

## VENN DIAGRAM

### Type1 : Some Important Point

This section deals with question which aim at analyzing a candidate's ability to relate a certain given group of items and illustrate it diagrammatically.

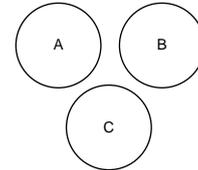
Here are a few different types of Venn diagrams with their implications made clear.

Suppose you are given a group of three items. Then,

1. if the items evidently belong to three different groups, the Venn diagram representing it would be as shown alongside.

**Ex. Doctors, Engineers, Lawyers**

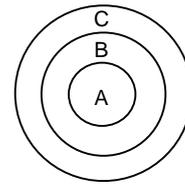
These three items bear no relationship to each other. So, they are represented by 3 disjoint figures as shown in



2. if one item belongs to the class of the second and the second belongs to the class of third, then the representation is in the form of three concentric circles

**Ex. Seconds, Minutes, Hours**

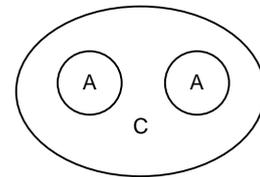
Clearly, seconds are a part of minutes and minutes are a part of hours. So, the Venn diagram would be as shown in the adjoining figure with circle A representing Seconds, circle B representing Minutes and circle C representing Hours.



3. if two separate items belong to the class of the third, they are represented by two disjoint circles inside a bigger circle as shown in Fig. 3

**Ex. Table, Chair, Furniture**

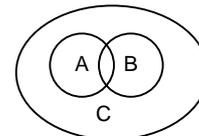
Clearly, table and chair are separate items but both are items of furniture. So, they would be represented as in the adjoining figure with circle A representing Table, circle B representing Chair and circle C representing Furniture.



4. if two items belong to the class of the third such that some items of each of these two groups are common in relationship, then they are represented by two intersecting circles enclosed within a bigger circle.

**Ex. Males, Fathers, Brothers**

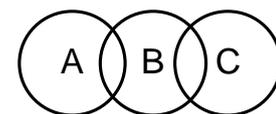
Clearly, some fathers may be brothers. So fathers and brothers would be represented by two intersecting circles. Also both fathers and brothers are males. So the diagrammatic representation would be as shown in fig 4, with circle A representing Fathers, circle B representing Brothers and circle C representing Males.



5. if two items are partly related to the third, and are themselves independent of each other they are represented by three intersecting circles in a line

**Ex. Dogs, Pets, Cats**

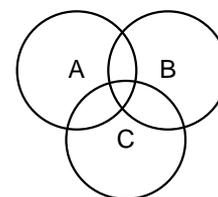
Clearly, some dogs and some cats are pets. But, all the pets are not dogs or cats. Also, dogs and cats are not related to each other. So, the given items would be represented as shown in Fig. 5 with circles A representing Dogs, circle B representing Pets and circle C representing Cats.



6. if the three items are partly related to each other, they are represented as shown in the adjoining figure.

**Ex. Clerks, Government Employees, Educated Persons**

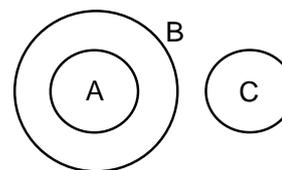
Clearly, some clerk may be government employees and some may be educated. Similarly, some government employees may be clerks and some may be educated. Also, some educated persons may be clerks and some may be government employees. So, the given items may be represented as shown in Fig. 6 with three different circles denoting the three classes.



7. if one item belongs to the class of second while third item is entirely different from the two, then they may be represented by the adjoining diagram

**Ex. Engineers, Human Beings, Rats**

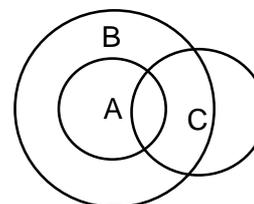
Clearly, all engineers are human beings. This would be represented by two concentric circles. But the class of rats is entirely different from these two. Thus, these items would be represented as shown in Fig. 7 with circle A representing Engineers, circle B representing Human Beings and circle C representing Rats



8. if one item belongs to the class of second and the third item is partly related to these two, they are represented as shown alongside.

**Ex. Females, Mothers, Doctors**

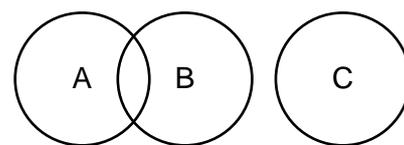
Clearly, all mothers are females. This would be represented by two concentric circles. But, some females and some mothers can be doctors. So, the circles representing doctors would intersect the two concentric circles. Thus, the diagram becomes as shown in Fig. 8 with circle A representing Mothers, circles B representing Females and circle C representing Doctors.



9. if one item belongs to the class of second and the third item is partly related to the second, they are represented as shown alongside.

**Ex. Grass-eating Animals, Cows, Flesh-eating Animals**

Clearly, cows are grass-eating animals. So, they would be represented by two concentric circles. But some grass-eating animals are flesh-eating also. Thus the Venn diagram is as shown in Fig 9 with circle A representing Cows, circle B representing Grass-eating Animals

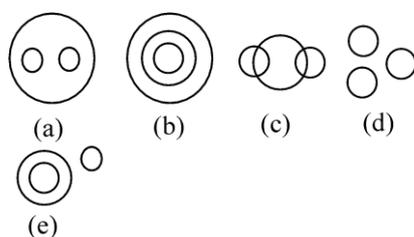


The questions based on venn diagram are very simple but you have to concentrate yourself on the diagram and observe it carefully. Observe the given area and place carefully as per the directions and as such you could be able to solve such problems.

**Example:**

**Directions:** Each of these questions given below contains three group of things. You are to choose from the following five numbered diagrams, a diagram that depicts the correct relationship among the three groups of things in each question.

1.



1. Moon, Earth, Universe
2. India, Pakistan, Asia
3. Batsman, Cricket, Stick
4. Book, Pen, Pencil.

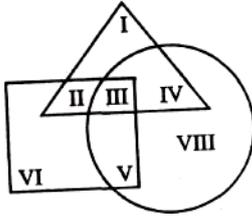
**Sol.** 1. Moon and Earth, are the parts of universe and therefore are subsets of universe and hence this relationship is represented by diagram (a).

2. India and Pakistan, are the subsets of Asia. Hence, option (a) represents this relationship.
3. Batsman is a subset of Cricket and, Stick is something unrelated to Cricket, therefore, our answer is (e).
4. Book, Pen, Pencil are neither subset of one another nor have anything in common, Therefore, our answer is (d).



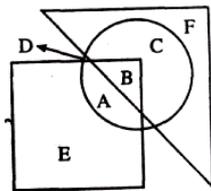
## Exercise

1. The triangle, square and circle shown below represents urban, hard-working and educated people. Which one of the areas represented by the urban educated people those who are not hard-working?



- (A) IV                      (B) II                      (C) V                      (D) VII

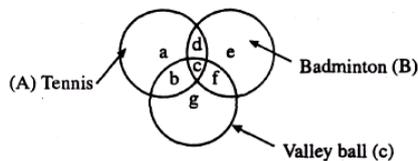
2. Which one of the following statements is correct with regards to the given figure?



- (A) A and B are in all the three shapes  
 (B) E, A, B, C are in all the three shapes  
 (C) F, C, D, B, A are all in the three shapes  
 (D) Only B is in all the three shapes

**Direction for Question 3 to 6 :**

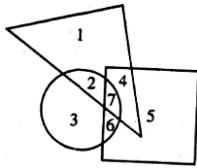
The figure given below consists of three intersecting circles marked A & C. Which represents group of students who play Tennis, Badminton and Volley ball. Each part of the figure is represented by a small alphabets. On the basis of the figure given, answer the questions :



3. Which small letter represents the group of persons who play all the three games?  
 (A) b                      (B) c                      (C) f                      (D) g
4. Which small letter represents group of persons who play Tennis and Volley ball but not Badminton ?  
 (A) g                      (B) e                      (C) c                      (D) b
5. Which small letter represents the group of persons who play Tennis but neither Badminton nor Volly ball ?  
 (A) a                      (B) b                      (C) c                      (D) d

6. Which letter represents the group of persons who play Tennis and Badminton but not Volley ball ?  
 (A) b (B) c (C) d (D) f

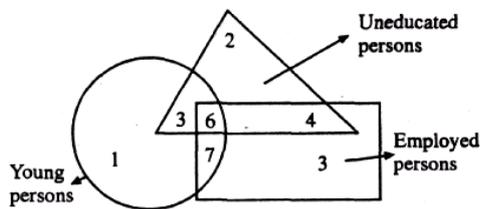
7. If tall is to circle, Army men to triangle and strong to square then indicate which one of the numbers will represent strong army men ?



(A) 3 (B) 4 (C) 5 (D) 6

**Directions for Question 8 to 11 :**

**In the figures given below, the circle represents young persons, the triangle represent uneducated persons and the rectangle represents employed persons. Study the figure carefully to the best you can and answer the given questions :**



8. Which number represents young, uneducated and employed person ?  
 (A) 6 (B) 5 (C) 4 (D) 3

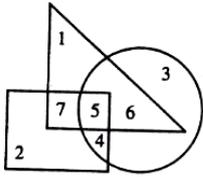
9. Which of the numbers of the region represents educated, employed young persons?  
 (A) 2 (B) 3 (C) 4 (D) 5

10. Which of the numbers of the region represents young person?  
 (A) 7 (B) 4 (C) 1 (D) 5

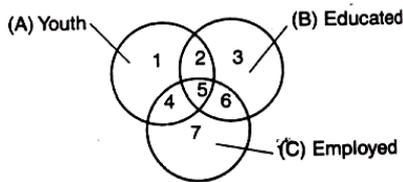
11. Which of the regions represents young, uneducated persons?  
 (A) 1 (B) 2 (C) 6 (D) 3

**Direction for Question 12 to 14 :**

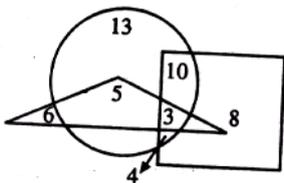
The following questions are based on the given diagram in which the triangle stands for graduates, squares stands for membership of professional organisation and circle stands for membership of social organisations. Read each of the given statements carefully and find the appropriate number that represents the people covered under the given statement.



12. What is the number of the region covered by graduates in social organisation.  
 (A) 1 (B) 5 (C) 6 (D) 5 and 6
13. What is the number of the region covered by graduates in social organisation only?  
 (A) 3 (B) 4 (C) 5 (D) 6
14. What is the number of the region covered by graduates in professional organisation?  
 (A) 5 and 7 (B) 5, 6 and 7 (C) 6 and 7 (D) 4, 5 and 6
15. Study the diagram below and identify the region representing youth who are employed but not educated?

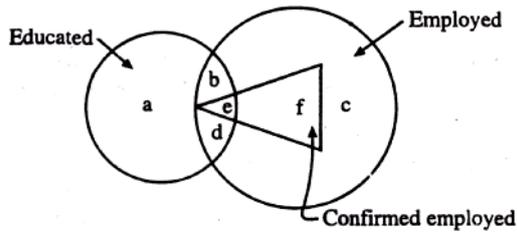


- (A) 4 only (B) 1, 4, 7 (C) 4, 7 (D) 4, 5, 6
16. In the diagram given below square represents women, triangle represents sub-inspectors of police and circle represents graduates. Which number of the region represents women graduate sub-inspectors of police?



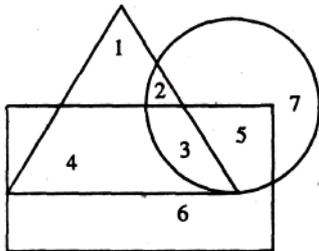
- (A) 5 (B) 3 (C) 8 (D) 13

17. Study the figure and find the region which represents educated and employed but not confirmed?



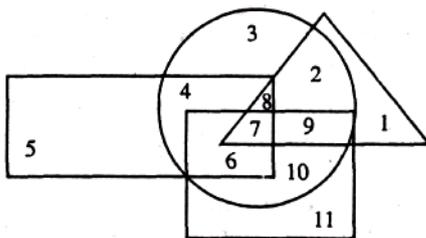
- (A) a, c                      (B) a, b, c                      (C) b, d                      (D) a, d, c

18. In the figure given below, triangle represents the healthy, square represents the old and circle represents the men. Find the area of the figure that represents the men who are healthy but not old?



- (A) 1                      (B) 2                      (C) 3                      (D) 7

**Direction for questions 19 to 20 :** In the following figure, rectangle, square, circle and triangle represents the regions of wheat, gram, maize and rice cultivation respectively. On the basis of the figure, answer the following questions?



19. Which of the area is cultivated for wheat and maize only?  
 (A) 8                      (B) 6                      (C) 5                      (D) 4
20. Which of the area is cultivated for maize only?  
 (A) 10                      (B) 2                      (C) 3                      (D) 4

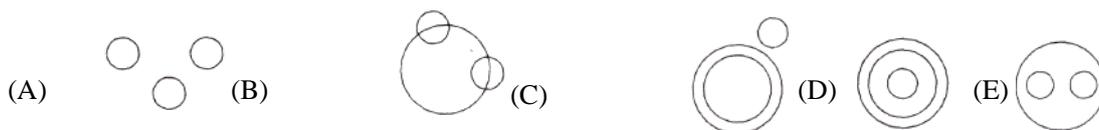
**In this type of test some figure of circles are given and each question some words are given. The candidates have to choose a figure which represents the given words.**

**Example 1.** If two big circles represent animals living on soil and those living in water and the small circle stands for the animals who live both on soil and in water. Which figure correctly represents the relationship among them ?



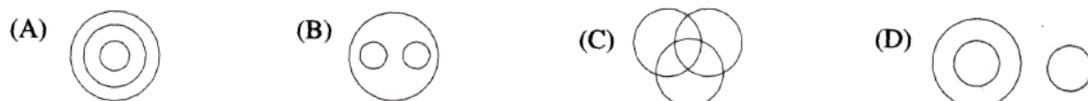
**Answer with Explanation (D)**—The both big circles should touch externally and the small circle should cover some of the parts of both big circles.

**Directions –** Three elements have been given in each of the questions given below. May be that these elements have some relationship with each other or even no relation at all. Each group of these elements fits in either of the sketches such as (A), (B), (C), (D) and (E). You have to point out the group of elements fitting into each question. The serial letter of that sketch is your answer.



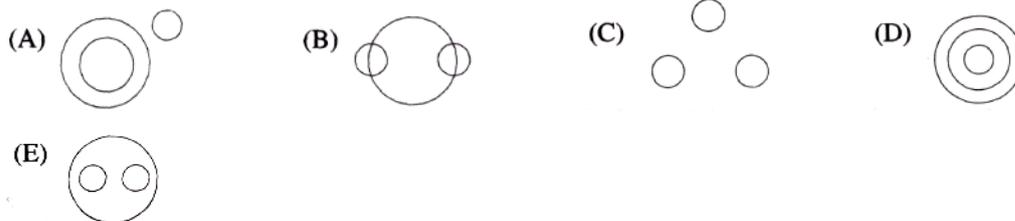
21. Shirt, Cloth, Pen
22. Chair, Steel, Furniture
23. Gold, Metal, Zinc
24. Goods, Shop, Market
25. Moon, Sun, Earth

**Directions—** In each of the following questions three words are given which are related in some way. This relationship is indicated by one of the four diagrams given below. The diagram showing the relationship among the words in the question is your answer. Mark it on the answer-sheet as instructed.



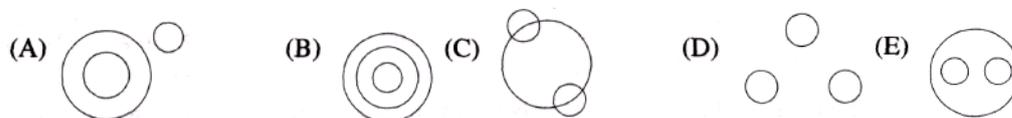
26. Window, Room, Wall
27. State, Country, City
28. Table, Chair, Furniture
29. Dog, Cat, Mammal
30. Girl, Athlete, Singer
31. Teacher, Graduate, Player
32. Copper, Paper, Wire

**Directions–** There are five diagrams and five groups of three objects. You have to select the diagrams which best represents the relationships between the members of these groups.



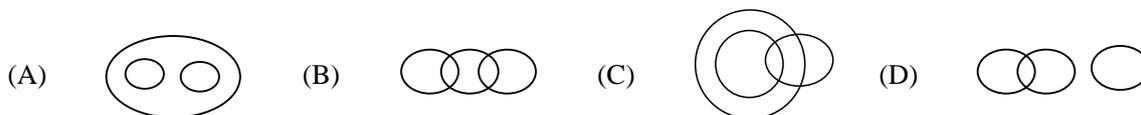
- 33. Table, Chair, Furniture
- 34. Child, Father, grand-father
- 35. Ass, Cat, Pet animals
- 36. Water, Water pot, Lunch box
- 37. Books, Pens, Pencils

**Directions–** Each of the question below contains three elements. These elements may or may not have some interese linkage. Each group of the elements may fit into one of the diagrams (A), (B), (C), (D) and (E). You have to indicate group of elements in each of the question correctly fit into which of the diagram ?



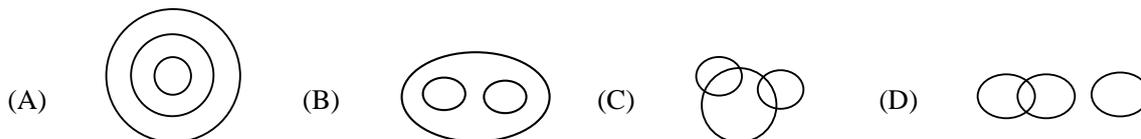
- 38. Book, Stationary, Jeep
- 39. Factory, Tools, Product
- 40. Vegetable, Brinjal, Onion
- 41. Honesty, Intelligence, Aptitude
- 42. Truck, Ship, Goods

43. Which of the following diagrams correctly represents Elephants, Wolves, Animals?

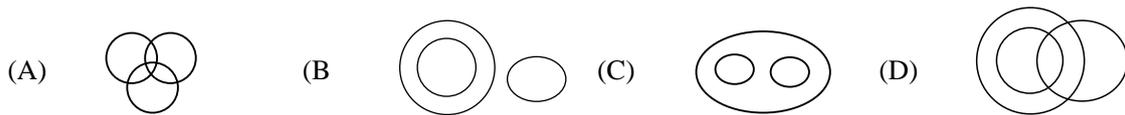


44. Which one of the following Venn diagrams correctly illustrates the relationship among the classes: Carrot, Food, Vegetable?

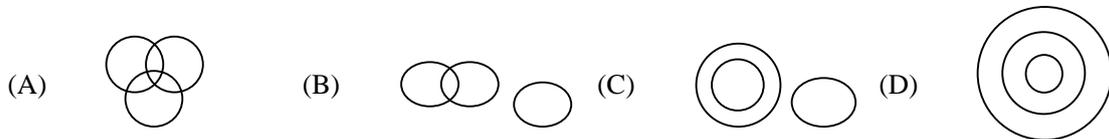
Directions: In the following questions, three classes are given. Out of the four figures that follow, you are to indicate which figure will best represent the relationship amongst the three classes



45. Women, Mothers, Widows



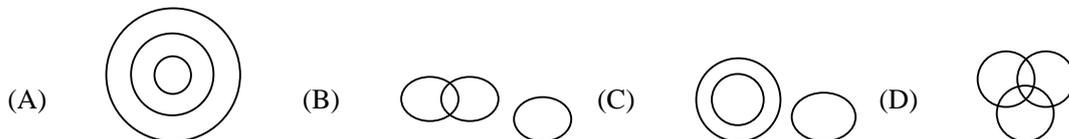
46. Select from the given diagrams, the one that illustrates the relationship among the given three classes: Judge, Thief, Criminal



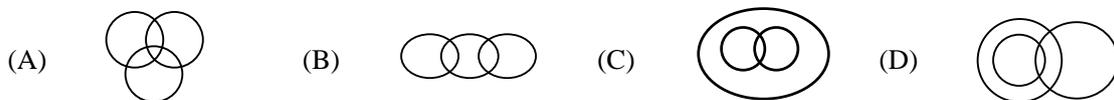
47. Which one of the following diagrams correctly represents the relationship among the classes: Tennis fans, Cricket players, Students?



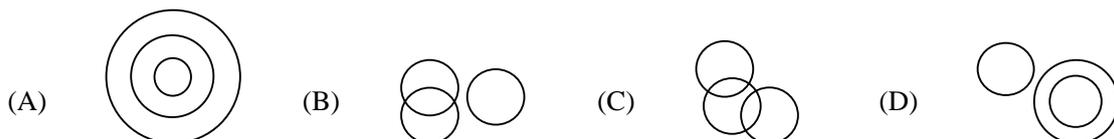
48. Which one of the following Venn diagrams best illustrates the three classes Rhombus, Quadrilaterals, Polygons?



49. Which is the most suitable Venn diagram among the following, which represents interrelationship among Antisocial elements, Pick pockets and Black mailers?



50. Which one of the following four logical diagrams represents correctly the relationship between: Musicians, Instrumentalists, Violinists?

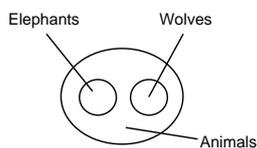


## Answer Key

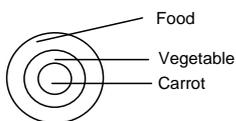
1. (C) The region common to triangle and circle but not a part of the square is the answer i.e., IV.
2. (D) B is the area common to the circle, square and triangle. Hence (D) is the answer.
3. (B) The area common to all the three circle is C. Hence (B) is the answer.
4. (D) The required region is the one which is common to circle 'P' and 'R' but is not a part of circle Q i.e., (B).
5. (A) The required region is the one which lies inside the circle T' but is not common to circle 'Q' or circle 'R' or both i.e., (A). Hence (A) is the answer.
6. (C) The required region is the one which is common to circle T' and 'Q' but lies outside circle 'R' i.e., 'd'.
7. (B) Strong army men will be represented by the region common to the square and the triangle but lies outside the circle i.e., 4. Hence (B) is the answer.
8. (C) The given group of persons is denoted by the region common to the circle, the triangle and the rectangle i.e., 4. Hence (C) is the answer.
9. (A) The given group of persons is denoted by the circular region contained in the rectangle but outside the triangle i.e., 2. Hence (A) is the answer.
10. (C) The given group of persons is denoted by the circular region outside the triangle and die rectangle i.e., 1.
11. (D) The given group of persons is denoted by the circular region inside the triangle but outside the rectangle i.e., 3. Hence (D) is the answer.
12. (D) The required region is the one which is common to the circle and triangle i.e., 5 and 6.
13. (D) The required region is the one which is common to the triangle and circle but lies outside the square i.e.; 6. Hence (D) is the answer.
14. (A) The required area is the one which is common to the triangle and square i.e., 5 and 7.
15. (A) The required region is the one which is common to the circle 'A', and 'C' but lies outside the circle 'B' i.e., 4.
16. (B) The required region is the one which is common to the parallelogram, triangle and! circle i.e., 3.
17. (C) The required region is the one which is common to both the circles but outside the! triangle i.e., (B) and (D).

18. (B) The required region is the one which is 1 common to the triangle and circle but lies outside the square i.e., 2.
19. (D) The required region is the one which! is common only to the rectangle and circle and is not a part of either the! triangle or square i.e., 4. Hence (D) is the answer.
20. (C) The required region is the one which lies inside the circle but outside the rectangle, square and triangle i.e., 3. Hence (C) is the answer.
21. (C)    22. (C)    23. (E)    24. (D)    25. (A)
26. (A) Window is on a wall and a wall is in a room.
27. (A) City is in a state and a state is in a country.
28. (B) Table and Chair both come under furniture.
29. (D) Cat is mammal while a dog is different
30. (C) Some girls are athlete, while others are not and some athlete are singer while others are not.
31. (C) Some teachers are graduate while others are not and some graduate are player while others are not.
32. (D) Wire is made of copper while paper is different.
33. (E)    34. (D)    35. (B)    36. (A)    37. (C)    38. (A)    39. (C)
40. (E)    41. (E)    42. (C)

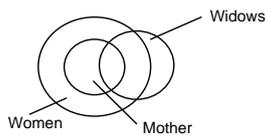
43. (A) : Elephants and Wolves bear no relationship to each other. But, both of them are animals.



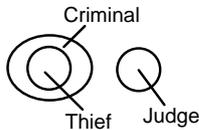
44. (A) : All carrots are vegetables. All vegetables are foods



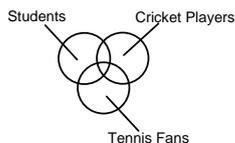
45. (D) : All mothers are women, Some mothers and some women can be widows



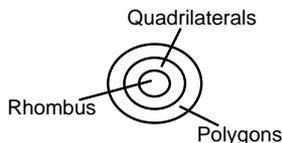
46. (B) : All thieves are criminals. But judge is entirely different.



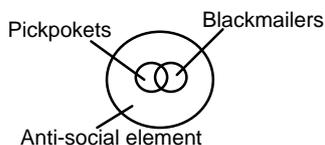
47. (A) : Some students can be cricket players. Some cricket players can be tennis fans. Some students can be tennis fans. So, the given items are partly related to each other.



48. (A) : All rhombus are quadrilaterals. All quadrilaterals are polygons.



49. (C) : Both pickpockets and blackmailers are antisocial elements. But, some pickpockets can be blackmailers and vice-versa



50. (A) : All violinists are instrumentalists. All instrumentalists are musicians

