CASE STUDY BASED QUESTIONS-

1. A company conducted interview under 2 different categories that is male and female. Totally there were 100 participants. Among all of them finally three from category 1 and two from category 2 were selected for final race . Rahul forms two sets M and F with these participants for his college project.

Let M ={ m1, m2, m3} and F= {f1, f2}, where M represents the set of males selected and F the set of females who were selected for the final. Rahul decides to explore these sets for various types of relations and functions.

(i) Rahul wants to form all the relations possible from M to F. How many such relations are possible?

(a) 2^6   (b) 2^5   (c) 0   (d) 2^3

Ans. 2^6

(ii)The elements of set M represent*

(a) domain   (b) range   (c) codomain   (d) None of these

Ans. Domain

(iii) If M X M X M= { m1, m2, m3, where m1, m2, m3∈ M}, then m1, m2, m3 is called –

(a) range   (b) constant function   (c) ordered triplet   (d) rational function

Ans. ordered triplet

(iv) If five elements of A X B are (m1, f1), (m1, f2) , (m2,f1), (m3, f1), (m3, f2), then remaining elements of A X B*

(a) (m2,f1)   (b) {m2, f2}   (c) {m3,f1}   (d)(m3, f2)

Ans. {m2, f2}

2. In a class test of class XI , a teacher asked to students to consider A + B= π/4 where A and B are acute angles.

Based on the above information answer the following questions-

(i) What is value of tan (A+B)?

(a)1   (b) 2   (c) 3   (d) -1

Ans. 1

(ii) Find the value of (1+ tan A) (1+ tan B)*

(a) 3   (b) 1   (c) 2   (d) 0

Ans. 2

(iii) Find the value of (cot A-1)(cot B-1)*

(a) 3   (b) 2   (c) 4   (d) -1

Ans. 2

(iv) Find the value of

$\sin (A+B) - \cos (A+B) + \tan (A+B)$

(a) -1   (b) 0   (c) 1   (d)2

Ans. 1

ASSERTION AND REASONING QUESTIONS-

3. **Assertion (A):** n (A)= 4 and B= {3,4,5,6,8,9} then the number of relations from A to B is 2^20.

   Reason (R): If A and B are any two non empty finite sets containing m and n elements respectively, then total number of relations from set A to B is 2^mn

(a)Both A and R are true and R is the correct explanation of A.

(b)Both A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.

(d)A is false but R is true.

(e) Both A and R are false.

Ans. A is false but R is true.

4. **Assertion (A)** : cosec^2 (25 degree) - tan^2 (65 degree)= 2

Reason (R): cosec^2 (θ) - cot^2 (θ)= 1

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c)A is true but R is false.

(d) A is false but R is true.

(e) Both A and R are false.

Ans. A is false but R is true.