

TFM

FIRST MID TERM TEST - 2024

10 - Std

MATHEMATICS



Time : 1.30 Hrs.

MARKS : 50

PART - A

- I. Answer all the question. Choose the correct answer and write the option code and the corresponding answer. $7 \times 1 = 7$
- If $n(A \times B) = 6$ and $A = \{1, 3\}$ then $n(B)$ is
a) 1 b) 2 c) 3 d) 6
 - The range of the relation $R = \{(x, x^2) \mid x \text{ is a prime number less than } 13\}$ is
a) $\{2, 3, 5, 7\}$ b) $\{2, 3, 5, 7, 11\}$
c) $\{4, 9, 25, 49, 121\}$ d) $\{1, 4, 9, 25, 49, 121\}$
 - If $f : A \rightarrow B$ is a bijective function and if $n(B) = 7$ then $n(A)$ is equal to.
a) 7 b) 49 c) 1 d) 14
 - If the HCF of 65 and 117 is expressible in the form of $65m - 117$ then the value of m is
a) 4 b) 2 c) 1 d) 3
 - If 3, x , 6.75 are in G.P then x is
a) 2.5 b) 3.5 c) 4.5 d) 5.5
 - If 6 times of 6th term of an A.P is equal to 7 times the 7th term, then the 13th term of the A.P is.
a) 0 b) 6 c) 7 d) 13
 - If $(x - 6)$ is the HCF of $x^2 - 2x - 24$ and $x^2 - kx - 6$ then the value of k is
a) 3 b) 5 c) 6 d) 8

PART - B

- II. 1. Answer any five only. $5 \times 2 = 10$
2. Question number 14 is compulsory.
- If $A = \{2, -2, 3\}$ and $B = \{1, -4\}$ then find $A \times B$ and $B \times A$.
 - Let $X = \{-5, 1, 3, 4\}$ and $Y = \{a, b, c\}$. Determine whether the relation $R = \{(-5, b), (1, 6), (3, a), (4, c)\}$ is a function from X to Y ?
 - If $f(x) = 3 + x$, $g(x) = x - 4$ then find $f \circ g$ and $g \circ f$.

11. a and b are two positive integers such that $a^b \times b^a = 800$. Find a and b.
12. Find the 19th term of an A.P -11, -15, -19,
13. Find the LCM of $(5x - 10), (5x^2 - 20)$
14. Find the sum $1 + 8 + 27 + \dots + 512$.

PART - C

III. 1. Answer any five questions only.

5 x 5 = 25

2. Question number 21 is compulsory.

15. Let $A = \{x \in N / 1 < x < 4\}$ $B = \{x \in W / 0 \leq x < 2\}$ and $C = \{x \in N / x < 3\}$ then verify that $A \times (B \cup C) = (A \times B) \cup (A \times C)$.
16. Let $A = \{1, 2, 3, 4\}$ and $B = \{2, 5, 8, 11, 18\}$ be two sets. Let $f : A \rightarrow B$ be a function given by $f(x) = 3x - 1$. Represent this function
 1. by arrow diagram
 2. In a table form
 3. As a set of ordered pairs
 4. In a graphical form.
17. If $f(x) = 2x + 3$, $g(x) = 1 - 2x$ and $h(x) = 3x$ then prove that $f \circ (g \circ h) = (f \circ g) \circ h$.
18. Use Euclid's Division Algorithm to find the HCF of 84, 90 and 120.
19. Find the sum to n terms of the series $5 + 55 + 555 + \dots$.
20. Rekha has 15 square colour papers of sizes 10 cm, 11 cm, 12 cm 24 cm.
How much area can be decorated with these colour papers?
21. Solve : $3x - 2y + z = 2$, $2x + 3y - z = 5$; $x + y + z = 6$.

PART - D

IV Note : Answer the following question.

1 x 8 = 8

22. a) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{3}{5}$ of the corresponding sides of the triangle PQR
(scale factor $\frac{3}{5} < 1$) (OR)
- b) Construct a triangle similar to a given triangle ABC with its sides equal to $\frac{6}{5}$ of the corresponding sides of the triangle ABC (scale factor $\frac{6}{5} > 1$)