

10 - STD

MATHEMATICS

TIME: 1.30 Hrs

Marks : 50

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PART-A

X-B 7x1=7

Multiple Choice Questions.

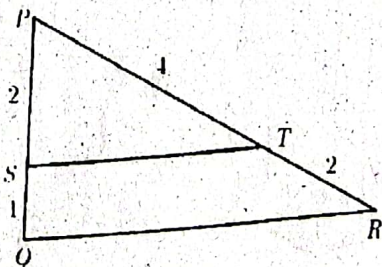
- If  $\{(a, 8), (6, b)\}$  represents an identity function, then the value of  $a$  and  $b$  are respectively a.   
 a. (8,6)      b. (8,8)      c. (6,8)      d. (6,6)
- The range of the relation  $R = \{(x, x^2)/x \text{ is a prime number less than } 13\}$  is.   
 a. {2,3,5,7}      b. {2,3,5,7,11}      c. {4,9,25,49,121}      d. {1,4,9,25,49,121}
- 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.  $0 \leq r < b$       d.  $0 < r \leq b$
- The sum of the exponents of the prime factors in the prime factorization of 1729 is.   
 a. 1      b. 2      c. 3      d. 4
- The solution of the system  $x + y - 3z = -6$ ,  $-7y + 7z = 7$ ,  $3z = 9$  is   
 a.  $x = 1, y = 2, z = 3$       b.  $x = -1, y = 2, z = 3$    
 c.  $x = -1, y = -2, z = 3$       d.  $x = 1, y = -2, z = 3$
- In  $\triangle LMN$ ,  $\angle L = 60^\circ$ ,  $\angle M = 50^\circ$ . If  $\triangle LMN \sim \triangle PQR$  then the value of  $\angle R$  is   
 a.  $40^\circ$       b.  $70^\circ$       c.  $30^\circ$       d.  $110^\circ$
- $A = \{a, b, p\}$ ,  $B = \{2, 3\}$ ,  $C = \{p, q, r, s\}$  then  $n\{(A \cup C) \times B\}$  is   
 a. 8      b. 20      c. 12      d. 16

PART-B

Answer the following questions. (Any 5) (Qn No.14 is Compulsory)

5x2=10

- 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".
- Determine the value of  $d$  such that  $15 \equiv 3 \pmod{d}$ . 49
- Which term of an 16, 11, 6, 1... is -54? 62
- Simplify  $\frac{x+2}{4y} \div \frac{x^2-x-6}{12y^2}$  101
- Show that  $\triangle PST \sim \triangle PQR$ . 165
- If  $a, b$  and  $c$  are in GP, then find the value of  $\frac{a-b}{b-c}$ .



Answer the following questions. (Any 5) (On No.21 is Compulsory)

5x5=25

15. Let  $A = \{1, 2, 3, A\}$  and  $B = \{2, 5, 8, 11, 14\}$  be two sets. Let  $f: A \rightarrow B$  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 functions  $f(x), g(x), h(x)$  as  $f(x) = x^2, g(x) = 2x$  and  $h(x) = x + 4$  respectively and show that  $(f \circ g) \circ h = f \circ (g \circ h)$ .

17. Use Euclid's division Algorithm to find the Highest common factor (HCF) of 10224 and 9842.

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

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 its 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.

8x1=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  $\frac{6}{5} > 1$ )