MATHEMATICS
SAMPLE QUESTION PAPER
Maximum : 60 Scores   **Time : 2 ¼ Hours**

(Questions 1-8 answer any six . Each question carry 3 marks 6 x 3 = 18)

1.   A = { x: x is a prime number lessthan 10}

   B = {1,2,3,4}

   (1) Write A in roster form (1)

   (2) Find $A \cup B$ and $A \cap B$ (2)

2.   (1) Find the Value of i^5 (1)

   (2) Express $\dfrac{2+i}{1+i}$ in the form of a+i b. (2)

3.   Let A = { 1, 2, 3, - - - - 14}. Define a relation R from A to A by

   R= {(x,y) : 3x – y = 0, where x, y ∈ A} Write down its domain, Codomain and Range (3)

4.   Solve the Inequality 3 (x - 1) ≤ 2 (x - 3) Show the graph of the Solution in number line. (3)

5.   (1) How many three digit even numbers Can be formed from the digits 1, 2, 3, 4, 5, 6, if the digits

   Can be repeated (1)

   (2) If $\dfrac{1}{8!} + \dfrac{1}{9!} = \dfrac{x}{10!}$ find the Value of 'x'. (2)

6.   Find the Coordinates of the focus of the parabola, the equation of the directrix and the length of the

   latus rectum, y² =12x (3)

7.   (1) $\underset{x \to 3}{Lim} \quad x(x+1) = ...$ (1)

   (2) $\underset{x \to 3}{Lim} \quad \dfrac{x^5 - 32}{x^3 - 8}$ (2)

8.   In a class of 60 students 30 opted for NCC, 32 opted for NSS and 24 opted for both NCC and NSS.

   If one of these students is selected at random, Find the probability that

   (i) The Student opted for NCC or NSS (1)

   (ii) The Student has opted neither NCC nor NSS. (1)

   (iii) The Student has opted NSS but not NCC (1)

(Questions 9-16 answer any six Each question carry 4 marks 6 x 4 = 24)

9.   (1) Define Modulus Function (1)

   (2) Draw the graph of modulus function. (2)

   (3) Write down domain and Range (1)

10.   (a) If $nC_9 = nC_8$ find the Value of 'n' , and also find nC_{17} (2)

   (b) A bag Contains 5 black and 6 red balls, determine the number of ways in which 2 black and

   3 red balls Can be selected. (2)

11. (1) Convert 120° into radian Measure (1)

(2) Find the Value of Sin 120° (1)

(3) P.T $\dfrac{\sin 5x + \sin 3x}{\cos 5x + \cos 3x} = \tan 4x$ (2)

12. (1) Find $(x + 1)^6 + (x - 1)^6$ (2)

(2) Hence evaluate $\left(\sqrt{2}+1\right)^6 + \left(\sqrt{2}-1\right)^6$ (2)

13. Find the derivative of Sin x using First principle (4)

14. Find the Co-Ordinates of the foci, the Vertices, the length of the major axis, Minor axis, the eccentrincity and the length of the latus rectum of the ellipse $\dfrac{x^2}{36} + \dfrac{y^2}{16} = 1$ (4)

15. (1) Name the octant in which (4, -2, 3) lies (1)

(2) A (0, 7, 10), B (-1, 6, 6) and C (-4, 9, 6) Verify the given points are the vertices of a right angled triangle (3)

16. Find the mean deviation about the Mean for the following data. (4)

marks obtained:	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of students:	2	3	8	14	8	3	2

(Questions 17-20 answer any three Each question carry 6 marks 3x6 =18)

17 (a) The Sum of first three terms of GP is $\dfrac{13}{12}$ and their product is -1. Find the Common ratio and the terms. (3)

(b) Find the Sum of the series 7+77+777+ ……………………..- to n terms (3)

18 (1) Find the equation of lines passing through the point (-4, 3) with slope ½ (2)

(2) Find the equation of the line passing through (-3,5) and perpendicular to the line through the points (2,5) and (-3,6) (2)

(3) Find the distance of the point (3,-5) from the line $3x - 4y - 26 = 0$ (2)

19. Calculate the mean, Variance and Standard deviation for the following distribution (2)

class :	30-40	40-50	50-60	60-70	70-80	80-90	90-100
frequency:	13	7	12	15	8	3	2

20. Two Students Anil and Ashima appeared in an examination. The probability that Anil will qualify the examination is 0.05 and that Ashima will qualify the examination is 0.10. The probability that both will qualify the examination is 0.02 Find the probability that.

(i) Both Anil and Ashima will not qualify the examination. (2)

(ii) Atleast one of them will not qualify the the examination (2)

(iii) Only one of them will qualify the examination. (2)

Prepared by

(1)   Kishore . K   (GHSS , Nellikuth)

(2)   Anto Thomas   (JSRHSS ,Manjeri)

(3)   Jamaludheen .T   (EMEA HSSS ,Kondotty)

(4)   Vidya .G   (Crescent HSS , Ozhukur)

(5)   Dhanya .V   (KKMHSS ,Cheekode)

(6)   Sareena .K .P   (GBHSS , Manjeri)

(7)   Sindhu .S   (GBHSS , Manjeri)

(8)   Keerthana .E .K   (GBHSS , Manjeri)

(Malappuram Cluster)