GUESS PAPER-2

MATHS - 2A Aimstutorial.in

SECTION - A

I. Answer ALL the following Very Short Answer Questions: **[10 x 2 = 20]**

1. Find the multiplicative inverse of 7 + 24i.
2. Express 1- i in modulas - amplitude form.
3. If x = cisθ then find the value of $\left(x^6+\frac{1}{x^6}\right)$.
4. Form a quadratic equation, whose roots are $7 \pm 2\sqrt{5}$.
5. If 1, 1, α are the roots of $x^3 - 6x^2 + 9x - 4 = 0$ then finid α.
6. Find the number of ways in which 4 letters can be put in 4 addressed envolopes so that no letter goes into the envelope meant for it.
7. Find the number of ways of arranging the letters of the word "INDEPENDENCE".
8. If $(1 + x + x^2)^n = a_0 + a_1x + a_2x^2 + ...+ a_{2n}x^{2n}$ then prove that $a_0 + a_1 + ... + a_{2n} = 3^n$.
9. Find the mean deviation about mean for the data : 6, 7, 10, 12, 13, 4, 12, 16.
10. A Poisson variable satisfies P(x = 1) = P(x = 2), find P(X = 5).

SECTION - B

II. Answer any FIVE of the following Short Answer Questions: **[5 x 4 = 20]**

11. If $x + iy = \frac{1}{1+\cos\theta+i\sin\theta}$ then, show that $4x^2 - 1 = 0$.
12. If x is real, prove that $\frac{x}{x^2-5x+9}$ lies between 1 and $\frac{-1}{11}$.
13. If the letters of the word EAMCET are permuted in all possible ways and if the words thus formed are arranged in the dicitionary order. Find the rank of the word EAMCET.
14. Find the number of ways of selecting a cricket team of 11 players from 7 batsmen and 6 bowlers such that there will be atleast 5 bowlers in the team.
15. Resolve $\frac{x^3}{(x-a)(x-b)(x-c)}$ into Partial fractions.
16. Suppose A and B are independent events with P(A) = 0.6, P(B) = 0.7
    compute (i) $P(A \cap B)$ ii) $P(A \cup B)$ iii) P(A/B) iv) $P(A^c \cap B^c)$
17. If A and B are independent events of a random experiment, show that A^c and B^c are also independent.

SECTION - C

III. Answer any FIVE of the following Long Answer Questions. : **[5 x 7 = 35]**

18. If α, β are the roots of the equation $x^2 - 2x + 4 = 0$, then show that $\alpha^n + \beta^n = 2^{n+1} \cos\left(\frac{n\pi}{3}\right)$.

19. Find the polynomial equation whose roots are the translates of these of the equation $x^4 - 5x^3 + 5x^2 + 17x + 11 = 0$ by -2.

20. If the coefficient of r^{th} , $(r+1)^{th}$, $(r+2)^{nd}$ terms in the expansion of $(1 + x)^n$ are in A.P., then show that $n^2 - (4r + 1)n + 4r^2 - 2 = 0$.

21. If $x = \frac{1}{5} + \frac{1.3}{5.10} + \frac{1.3.5}{5.10.15} + ...\infty$, then find $3x^2 + 6x$.

22. Find the mean deviation about the mean for the given data using 'step deviation method'.

Marks obtained	0-10	10-20	20-30	30-40	40-50
No. of students	5	8	15	16	6

23. State and prove addition theorem on Probability.

24. A cubical die is thrown. Find the mean and variance of X, giving the number on the face that shows up.

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