FIRST YEAR HIGHER SECONDARY EXAMINATION
SAMPLE QUESTION PAPER
MATHEMATICS(COMMERCE)

Max. Marks: 60   Time: 2 hours 15 minutes

Answer any 6 questions from 1 to 8. Each question carries 3 marks

1. Let A = $\{x : x\, is\, a\, divisor\, of\, 30\}$ and B = $\{x : x\, is\, a\, prime\, number\, less\, than\, 10\}$

    Write A and B in roster form and hence A – B.   (3)

2. (i) If A = {-1, 1}, find AxAxA.   (1)

    (ii) Let A = {1, 2, 3}, B = {3, 4} and C = {4, 5, 6}. Verify that

    Ax $(B \cap C)$ = (AxB) ∩ (AxC).

                                                                                      (2)

3. Solve7x + 3 <5x +9. Represent the solution on a number line.   (3)
4. Consider the word "ASSASSINATION"
    (i)   How many different ways can the letters of the word be arranged?   (1)
    (ii)   How many of these words have all vowels together?   (2)
5. (i) The point in the 6th octant is ………
    (a) (2, 3, 4)   (b) -2, -3, 4)   (c) (-2, 3, -4)   (d) (-2, -3, -4)   (1)
    (ii) Show that the points (0, 7, -10), (1, 6, -6) and (4, 9, -6) are the vertices of an
    isosceles triangle.   (3)
6. Find $\lim_{x \to 0} f(x)$, if f(x) = $\begin{cases} 2x+3, if\, x \le 0 \\ 3(x+1), if\, x > 0 \end{cases}$ (3)

7. A coin is tossed 3 times.
    (i) Write the sample space.   (1)

    (ii) Find the probability of getting (a) two heads   (b) at least one head   (2)

8. Find the equation of the ellipse with vertices $((\pm 5, 0)$ and foci $((\pm 4, 0)$,   (3)

Answer any 6 questions from 9 to 16. Each carries 4 marks.

9. (a) Find the number of subsets of the set A = {1, 2, 3}.   (1)
    (b) Let A = {4, 5, 6}, B = {1, 4, 7, 8, 6} and U = {1, 2, 3, ……10}. Verify that
        (i) $(A \cup B)' = A' \cap B'$ (2)
        (ii) Draw the Venn diagram of $A' \cap B'$.   (1)
10. (i) Draw the graph of f(x) = $|x|$ + 1 and write its Range.   (2)
    (ii) Determine a relation R on the set N of natural numbers by

R = { (x, y): y = x + 5; x<4, x, y∈N}. Depict the relation R in roster form and write Domain and Range. (2)

11. (i) Find the value of $i + i^2 + i^3 + i^4$.

        (a) -1   (b) 0   (c) 1   (d) 2 (4)

(ii) Find the multiplicative inverse of $Z = 1 + \sqrt{-3}$. (3)

12.   (i) If $n_{C_9} = \eta_{C_8}$, then find $n_{c_{17}}$. (1)

(ii) A group consist of 4 girls and 7 boys. How many ways can a team of 5 members be selected if the team has (a) no girl   (b) at least 3 girls. (1 + 2)

13. (i) Find the number of terms in the expansion of $(x+y)^{10}$. (1)

(ii) Find $(x+1)^4 + (x-1)^4$. Hence evaluate $((\sqrt{2}+1)^4 + (\sqrt{2}-1)^4$. (4)

14. Find the sum to n terms of the series 5 + 55 + 555 +……….. (4)

15. If A and B are events such that P(A) = ¼, P(B) =1/2, $P(A \cap B) = \dfrac{1}{6}$ Then

find (a) P(not A) (1)
(b) P(A or B) (1)
(c) P(not A and not B). (2)

16. Find the coordinates of focus, axis, equation of directrix and length of latus rectum of parabola $y^2 = |2x$. (4)

PART C

Answer any 3 questions from 17 to 20. Each question carries 6 marks.

17. (i) By the method of first principle, find the derivative of tanx. (3)

(ii) Find the derivative of f(x) = $\dfrac{2x+3}{x-2}$

    (2)

18. Find mean, variance and standard deviation of the following frequency distribution.

Classes	0-10	10-20	20-30	30-40	40-50
Frequency	5	8	15	16	6

(6)

19.   (i) Consider the line 2x + 3y – 6 = 0. Reduce it into slope-intercept form and find slope and y-intercept. (3)

(iii)   Find the angle between the lines y - $\sqrt{3}$x – 5 = 0 and $\sqrt{3}$y – x + 6 = 0 (3)

20.   (i) $\sin 765° =$……

(ii) If Cos x = $\dfrac{-3}{5}$ and x lies in second quadrant, find the value of Sin x and tan x.

(iv)   Prove that $\dfrac{\cos 9x - \cos 5x}{\sin 17x - \sin 3x} = \dfrac{-\sin 2x}{\cos 10x}$ (1 + 2 + 3)

PREPARED BY KANHANGAD CLUSTER, KASARAGOD DISTRICT

DRG'S

1) PRIYA V K, HSST MATHEMATICS, GHSS RAVANESWARSM
2) SARATH S S, HSST MATHEMATICS, GHSS SOUTH TRIKARIPUR

TEACHERS

1) REETHA K, HSST MATHEMATICS, GHSS CHAYATH
2) RATNAMANI K, HSST MATHEMATICS, RAJAH'S H S NILESHWAR
3) KADEEJA K, HSST MATHEMATICS, GHSS CHAYATH
4) SADHYA, NVT MATHEMATICS, KODAKKAD
5) SHEENA A M, HSST MATHEMATICS, GHSS BEKAL
6) VISWARAJ T K, HSST MATHEMATICS, DURGA HSS, KANHANGAD
7) AINES GEORGE, HSST MATHEMATICS, ST. JOHNS HSS PALAVAYAL
8) PRADEEPKUMAR P M, HSST MATHEMATICS, GHSS, CHERUVATHUR
9) ARAVINDAS V P, HSST MATHEMATICS, GHSS KAMBALUR
10) DIVYA K RAJ, HSST MATHEMATICS, GHSS UPPILIKAI
11) RANI EDISON, HSST MATHEMATICS, GHSS UDMA
12) DEEPA CHENAMBETH, HSST MATHEMATICS, GHSS UDINUR.