Hyderabad

Model guess paper -1 - March - 2019

INTERMEDIATE II -YEAR **Telengana MATHEMATICS** - IIA

Time: 3hours MATHEMATICS - IIA Max.Marks:75

INSTRUCTIONS:

- 1. Q.Nos: 1 10 are Very Short Answer Type. Each question carries 2 marks.
- 2. Q. Nos: 11 17 are Short Answer Type. Each question carries 4 marks.
- 3. Q.Nos: 18 24 are Long Answer Type. Each question carries 7 marks
- I. Very Short Type Questions: Answer ALL.

 $[10 \times 2 = 20]$

- 1. If $z_1 = (6,3)$, $z_2 = (2, -1)$ find $\frac{z_1}{z_2}$.
- 2. Express $(1 i)^3 (1 + i)$ in the form of a + ib.
- 3. Find the value of $(1+i\sqrt{3})^3$.
- 4. Solve $15x^2 + 4x 4 \le 0$.
- 5. Form the polynomial equation with rational coefficients where one of the roots is $i \sqrt{5}$.
- 6. Find the number of 5 letter words that can be formed using the letters of the word MIXTURE which begin with an vowel when repetitions are allowed.
- 7. If ${}^{n}P_{r} = 5040$ and ${}^{n}C_{r} = 210$, find n and r.
- 8. Find the middle term(s) in the expansion of (3a 5b)⁶.
- 9. The variance of 20 observations is 5. If each observation is multiplied by 2, then find the new variance of the resulting observations.
- 10. A poisson variable satisfies P(X = 1) = P(X = 2). Find P(X = 5).
- II. Short Type Questions: Answer any FIVE.

 $[5 \times 4 = 20]$

- 11. If the point P denotes the complex number z = x + iy in the argand plane and if $\frac{z i}{z 1}$ is a purely imaginary number, find the locus of P.
- 12. Determine the range of the expression $\frac{2x^2 6x + 5}{x^2 3x + 2}$
- 13. If the letters of the word PRISON are permuted in all possible ways and the words thus formed are arranged in dictionary order, find the rank of the word PRISON.
- 14. Prove that $\frac{{}^{4n}C_{2n}}{{}^{2n}C_n} = \frac{1.3.5....(4n-1)}{\{1.3.5....(2n-1)\}^2}$.
- 15. Resolve $\frac{x+3}{(1-x)^2(1+x^2)}$ into partial fractions.
- 16. A speaks truth in 75% of the cases and B in 80% of the cases. What is the probability that their statements about an incident do not match.
- 17. If A and B are independent events with P(A) = 0.6, P(B) = 0.7 then compute
 - i) $P(A \cap B)$
- ii) $P(A \cup B)$
- iii) $P\left(\frac{B}{A}\right)$
- iv) $P(\overline{A} \cap \overline{B})$

- If n is an integer then show that $(1 + i)^{2n} + (1 i)^{2n} = 2^{n+1} \cos \frac{n\pi}{2}$. 18.
- Solve the equation $x^3 7x^2 + 14x 8 = 0$, given that the roots are in geometric progression. 19.
- If the coefficients of r^{th} , $(r + 1)^{th}$, $(r + 2)^{nd}$ terms in the expansion of $(1 + x)^n$ are in A.P, then show that 20. n^2 - $(4r + 1) n + 4r^2 - 2 = 0$.
- If $x = \frac{5}{(2!)^3} + \frac{5.7}{(3!)^3^2} + \frac{5.7.9}{(4!)^3^3} + \dots \infty$, then find the value of $x^2 + 4x$. 21.
- 22. Find the mean deviation about the mean for the following data using step deviation method.

Marks	0-10	10-20	20-30	30-40	40-50	50 - 60	60 - 70
No. of students	6	5	8	15	7	6	3

23. Three boxes B_1 , B_2 , B_3 contain balls with different colours as shown:

	White	Black	Red
B ₁	2	1	2
B ₂	3	2	4
B ₃	4	3	2

A die is thrown. B_1 is chosen if either 1 or 2 turns up. B_2 is chosen if 3 or 4 turns up and B_3 is chosen if 5 or 6 turns up. Having chosen a ball in this way, a ball is chosen at random from the box. If the ball drawn is found to be red, find the probability that it is drawn from box B₂.

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

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

Find (i) k

(ii) The mean (iii) P(0 < X < 5)

***All the Best...