

## Case Study-Based Questions (5×1 Mark)

7. Raju gets an assignment for home work. The assignment has five problems on progressions. He faces the difficulty to solve the problem. Help him to give answer of the following questions.



(i) If  $x, y, z$  are in G.P., then

- (a)  $x(y^2 + x^2) = z(y^2 + z^2)$
- (b)  $x(y^2 + z^2) = z(x^2 + y^2)$
- (c)  $x^2(y + z) = z^2(x + y)$
- (d) None of these.

(ii) In a G.P., sum of second and fifth term is 216 and the ratio of forth and sixth term 1 : 4, then its first term is (given that all terms are integers)

- (a) 16
- (b) 14
- (c) 12
- (d) None of these.

(iii) Four numbers are in arithmetic progression. The sum of first and last term is 8 and the product of middle term is 15, then the least number of the series is

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

(iv) If the 10th term of a geometric progression is 9 and 4th term is 4, then its 7<sup>th</sup> term is

- (a) 6                      (b) 36                      (c)  $\frac{4}{9}$                       (d)  $\frac{9}{4}$

(v) If the ratio of the sum of first three terms and the sum of first six terms of a G.P. be 125 : 152, then the common ratio  $r$  is

- (a)  $\frac{3}{5}$                       (b)  $\frac{5}{3}$                       (c)  $\frac{2}{3}$                       (d)  $\frac{3}{2}$

11. Raveena, a class 12 student invited her friends Bharti, Ravi, Aarush and Ekta for her birthday party. After



cutting cake they all want to take a group photograph sitting in a row.



Based on the given information, answer the following questions.

(i) Find the number of distinct photographs that can be clicked.

- (a) 120      (b) 240      (c)  $5^5$       (d)  $5^5 - 4^4$

(ii) In how many of the photographs Raveena be sitting in middle?

- (a)  $4^4$       (b) 24      (c)  $4^3$       (d) 12

(iii) In how many photographs would, Raveen and Aarush be sitting next to each other?

- (a) 120      (b) 60      (c) 48      (d) 24

(iv) If Ravi and Ekta were not sitting together then how many photographs can be taken?

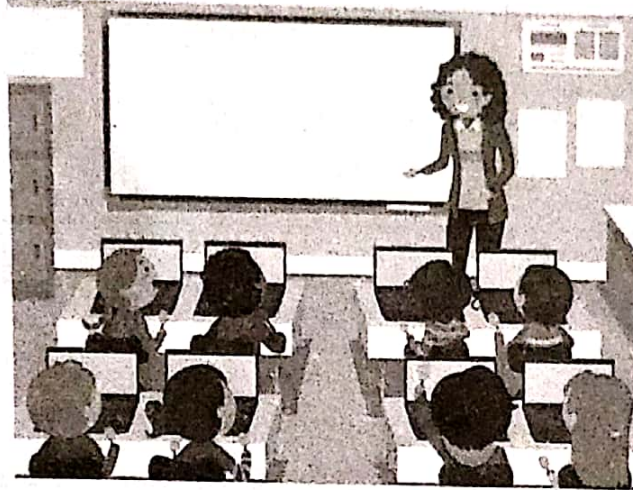
- (a)  $5^5 - 4^4$       (b) 120      (c)  $4^3$       (d) 72

(v) If Ekta can sit on any place except the middle one, then how many distinct photographs are possible?

- (a) 96      (b)  $5^4$       (c) 120      (d)  $4^5$

18. Daksh is studying in class XI. In evening, he went to his tuition class, where the tuition teacher wrote the sets  $A$  and  $B$  on the board and asked some questions based on it.

Let  $A$  denotes the set of all even positive integers and  $B$  denotes the set of all odd positive integers.

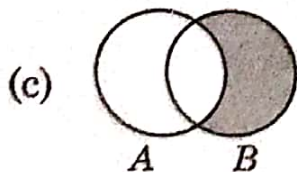
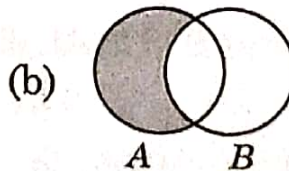
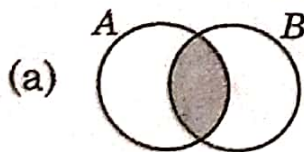


Based on the above information, answer the following questions.

(i) The set  $A \cup B$  is

- (a)  $N$       (b)  $Z$       (c)  $R$       (d)  $Q$

(ii) Venn-diagram of  $(A \cap B) \cap (A \cup B)$  is



(d) None of these

(iii) The set  $(A - B) \cup (B - A)$  is

- (a)  $A \cap B$       (b)  $A \cup B$   
(c)  $A - B$       (d)  $B - A$

(iv)  $(A \cup B)' =$

- (a)  $N'$       (b)  $Z'$       (c)  $Q'$       (d)  $\phi$

(v) Find  $n(A \cap B)$

- (a) 0      (b) 1  
(c) 2      (d) None of these