Tenth Class Mathematics Paper -I Model Paper

Part A & B

Max.Marks: 40 **Time: 2Hrs. 45 Min.**

Instructions:

i) In the time duration of 2 hours 45 minutes, 15 minutes of time is allotted to read and understand the question paper.

ii) Answer the questions under PART - A on a separate answer book.

iii) Write the answers to the questions under PART - B on the question paper itself and attach it to the answer book of PART - A.

PART - A

SECTION - I

Note: i) Answer ALL the questions.
ii) Each question carries ONE mark.

7 × 1 = 7

1. In Arithmetic Progression first term is 3 and $a_n = 4a_{n-1} + 3$, $n > 1$ find the 4^{th} term?

2. Show that the sequence defined by $a_n = 3n^2 - 5$ is an A.P. or not?

3. Find x, if $2\log 3 + \frac{1}{2}\log 4 - \log 2 = \log x$.

4. A = {5, 6, 7, 8 } and B = {7, 8, 9, 10} find the A – B with venn diagram.

5. Check whether 3 and –2 are the zeroes of the polynomial $P(x) = x^2 - x - 6$.

6. What relation between the coefficients of $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are to be inconsistent?

7. Write the discriminant of $\sqrt{3}x^2 + 2\sqrt{2}x - 2\sqrt{3}$

SECTION - II

Note: i) Answer ALL the questions.
ii) Each question carries TWO marks.

6 × 2 = 12

8. Find the largest number which divides 615 and 963 leaving remainder 6 in each case.

9. If the sum of the zeros of the quadratic polynomial $f(x) = kx^2 + 2x + 3k$ is equal to their product, find the value of k.

10. A train travels 360 km at a uniform speed. If the speed had been 5km/hr more, it would have taken 1 hour less for the same journey. Form the quadratic equation to find the speed of the train.

11. ABC is a right angle triangle and $\angle B = 90°$ If the points are A(8,–10),B(7,–3) C(0, P) find the value of P.

12. Solve the given pair of equations using elimination $x + 2y = -1$, $2x - 3y = 12$.

13. A = {Prime numbers below 20};
B = {Whole numbers below 10} find
i) A∩B ii) A– (A∩B)

SECTION - III

Note: i) Answer ALL the questions.
ii) Each question carries FOUR marks.
iii) There is internal choice for each question. Only one option from each question is to be attempted.

4 × 4 = 16

14. For any positive integer n, prove that $n^3 - n$ divisible by 6.

OR

Prove that $\frac{3\sqrt{2}}{5}$ is irrational number.

15. A = {x : x is a multiple of 3, $x \le 21$};
B = {x : x is a multiple of 4, $x \le 20$}
C = {x : x is a multiple of 2, $x \le 16$}
i) A– (B ∩ C) = (A – B) ∪ (A – C)
ii) A ∩ (B ∪ C) = (A ∩B) ∪ (A ∩ C)

OR

Find the roots $4x^2 + 4\sqrt{3}x + 3 = 0$ by the method of completing the square.

16. If the co-ordinates of the mid points of the sides of a triangle are (3, 4), (4, 6) and (5, 7) find its vertices.

OR

Find the sum of all natural numbers between 100 and 1000 which are exactly divisible by 5.

17. Draw the graph of $P(x) = x^2 - 2x - 8$ and find the zeroes of polynomial.

OR

Solve the following equations graphically
$3x - 5y = 20$; $6x - 10y = -40$.

PART - B

1. Which of the following terminating decimal?

A) $\frac{41}{75}$ B) $\frac{100}{81}$

C) $\frac{16}{125}$ D) $\frac{2}{11}$

2. If A ⊂ B, A ∪ (B–A) = __
A) A B) ∅
C) μ D) B

3. Value of $\log_{\left\{\frac{1}{3}\right\}}\left(\frac{1}{27}\right)$

A) –3 B) $\frac{1}{3}$

C) 1 D) 3

4. The coordinates of vertex A of ΔABC are (–4, 2), and point D (2, 5) is mid point of BC. The coordinates of centroid of ΔABC are:

A) (0, 4) B) $\left(-1, \frac{7}{2}\right)$

C) $\left(-2, \frac{7}{3}\right)$ D) (0, 2)

5. If one root of $2x^2 + kx + 1 = 0$ is –½ then the value of 'k' is:
A) 3 B) –3
C) 5 D) –5

6. $f(x) = a_0x^n + a_1x^{n-1} + a_2x^{n-2} + ... a_n$ then. $a_0 + a_1 + a_2 + ... a_n = 0$ $f(x)$ is the factor of:
A) $x + 2$ B) $x - 2$
C) $x - 1$ D) $x + 1$

7. Which term of the AP 5, 2, –1,... is –22?
A) 9 B) 10
C) 12 D) 14

8. If α, β, γ are zeroes of the cubic polynomial $ax^3 + bx^2 + cx + d$, $a \neq 0$, then $\alpha\beta\gamma = ?$

A) $\frac{-b}{a}$ B) $\frac{c}{a}$

C) $\frac{d}{a}$ D) $\frac{-d}{a}$

9. Name of the type of quadrilateral formed by the points A(–1, –2), B(1, 0), C(–1, 2) (–3, 0) is:
A) Square B) Rectangle
C) Parallelogram D) Trapezium

10. Find the value of 'x' in equation
$5(x - 2) = x + 18$
A) 5 B) 7

C) 3 D) –7

PART - B KEY

1) C	2) D	3) D	4) A	5) A
6) C	7) B	8) D	9) A	10) B