FIRST MID TERM TEST - 2023

10 - STD MATHEMATICS

TIME: 1.30 Hrs Marks : 50

PART–A

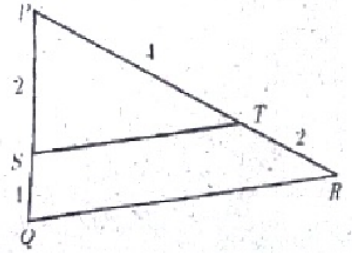
Multiple Choice Questions. 7×1=7

1. If {(a, 8), (6,b)} represents an identity function, then the value of a and b are respectively a.
   a. (8,6) b. (8,8) c.(6,8) d. (6,6)
2. The range of the relation $R = \{(x, x^2)/x$ 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}
3. Euclid's division lemma states that for positive integers a and b, there exist unique integers q and r such that a =bq+r,
   a. 1<r<b b. 0<r<b c. 0≤r<b d. 0<r≤b
4. The sum of the exponents of the prime factors in the prime factorization of 1729 is.
   a. 1 b.2 c.3 d.4
5. The solution of the system $x + y - 32 = -6, -7y + 7z = 7, 3z=9$ is
   a. $x = 1, y = 2, z = 3$ b. $x = -1, y = 2, z = 3$
   c. $x = -1, y = -2, z = 3$ d. $x = 1, y = -2, z = 3$
6. In ΔLMN, $\angle L = 60^\circ \angle M = 50^\circ$. If $\Delta LMN \sim \Delta PQR$then the value of $\angle R$is
   a. 40° b. 70° c. 30° d. 110°
7. A = { a, b, p }, B = { 2, 3 }, C = { p, q, r, s } then n { (A∪C) x B } is
   a. 8 b. 20 c. 12 d. 16

PART–B

Answer the following questions. (Any 5) (Qn No.14 is Compulsory) 5×2=10

8. A relation R is given by the set $\{(x, y)/y = x + 3, x \in \{0,1,2,3,4,5\}\}$Determine its domain and range.
9. Define the function "Bijection".
10. Determine the value of d such that $15 \equiv 3 \pmod d$.
11. Which term of an 16,11,6,1...is −54?
12. Simplify $\frac{x+2}{4y} \div \frac{x^2-x-6}{12y^2}$
13. Show that $\Delta PST \sim \Delta PQR$.
14. If a, b and c are in GP, then find the value of $\frac{a-b}{b-c}$.



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Answer the following questions. (Any 5) (Qn No.21 is Compulsory) 5×5=25

15. Let A={1,2,3,4} and B={2,5,8,11,14} be two sets Let $f: A \to B$ be a function given by $f(x) = 3x - 1$ represent this function (i) by arrow diagram (ii) in a table form (iii) as a set of ordered pairs (iv) in a graphical form.

16. Consider the function $f(x), g(x), h(x)$ as $f(x) = x^2, g(x) = 2x$ and $h(x) = x + 4$ respectively and show that $(fog)oh = fo(goh)$.

17. Use Euclid's division Algorithm to find the Highest common facto (HCF) of 10224 and 9648.

18. Find the sum to n terms of the series 5+55+555+.....

19. Find the GCD of the polynomials $x^3 + x^2 - x + 2$ and $2x^3 - 5x^2 + 5x - 3$

20. There are 12 pieces of five, ten and twenty rupee currencies whose total value is Rs.105. When first 2 sorts are interchanged in their numbers it is value will be increased by Rs. 20. Find the number of currencies in each sort.

21. If in an AP $S_n = qn^2$ and $S_m = qm^2$, where S_r denotes the sum of r terms of the AP, then find the value of S_q .

PART–D

Answer the following question. 8×1=8

22. Construct a triangle similar to a given triangle PQ with its sides equal to $\frac{3}{5}$ of the corresponding sides of the triangle PQR. (Scale factor $\frac{3}{5} < 1$).

(OR)

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 $\frac{6}{5} > 1$)