equation		
14.	The integrating factor for solving the unterential equation		
	$\frac{dy}{dx} - \frac{y}{x} = 2x^2 + 3x + 4$ is :		
	(1) $\frac{1}{x^2}$ (2) $-\frac{1}{x}$		
	(3) $x$ (4) $\frac{1}{x}$		
75.	$\frac{xdy-ydx}{x^2}$ is equal to :		
	(1) $d\left(\frac{x}{y}\right)$ (2) $d(xy)$		
	(3) $d(x+y)$ (4) $d\left(\frac{y}{x}\right)$		
76.	If $\vec{u}$ , $\vec{v}$ and $\vec{w}$ are three vectors such that $\vec{u} + \vec{v} + \vec{w} = \vec{0}$ , then find		
<i>C</i>	$\vec{v} \cdot \vec{v} + \vec{v} \cdot \vec{w} + \vec{w} \cdot \vec{v}$ , if $ \vec{v}  = 3$ , $ \vec{v}  = 4$ and $ \vec{w}  = 5$ :		
	(1) $5^2$ (2) $-5^2$		
	(3) $2^5$ (4) $5^3$		
77.	If $ \vec{a}  =  \vec{b} $ , then $(\vec{a} + \vec{b}) \cdot (\vec{a} - \vec{b})$ is :		
	(1) Positive (2) Negative		
ж. К	(3) Zero (4) None of these		
78.	If $\theta$ is the angle between the vectors $\vec{a} = 2\hat{\imath} + 2\hat{\jmath} - \hat{k}$ and $\vec{b} = 6\hat{\imath} - 3\hat{\jmath} + 2\hat{k}$ ,		
	then :		
	(1) $\cos \theta = \frac{4}{21}$ (2) $\cos \theta = \frac{3}{19}$		
	(3) $\cos \theta = \frac{2}{19}$ (4) $\cos \theta = \frac{2}{21}$		

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Question No.	Questions		
79.	If $\vec{a}$ is any vector, then $(\vec{a} \times i)^2 + (\vec{a} \times \vec{j})^2 + (\vec{a} \times \vec{k})^2$ is :		
	(1) $2\vec{a}^2$	(2)	$\frac{\vec{a}^2}{2}$
	(3) $\vec{a}^2 + 2$	(4)	$\vec{a}^2 - 2$
80.	If a line makes angles $\alpha, \beta, \gamma$ with	coordin	nate axes, then
	$\cos 2\alpha + \cos 2\beta + \cos 2\gamma$ is :		
	(1) 3	(2)	-1
	(3) -2	(4)	2
81.	If $\cos \theta = \frac{1}{2}\left(x + \frac{1}{x}\right)$ , then $\frac{1}{2}\left(x^2 + \frac{1}{x}\right)$	$\left(\frac{1}{2}\right)$ is eq	ual to :
	(1) $\sin 2\theta$	(2)	cos 2 <i>θ</i>
	(3) $\tan 2\theta$	(4)	$\cot 2\theta$
82.	If $\frac{3\pi}{4} < \alpha < \pi$ , then $\sqrt{\operatorname{cosec}^2 \alpha + 2}$	$\cot \alpha$ is	equal to :
· .	(1) $-1 - \cot \alpha$	(2)	$1 + \cot \alpha$
	(3) $1 - \cot \alpha$	(4)	$-1 + \cot \alpha$
83.	If $\tan 2\theta  \tan \theta = 1$ , then the gener	al valu	e of $\theta$ is :
	(1) $\left(n+\frac{1}{2}\right)\pi$	(2)	$\left(2n\pm\frac{1}{2}\right)\frac{\pi}{3}$
	$(3)  \left(n+\frac{1}{2}\right)\frac{\pi}{3}$	(4)	None of these

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Question	Ques	stions	
84.	If $(w \neq 1)$ is a cube root of unity	and (1	$(+w)^7 = A + Bw$ , then A and B
0 11			
	are given by :		
2 - A. J.	(1) 0,1	(2)	1,0
	(3) -1,1	(4)	1,1
85.	If $z = \left(\frac{\sqrt{3}}{2} + \frac{i}{2}\right)^5 + \left(\frac{\sqrt{3}}{2} - \frac{i}{2}\right)^5$ , then :		
	(1) $Im(z) = 0$	(2)	$\operatorname{Re}(z) = 0$
	(3) $\operatorname{Re}(z) > 0, \operatorname{Im}(z) > 0$	(4)	None of these
86.	The number of real roots of $3^{2x^2-7x}$ .	+7 = 9	is:
-	(1) 2	(2)	1
	(3) Zero	(4)	4
87.	If the roots of the equation $qx^2 + p$	x + q =	= 0 are complex, where $p, q$ are
	real, then the roots of the equation	$x^{2} - 4$	$4qx + p^2 = 0 \text{ are }:$
•s.	(1) Imaginary	(2)	Real and equal
	(3) Real and unequal	(4)	None of these
88.	If $2 + i\sqrt{3}$ is a root of the equation	on $x^2$ -	px + q = 0 where p and q are
	real, then $(p,q)$ is equal to :		
	(1) (4, -7)	(2)	(4,7)
	(3) (-4,7)	(4)	(-4, -7)

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Question No.	Questions
89.	If eleven members of a Committee at a round table, so that the
~	Chairman and Secretary always sit together, then the number of
	arrangements is :
	(1) 10 (2) 9
	(3) $\lfloor 10 \times 2$ (4) $\lfloor 9 \times 2$
90.	A man has 7 friends. In how many ways, he can invite one or more of
	them to a tea party :
	(1) 127 (2) 128
	(3) 256 (4) 130
91.	A coin is tossed and a die is rolled. The probability that the coin shows
	a head and the die shows 3 is :
	(1) $\frac{1}{3}$ (2) $\frac{1}{6}$
	(3) $\frac{1}{12}$ (4) $\frac{1}{24}$
92.	The probability that at least one of the events A and B occurs is $\frac{3}{5}$ . If A
	and B occur simultaneously with probability $\frac{1}{5}$ , then $P(A') + P(B')$ is :
	(1) $\frac{6}{5}$ (2) $\frac{4}{5}$
	(3) $\frac{7}{5}$ (4) $\frac{2}{5}$

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(18)

Question	Ουσ	stion	
Na	વ્યવ	SUIUI	15
93.	If two coins are tossed 5 times, th	en th	e probability of getting 5 heads
	and 5 tails is :		
	(1) $\frac{9}{64}$	(2)	2 205
	(3) $\frac{1}{1024}$	(4)	<u>63</u> 256
94.	A Coin is tossed 10 times. The pro-	obabil	ity of getting exactly six heads
	is:		
	(1) $\frac{100}{153}$	(2)	<sup>10</sup> c <sub>6</sub>
	(3) $\frac{105}{512}$	(4)	<sup>10</sup> C <sub>4</sub>
95.	A box contains 3 white and 2 red b	alls. I	f we draw one ball and without
	replacing the first ball, the proba	bility	of drawing red ball in second
	draw is :		
	(1) $\frac{8}{25}$	(2)	$\frac{2}{5}$
	(3) $\frac{3}{5}$	(4)	$\frac{21}{25}$
96.	If $3 <  x  < 6$ , then x belongs to :		
ан 1 1	(1) $(-6, -3) \cup (3, 6)$	(2)	(-6,6)
	$(3)  (-3, -3) \cup (3, 6)$	(4)	None of these
97.	If $ab = 4$ and $a, b \in R^+$ , then :		
	(1) $a+b \leq 4$	(2)	(a+b)=4
	$(3)  a+b \geq 4$	(4)	None of these
		-	

UG-EE-June-2025(Mathematics) Code-D (19)

#### Set-x Code-D

Question No.	Questions
98.	Area lying between parabola $y^2 = 4ax$ and its latus rectum is :
	(1) $\frac{4}{3}a^2$ sq. unit (2) $\frac{8}{3}a^2$ sq. unit
	(3) $\frac{16}{3}a^2$ sq. unit (4) None of these
99.	$\int_{-1}^{0} \frac{dx}{x^2 + 2x + 2}$ is equal to :
	(1) $\frac{\pi}{4}$ (2) $-\frac{\pi}{4}$
-	(3) $\frac{\pi}{2}$ (4) 0
	$\pi/4$
100.	The value of $\int_{-\pi/4}^{\pi} x^3 \sin^4 x  dx$ is equal to :
	(1) $\frac{\pi}{4}$ (2) $\frac{\pi}{2}$
	(3) $\frac{\pi}{8}$ (4) 0

UG-EE-June-2025(Mathematics) Code-D (20)

O No	Α	В	С	D
1	2	2	1	1
2	1	4	1	3
2	2	1	2	2
3	Л	2	3	4
4		2	4	2
5	<u>+</u>	3	2	1
6	2	2	4	2
/	Z		1	3
8	3	4	2	4
9	4	2	2	1
10	1	2	<u>/</u>	4
	1	3	2	3
12	3		2	2
13	2	4	1	2
14	4	2	1	
15	2			
16	1	3	2	1
17	2	1	3	<u>1</u>
18	3	2	4	2
19	4	4	1	3
20	1	1	2	3
21	4	3	2	2
22	2	4	1	4
23	3	1	3	1
24	1	2	4	2
25	1	1	1	2
26	2	4	2	3
27	3	1	2	3
28	4	2	3	4
29	1	3	4	1
30	2	4	1	2
31	3	1	4	3
32	4	3	3	1
33	1	2	2	4
34	2	4	3	2
35	1	2	4	1
36	4	1	1	3
37	1	2	1	1
38	2	3	2	2
39	3	4	3	4
40	4	1	3	1
41	1	4	3	3
47	1	3	2	4
13	2	2	3	1
чэ АЛ	2	3	4	2
44	Л	4	4	1
45		1	2	4
40	Δ	1	3	1
47	1	2	1	2
48		2	1	3
49	2	2	2	4
L I I	1 /	J	6.	

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O No I	Α	В	C	D
51	3	3	3	4
51	1	2	4	2
52	4	3	1	3
53	2	4	2	1
54	1	4	1	1
55	2	2	4	2
56	1	3	1	3
5/	2	1	2	4
58	2	1	3	1
59	4	2	4	2
60		2	2	1
61	3	1	<u>A</u>	1
62	2			2
63	3		2	3
64	4	3	2	<u>J</u>
65	4	2	2	
66	2	1	3	Z
67	3	3	3	
68	1	2	4	1
69	1	1	1	2
70	2	4	2	2
71	2	1	3	3
72	4	1	1	2
73	1	2	4	3
74	2	3	3	4
75	2	4	2	4
76	3	2	1	2
77	3	4	3	3
78	4	1	2	11
79	1	2	1	11
80	2	2	4	2
81	3	4	1	2
82	1	2	3	1
<u>82</u>	4	3	2	3
00	3	1	4	4
04 QE	2	1	2	1
96	1	2	1	2
00	2	3	2	2
0/	2	4	3	3
88	1	1	4	4
89	<u>⊥</u>	2	1	1
90	4	2	3	3
91	4	1	1	1
92	3	2	4	4
93	2		2	3
94	3	4	1	2
95	4		2	1 1
96	1	2	1	2
97	1	2		2
98	2	3	Δ	1
99	3	4	4	<u>⊥</u> л
400	2	1	1	4

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