GUESS PAPERS

Q 1 MODEL PAPER -1

MATHS - 2A

Max.Marks : 75

Time : 3 Hours

SECTION-A

$10 \times 2 = 20$

Ans-Page Index

I.   Answer ALL the following VSAQ:

1.   Write the conjugate of $(3+4i)(2-3i)$ | [☞P 72(106.1)]

2.   If $x+iy=cis\alpha.cis\beta$, then find the value of x^2+y^2. | [☞P 74(114)]

3.   If A,B,C are angles of a triangle, $x=cisA, y=cisB, Z=cisC$, then find xyz. | [☞P 75(116)]

4.   Form a quadratic equation, whose roots are $7\pm2\sqrt{5}$ | [☞P 76(121.1)]

5.   If $1,1,\alpha$ are the roots of $x^3-6x^2+9x-4=0$ then find α. | [☞P 78(127)]

6.   If $^nP_3=1320$ find n | [☞P 80(138.1)]

7.   Find number of ways of selecting 4 boys and 3 girls from a group of 8 boys and 5 girls. | [☞P 83(152.1)]

8.   Find the middle term (s) in the expansion of $\left(\dfrac{3x}{7}-2y\right)^{10}$ | [☞P 84(158)]

9.   Find the mean deviation about mean for the data 3,6,10,4,9,10. | [☞P 87(169.1)]

10. The mean and variance of a binomial distribution are 4, 3 respectively. Find the distribution and find $P(X\geq1)$ | [☞P 89(174)]

SECTION-B

II.   Answer any FIVE of the following SAQ: $5 \times 4 = 20$

11. Show that the four points in the Argand plane represented by the complex numbers 2+i, 4+3i, 2+5i, 3i are the vertices of a square. | [☞P 50(54.2)]

12. Find the range of $\dfrac{x+2}{2x^2+3x+6}$ | [☞P 54(63.1)]

13. Simplify $^{34}C_5 + \sum\limits_{r=0}^{4} {}^{(38-r)}C_4$ | [☞P 57(68.1)]

14. Find the number of ways of selecting a cricket team of 11 players from 7 batsmen and 6 bowlers such that there are atleast 5 bowlers in the team. | [☞P 58(70)]

15. Resolve $\dfrac{x+4}{(x^2-4)(x+1)}$ into partial fractions. | [☞P 65(93)]

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) $P(B/A)$ (iv) $P(A^c\cap B^c)$ | [☞P 61(77)]

17. A problem in calculus is given to two students A and B whose chances of solving it are1/3, 1/4 respectively. Find the probability of the problem being solved if both of them try independently. | [☞P 62(81)]

SECTION-C

III. Answer any FIVE of the following LAQ:

$5 \times 7 = 35$

18. If n is a positive integer, show that $(1+i)^n + (1-i)^n = 2^{\frac{(n+2)}{2}} \cos\left(\frac{n\pi}{4}\right)$ [☞P 16(1.2)]

19. Solve $x^4 - 10x^3 + 26x^2 - 10x + 1 = 0$.   [☞P 22(10)]

20. If 2nd, 3rd, 4th terms in $(a+x)^n$ are 240, 720 and 1080, then find a, x, n.   [☞P 29(20)]

21. If $x = \frac{1}{5} + \frac{1.3}{5.10} + \frac{1.3.5}{5.10.15} + ...\infty$, then find $3x^2 + 6x$ [☞P 35(27)]

22. Find the mean deviation about the mean for the given data using   [☞P 46(48)]

'step deviation method':

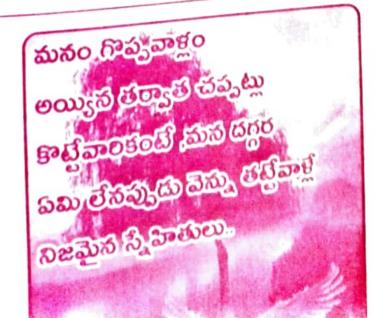| Marks obtained	0-10	10-20	20-30	30-40	40-50
No. of students	5	8	15	16	6

23. State and Prove Addition theorem on Probability.   [☞P 38(33)]

24. A random variable X has the following probability distribution.   [☞P 42(41.1)]

$X = x_i$	1	2	3	4	5
$P(X = x_i)$	k	2k	3k	4k	5k

Find k and the mean and variance of X.

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నిజమైన స్నేహితులు..

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GUESS PAPERS

Q 2 **MODEL PAPER -2**

MATHS - 2A

Max.Marks : 75

Time : 3 Hours

$10 \times 2 = 20$

I. Answer ALL the following VSAQ:

1. Write the complex number $\dfrac{a-ib}{a+ib}$ in the form A+iB   [☞P 72(107.1)]

2. If $z_1= -1$, $z_2=i$ then find Arg (z_1/z_2) [☞P 74(111.2)] 3.If x=cosθ+isinθ, then find $x^6+\dfrac{1}{x^6}$ [☞P 75(117)]

4. If α,β are the roots of $ax^2+bx+c=0$, then find the value of $\dfrac{1}{\alpha^2}+\dfrac{1}{\beta^2}$ [☞P 76(122.2)]

5. If the product of the roots of $4x^3+16x^2-9x-a=0$ is 9, then find a.   [☞P 78(130)]

6. Find the No.of ways of arranging letters of the word INTERMEDIATE   [☞P 82(147.1)]

7. If $^nP_r = 5040$ and $^nC_r = 210$ find n and r.   [☞P 80(142)]

8.   Find the term independent of x in the expansion of $\left(\sqrt{\dfrac{x}{3}}+\dfrac{3}{2x^2}\right)^{10}$ [☞P 85(160)]

9. Find the mean deviation about mean for the data 6,7,10,12,13,4,12,16.   [☞P 87(169.2)]

10. For a binomial distribution with mean 6 and variance 2. Find the first
two terms of the distribution.   [☞P 89(175)]

II. Answer any FIVE of the following SAQ:

$5 \times 4 = 20$

11. If $(x-iy)^{1/3} = a -ib$, then show that $\dfrac{x}{a}+\dfrac{y}{b}=4(a^2 - b^2)$ [☞P 51(56)]

12. If x is real, prove that $\dfrac{x}{x^2-5x+9}$ lies between 1 and $\dfrac{-1}{11}$.   [☞P 55(65)]

13. Show that $^{25}C_4+\sum_{r=0}^{4} {}^{(29-r)}C_3 = {}^{30}C_4$ [☞P 57(68.2)]

14. If the letters of the word MASTER are permutted in all possible ways
and the words are arranged in dictionary order, then find rank of MASTER.   [☞P 59(73)]

15. Resolve $\dfrac{x^2 - x+1}{(x+1)(x-1)^2}$ into partial fractions.   [☞P 66(94)]

16. If A and B are independent events with P(A) = 0.2, P(B) = 0.5, find
(i) P(A/B)   (ii) P(B/A)   (iii) P(A∩B)   (iv) P(A∪B)   [☞P 61(78)]

17. 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.   [☞P 62(82)]

III. Answer any FIVE of the following LAQ:

$5 \times 7 = 35$

18. Show that $(1+\cosθ+i\sinθ)^n+(1+\cosθ-i\sinθ)^n = 2^{n+1} \cos\left(\dfrac{θ}{2}\right)\cos\left(\dfrac{nθ}{2}\right)$ for n∈ Z   [☞P 17(2)]

19. Solve $6x^6-25x^5+31x^4-31x^2+25x-6=0$ [☞P 25(14)]

20. If the coefficients of rth, $(r+1)^{th}$, $(r+2)^{th}$ terms in the expansion of $(1+x)^n$ are in A.P
then show that $n^2-(4r+1)n+4r^2-2=0$ [☞P 30(22)]

21. If $x = \dfrac{1.3}{3.6}+\dfrac{1.3.5}{3.6.9}+\dfrac{1.3.5.7}{3.6.9.12}+\ldots\ldots$ then prove that $9x^2+24x = 11$ [☞P 35(28)]

22. Find the mean deviation about the mean for the following data: [☞P 46(49)]

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Students	6	5	8	15	7	6	3

23. State and Prove Baye's theorem on Probability.   [☞P 39(35)]

24. A random variable X has its range {0,1,2} and the probabilities are
$P(X=0)=3c^3$, $P(X=1)=4c-10c^2$, $P(X=2)=5c-1$ where 'c' is a constant,
find (i) c (ii) P(0<X<3) (iii) P(1<X≤2) (iv) P(X<1)   [☞P 44(45)]

GUESS PAPERS
Q3 MODEL PAPER -3

MATHS - 2A

Time : 3 Hours   Max.Marks : 75

I. Answer ALL the following VSAQ: $10 \times 2 = 20$

1. Find the multiplicative inverse of $7+24i$ [☞P 72(108.1)]

2. If Arg $\bar{z}_1$, Arg z_2 are $\pi/5$, $\pi/3$ then find Arg(z_1)+Arg(z_2) [☞P 74(112)]

3. If $1, \omega, \omega^2$ are cube roots of unity, then P.T $(2-\omega)(2-\omega^2)(2-\omega^{10})(2-\omega^{11})=49$ [☞P 75(119)]

4. If $x^2-15-m(2x-8)=0$ has equal roots then find m.   [☞P 77(124.1)]

5. If $-1, 2, \alpha$ are the roots of $2x^3+x^2-7x-6=0$ then find α.   [☞P 78(128)]

6. Find the number of different chains that can be prepared using 7 different coloured beads.   [☞P 83(153.2)]

7. If $^nC_5 = {}^nC_6$, then find $^{13}C_n$ [☞P 81(143.1)]

8. If $^{22}C_r$ is the largest binomial coefficient in the expansion of $(1+x)^{22}$, find $^{13}C_r$ [☞P 86(163)]

9. Find the mean deviation about median for the data 4, 6, 9, 3, 10, 13, 2   [☞P 87(170.1)]

10. A Poisson variable satisfies $P(X=1)=P(X=2)$, find $P(X=5)$ [☞P 89(173)]

II. Answer any FIVE of the following SAQ: $5 \times 4 = 20$

11. S.T the points in the Argand diagram represented by the complex numbers $2+2i, -2-2i, -2\sqrt{3} + 2\sqrt{3}i$ are the vertices of an equilateral triangle.   [☞P 50(54.1)]

12. Find the range of $\dfrac{x^2+x+1}{x^2-x+1}$ [☞P 54(63.2)] 13. P.T $\dfrac{^{4n}C_{2n}}{^{2n}C_n} = \dfrac{1.3.5.....(4n-1)}{\{1.3.5.....(2n-1)\}^2}$ [☞P 57(69)]

14. If the letters of the word PRISON are permutted in all possible ways and the words are arranged in dictionary order, then find rank of PRISON.   [☞P 59(74)]

15. Resolve $\dfrac{x^2-3}{(x+2)(x^2+1)}$ into partial fractions.   [☞P 68(100)]

16. If A,B are 2 events with $P(A \cup B) = 0.65$ and $P(A \cap B) = 0.15$, then find $P(A^c)+P(B^c)$. [☞P 61(79)]

17. The probability for a contractor to get a road contract is 2/3 and to get a building contract is 5/9. The probability to get atleast one contract is 4/5. Find the probability that he gets both the contracts. [☞P 62(83)]

III. Answer any FIVE of the following LAQ: $5 \times 7 = 35$

18. If α, β are roots of the equation $x^2-2x+4=0$, S.T $a^n+\beta^n=2^{n+1}\cos\left(\dfrac{n\pi}{3}\right)$ [☞P 18(4)]

19. Solve the equation $8x^3-36x^2-18x+81=0$ the roots being in A.P.   [☞P 27(16)]

20. If the coefficients of 4 consecutive terms in the expansion of $(1+x)^n$ are a_1, a_2, a_3, a_4 respectively, show that $\dfrac{a_1}{a_1+a_2} + \dfrac{a_3}{a_3+a_4} = \dfrac{2a_2}{a_2+a_3}$ [☞P 30(21)]

21. If $x = \dfrac{5}{2!.3} + \dfrac{5.7}{3!.3^2} + \dfrac{5.7.9}{4!.3^3} + ...\infty$, then find the value of x^2+4x [☞P 36(29)]

22. Find the mean deviation about median for the following data: [☞P 47(50)]

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of boys	6	8	14	16	4	2

23. Suppose that an urn B_1 contains 2 white and 3 black balls and another urn B_2 contains 3 white and 4 black balls. One urn is selected at random and a ball is drawn from it. If the ball drawn is found black, find the probability that the urn chosen was B_1.   [☞P 39(36)]

24. A cubical die is thrown. Find the mean and variance of X, giving the number on the face that shows up.   [☞P 43(43)]

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GUESS PAPERS

Q 4 **MODEL PAPER -4**

Max.Marks : 75

Time : 3 Hours

MATHS - 2A

SECTION-A

$10 \times 2 = 20$

1. Find the square root of $7+24i$ [☞P 73(109.1)] 2. If $z=x+iy$, $|z|=1$, find the locus of z. [☞P 91(182)]
3. Find the value of $(1-i)^8$. [☞P 75(119.1)]
4. Find the maximum or minimum value of the expression x^2-x+7 [☞P 76(123.1)]
5. If $\alpha, \beta, 1$ are the roots of $x^3-2x^2+5x+6=0$ then find α, β. [☞P 78(131)]
6. Find the number of diagonals of a polygon with 12 sides. [☞P 83(154.1)]
7. If $^{12}C_{r+1}=^{12}C_{3r-5}$ then find r [☞P 81(144.2)]
8. Find the number of terms in the expansion of $(2x+3y+z)^7$. [☞P 86(166)]
9. Find the mean deviation about median for the data 6,7,10,12,13,4,12,16. [☞P 87(170.2)]
10. If mean & variance of a binomial variable X are 2.4 & 1.44 find $P(1<X\leq4)$ [☞P 90(178)]

SECTION-B

$5 \times 4 = 20$

11. If $x+iy = \dfrac{1}{1+\cos\theta+i\sin\theta}$ then, show that $4x^2-1=0$ [☞P 52(59)]
12. Find the maximum value of the function $\dfrac{x^2+14x+9}{x^2+2x+3}$ over R. [☞P 55(64)]

13. Find the sum of all 4 digit numbers that can be formed using digits 1,3,5,7,9. [☞P 60(76)]
14. Find the number of ways of selecting 11 member cricket team from 7 batsmen, [☞P 58(71)]
    6 bowlers and 2 wicket keepers so that the team contains 2 wicket keepers and atleast 4 bowlers.

15. Resolve $\dfrac{x^4}{(x-1)(x-2)}$ into partial fractions. [☞P 69(102)]
16. If A,B are events with P(A)= 0.5, P(B)=0.4 and P(A∩B)=0.3, [☞P 61(80)]
    find the probability that (i) A does not occur (ii) neither A nor B occurs.
17. Find the probability that a non-leap year contains i) 53 Sundays ii) 52 Sundays only. [☞P 64(88)]

SECTION-C

$5 \times 7 = 35$

18. If $n\in N$, show that $(p+iq)^{1/n} +(p-iq)^{1/n} = 2(p^2+q^2)^{1/2n}\cos\left(\dfrac{1}{n}Tan^{-1}\dfrac{q}{p}\right)$ [☞P 18(5)]
19. Solve $18x^3+81x^2+121x+60=0$, given that a root is equal half the sum of the remaining roots [☞P 28(18)]
20. P.T $C_0.C_r+C_1.C_{r+1}+C_2.C_{r+2}+....+C_{n-r}.C_n=^{2n}C_{(n+r)}$ Hence deduce that $C_0^2 + C_1^2 + C_2^2 +......+ C_n^2 =^{2n}C_n$ [☞P 32(24)]

21. Find the sum of the infinite series $\dfrac{3.5}{5.10}+\dfrac{3.5.7}{5.10.15}+\dfrac{3.5.7.9}{5.10.15.20}+...\infty$ [☞P 37(31)]

22. Calculate the variance and standard deviation for the following distribution: [☞P 48(52)]

Class	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 B_1, B_2 and B_3 contain balls with different colours are shown here [☞P 40(38)]

	White	Black	Red
B_1	2	1	2
B_2	3	2	4
B_3	4	3	2

A die is thrown and 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 box in this way, a ball is chosen at random from this box. If the ball drawn is of red colour, what is the probability that it comes from box B_2?

24. A random variable x has the following probability distribution [☞P 43(42)]

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

Find (i) k (ii) the mean (iii) $P(0<X<5)$