



Code Number:

A**Aakash****Medical | IIT-JEE | Foundations**

Corp. Office: Aakash Educational Services Limited, 3rd Floor, Incuspaze Campus- 2, Plot No. 13,
Sector- 18, Udyog Vihar, Gurugram, Haryana - 122015

Time: 3 hrs.

Mock Test Paper for Class-XII

Max. Marks: 75

MATHEMATICS
Paper - II(A)

Roll No.

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GENERAL INSTRUCTIONS

Read the following instructions carefully and follow them:

1. The Question paper consists of section **A**, **B**, and **C**
2. Answer all the questions of **Section A**. Answer ANY **FIVE** questions out of **seven** in **Section B** and answer ANY **FIVE** questions out of **seven** in **Section C**.
3. In **Section A**, questions from Sl. Nos. **1** to **10** are of '**very short answer type**'. Each question carries **TWO** marks. Every answer may be limited to **5** lines. Answer all the questions at one place in the same order.
4. In **Section B**, questions from Sl. Nos. **11** to **17** are of '**short answer type**'. Each question carries **Four** marks. Every answer may be limited to **20** lines. Answer any **FIVE** questions out of **7** questions.
5. In **Section C**, questions from Sl. Nos. **18** to **24** are of '**long answer type**'. Each question carries **Seven** marks. Every answer may be limited to **60** lines. Answer any **FIVE** questions out of **7** questions.
6. Draw labelled diagrams, wherever necessary for questions in **Sections B** and **C**.

SECTION - A

I. Answer all Questions:

10 x 2 = 2M

1. Find multiplication inverse of $7 + 24i$
2. $Z_1 = 1$, and $Z_2 = i$ Find $\text{Arg}\left(\frac{Z_1}{Z_2}\right)$.
3. $1, \omega, \omega^2$ are cube roots of unity, then prove that $(1 - \omega + \omega^2)^6 + (1 + \omega - \omega^2)^6 = 128$
4. α, β are roots of the equation $ax^2 + bx + c = 0$. Find the value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$
5. If the product of the roots of $4x^3 + 16x^2 - 9x + a = 0$ is 9. Find a
6. Find the number of ways of preparing a chain with 6 different coloured beads.
7. ${}^{12}C_{r+1} = {}^{12}C_{3r-5}$. Find r
8. Find the set of x for which the binomial expansion of $(2x + 3x)^{-\frac{2}{3}}$ is valid.
9. Find the mean deviation about the median about mean following data
38, 70, 48, 40, 42, 55, 63, 46, 54, 44
10. The probability that a person chosen at random is left handed is 0.1. What is probability that in a group of 10 people. There is one who is left-handed

SECTION - B

II. Answer ANY FIVE questions.

5x4 = 20 M

11. If 'x' is real, prove that $\frac{x}{x^2 - 5x + 9}$ lies between 1 and $-\frac{1}{11}$
12. Show that the points in the argand plane represented by the complex numbers $-2 + 7i, \frac{-3}{2} + \frac{1}{2}i, 4 - 3i, \frac{7}{2}(1+i)$ are the vertices of a Rhombus
13. If the letters of the word MASTER are permuted in all possible ways and words arranged in dictionary order, then find Rank of MASTER.
14. Prove that $\frac{{}^{4n}C_{2n}}{{}^{2n}C_n} = \frac{1.3.5\dots(4n-1)}{[1.3.5\dots(2n-1)]^2}$
15. Resolve $\frac{3x^3 - 8x^2 + 10}{(x-1)^4}$
16. A, B, C are three Horses in a race, the probability of A to win the race is twice that of B, and the probability of B is twice that of C, what are probabilities of A, B, C to win the race?
17. If A, B, C are three independent events such that $P(A \cap B^c \cap C^c) = \frac{1}{4}$, $P(A^c \cap B \cap C^c) = \frac{1}{8}$, $P(A^c \cap B^c \cap C^c) = \frac{1}{4}$,

Then find P(A), P(B) and P(C)

SECTION - C

III. Answer ANY FIVE questions.

5 x 7 = 35 M

18. If $\cos\alpha + \cos\beta + \cos\gamma = \sin\alpha + \sin\beta + \sin\gamma = 0$ then show that $\cos^2\alpha + \cos^2\beta + \cos^2\gamma = \frac{3}{2} = \sin^2\alpha + \sin^2\beta + \sin^2\gamma$.
19. Solve $6x^6 - 25x^5 + 31x^4 - 31x^2 + 25x - 6 = 0$
20. If 2nd, 3rd and 4th terms in the expansion of $(a + x)^n$ are respectively 240, 720, 1080. Find a, x, n
21. If $x = \frac{1.3}{3.6} + \frac{1.3.5}{3.6.9} + \frac{1.3.5.7}{3.6.9.12} + \dots + \dots$ then show that $9x^2 + 24x = 11$.
22. Find the standard deviation of the following continuous frequency distribution

Class Interval	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	3	7	12	15	8	3	2

23. Three boxes numbered I,II,III contain the balls as follows

	White	Black	Red
I	1	2	3
II	2	1	1
III	4	5	3

One box is randomly selected and a ball is drawn from it. If the ball is red, then find the probability that it is from Box-II.

24. A random variable X has the following probability distribution.

$X=x_i$	0	1	2	3	4	5	6	7
$P(X=x_i)$	0	k	2k	2k	3k	k2	2k2	7k2+k

Then find k, Mean and $P(0 < x < 5)$

