Maths

Reg.No. : ☐☐☐☐☐☐

I.Answer all the questions.

II.Use Blue pen only.Section-A

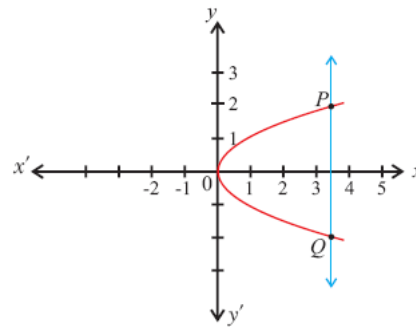Time : 01:00:00 Hrs

Total Marks : 40

Section-A

4 x 1 = 4

1) For any three sets A, B and C, $B \setminus (A \cup C)$ is

(a) $(A \setminus B) \cap (A \setminus C)$ (b) $(B \setminus A) \cap (B \setminus C)$ (c) $(B \setminus A) \cap (A \setminus C)$ (d) $(A \setminus B) \cap (B \setminus C)$

2) If n(A) = 20 , n(B) = 30 and $n(A \cup B) = 40$, then $n(A \cap B)$ is equal to

(a) 50   (b) 10   (c) 40   (d) 70

3) If { (x, 2), (4, y) } represents an identity function, then (x,y) is

(a) (2, 4)   (b) (4, 2)   (c) (2, 2)   (d) (4, 4)

4) If { (7, 11), (5, a) } represents a constant function, then the value of 'a' is
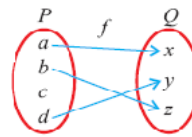
(a) 7   (b) 11   (c) 5   (d) 9

Section-B

5 x 2 = 10

5) Given $n(A) = 285$, $n(B) = 195$, $n(U) = 500$, $n(A \cup B) = 410$, find $n(A' \cup B')$.

6)

Use the vertical line test to determine which of the following graphs represent a function.

7) Let $A = \{1, 2, 3, 4, 5\}$, B=N and $f : A \to B$ be defined by $f(x) = x^2$ Find the range of f . Identify the type of function.

8)

State whether each of the following arrow diagrams define a function or not. Justify your answer.

9) For the given function $F = (1, 3), (2, 5), (4, 7), (5, 9), (3, 1)$, write the domain and range.

Section-C

5 x 5 = 25

10) In a college, 60 students enrolled in chemistry, 40 in physics, 30 in biology, 15 in chemistry and physics, 10 in physics and biology, 5 in biology and chemistry. No one enrolled in all the three. Find how many are enrolled in at least one of the subjects.

11) In a town 85% of the people speak Tamil, 40% speak English and 20% speak Hindi. Also, 32% speak English and Tamil, 13% speak Tamil and Hindi and 10% speak English and Hindi, find the percentage of people who can speak all the three languages.

12) An advertising agency finds that, of its 170 clients, 115 use Television, 110 use Radio and 130 use Magazines. Also, 85 use Television and Magazines, 75 use Television and Radio, 95 use Radio and Magazines, 70 use all the three. Draw Venn diagram to represent these data. Find

(i) how many use only Radio?   (ii) how many use only Television? (iii) how many use Television and magazine but not radio?

13) In a school of 4000 students, 2000 know French, 3000 know Tamil and 500 know Hindi, 1500 know French and Tamil, 300 know French and Hindi, 200 know Tamil and Hindi and 50 know all the three languages.

(i) How many do not know any of the three languages?

(ii) How many know at least one language?

(iii) How many know only two languages?

14) In a village of 120 families, 93 families use firewood for cooking, 63 families use kerosene, 45 families use cooking gas, 45 families use firewood and kerosene, 24 families use kerosene and cooking gas, 27 families use cooking gas and firewood. Find how many use firewood, kerosene and cooking gas.

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