



3) teachers                      4) meetings

19. **recipe**

1) deserts                      2) directions  
3) cookbook                      4) utensils

20. **dome**

1) rounded                      2) geodesic  
3) governmental                      4) coppery

21. **vibration**

1) motion                      2) electricity  
3) science                      4) sound

**Directions to Solve (Question No. 21 to 22) :**

In the following questions choose the word which best expresses the meaning of the given word.

22. **EMBEZZLE**

1) Misappropriate                      2) Balance  
3) Remunerate                      4) Clear

23. **CHASTE**

1) Honest                      2) Dignified  
3) Virtuous                      4) Noble

**Directions to solve (Question No. 23 to 25) :**

24. **His appearance is unsmiling but ....**

1) his heart is full of compassion for others  
2) he looks very serious on most occasions  
3) people are afraid of him  
4) he is uncompromising on matters of task performance

25. **In order to raise company's profit, the employees ....**

1) demanded two additional increments  
2) decided to go on paid holidays  
3) requested the management to implement new welfare schemes  
4) offered to work overtime without any compensation

26. **His behavior is so unpredictable that he ....**

1) never depends upon others for getting his work done  
2) is seldom trusted by others  
3) always finds it difficult to keep his word  
4) always insists on getting the work completed on time

**Directions to Solve ( Question No. 26 to 29) :**

Rearrange the following five sentences in proper sequence to form a meaningful paragraph, then answer the questions given below.

- I. Would you steal a software programme out of retail shop?
- II. The industry on its part has formed an organization to specially gather information, educate and drag and software pirates to courts.
- III. But more than the legality, there is always a different way of looking at piracy and that is in terms of morality.
- IV. The Government on the other hand has initiated National Enforcements Committees.
- V. As far as the issue of tackling piracy is concerned, both the industry and government have already started initiating action.

27. **Which of the following should be the fourth sentence?**

1) V                                      2) III  
3) II                                      4) IV

28. **Which of the following should be the fifth sentence ?**

1) I                                      2) IV  
3) III                                      4) V

29. **Which of the following should be the first sentence ?**

1) II                                      2) III  
3) I                                      4) V

30. **Which of the following should be the third Sentence ?**

1) II                                      2) III  
3) I                                      4) IV

**Directions to Solve (Question No. 30 to 33) :**

The greatest thing this age can be proud of is the birth of man in the consciousness of men. In his drunken orgies of power and national pride man may flout and jeer at it. When organized national selfishness, racial antipathy and commercial self seeking begin to display their ugly deformities in all their nakedness, then comes the time for man

to know that his salvation is not in political organizations and extended trade relations, not in any mechanical re-arrangement of social system but in a deeper transformation of life, in the liberation of consciousness in love, in the realization of God in man

31. In this passage, the phrase "God in man" implies

- 1) God having assumed the shape of man
- 2) neither fully godly nor fully human
- 3) man being transformed into God
- 4) the divine qualities in man

31. The author uses the expression 'ugly deformities to show his indignation at

- 1) political organizations
- 2) the liberation of human consciousness.
- 3) selfishness and materialism of the people
- 4) the drunken orgies of power

32. According to the author, "salvation" of human beings lies in the

- 1) extended trade relations
- 2) spiritual transformation of life
- 3) orgy of national pride
- 4) wholehearted participated in political organizations

33. People jeer at the 'birth of Man' in the human consciousness when they

- 1) begin to think of themselves as God
- 2) become power hungry
- 3) restructure the social system
- 4) become mentally deranged

Directions to Solve (Questions No. 34 to 37):

In the following questions choose the word which is the exact OPPOSITE of the given words.

34. CONCEDE

- 1) Object
- 2) Refuse
- 3) Grant
- 4) Accede

35. VIRTUOUS

- 1) Wicked
- 2) Corrupt
- 3) Vicious
- 4) Scandalous

36. LUCID

- 1) Glory
- 2) Noisy
- 3) Obscure
- 4) Distinct

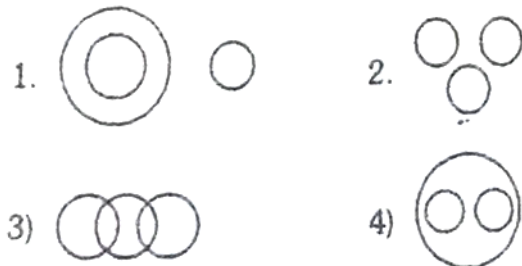
37. ACQUITTED

- 1) Freed
- 2) Burdened
- 3) Convicted
- 4) Entrusted

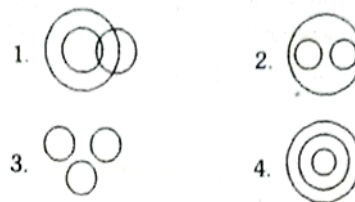
Directions to Solve (Questions No. 38 to 42):

Each of these questions given below contains three elements. These elements may or may not have some inter linkage. Each group of elements may fit into one of these diagrams at (1), (2), (3) and / or (4). You have to indicate the group of elements which correctly fits into the diagrams.

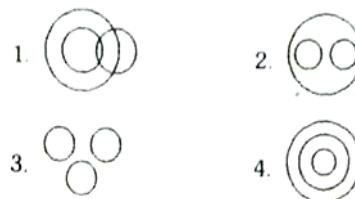
38. Which of the following diagrams indicates the – best relation between Travellers, Train and Bus?



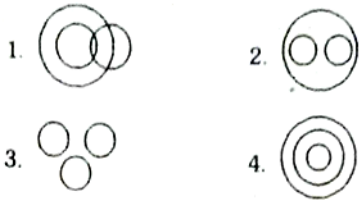
39. Which of the following diagrams indicates the best relation between Women, Mothers and Engineers ?



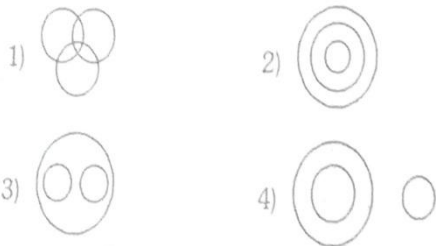
40. Which of the following diagrams indicates the best relation between Professors, Doctors and Men?



41. Which of the following diagrams indicates the best relation between Football, Player and Field ?



42. Which of the following diagrams indicates the best relation between Elephant, Carnivorous and Tiger ?



43. If Kumar paid Rs. 3,360 as interest on a 4 year loan at 8% interest, he borrowed an amount of  
 1) Rs. 10,500                      2) Rs. 14,000  
 3) Rs. 3,600                        4) Rs. 33,600
44. The average weight of 8 persons increases by 2.5 kg when a new person comes in place of one of them weighing 65 kg. What might be the weight of the new person?  
 1) 76 kg                                2) 76.5 kg  
 3) 85 kg                                4) Data inadequate
45. The average age of husband, wife and their child 3 years ago was 27 years and that of wife and the child 5 years ago was 20 years. The present age of the husband is  
 1) 35 years                              2) 40 years  
 3) 50 years                              4) None of these
46. A library has an average of 510 visitors on Sundays and 240 on other days. The average number of visitors per day in a month of 30 days beginning with a Sunday is  
 1) 250                                    2) 276  
 3) 280                                    4) 285
47. A pupil's marks were wrongly entered as 83 instead of 63. Due to that the average marks for the class got increased by half.

The number of pupils in the class is

- 1) 10                                      2) 20  
 3) 40                                      4) 73

48. From a point P on a level ground, the angle of elevation of the top tower is  $30^\circ$ . If the tower is 100 m high, the distance of point P from the foot of the tower is:  
 1) 149 m                                2) 156 m  
 3) 173 m                                4) 200 m
49. The sum of ages of 5 children born at the intervals of 3 years each is 50 years. What is the age of the youngest child?  
 1) 4 years                                2) 8 years  
 3) 10 years                              4) None of the above
50. Three times the first of three consecutive odd integers is 3 more than twice the third. The third integer is  
 1) 9                                        2) 11  
 3) 13                                      4) 15
51. At a game of billiards, A can give B 15 points in 60 and A can give C 20 points in 60. How many points can B give C in a game of 90?  
 1) 30 points                              2) 20 points  
 3) 10 points                              4) 12 points
52. In a 100 m race, A can beat B by 25 m and B can beat C by 4 m. In the same race, A can beat C by  
 1) 21 m                                    2) 26 m  
 3) 28 m                                    4) 29 m
53. 4 men and 6 women can complete a work in 8 days, while 3 men and 7 women can complete it in 10 days. In how many days will 10 women complete it?  
 1) 35                                        2) 40  
 3) 45                                        4) 50
54. Evaluate the value of x from  $\frac{x-a}{b} + \frac{x-b}{a} = 2$   
 1) a+b                                    2) ab  
 3) a-b                                    4) b-a
55. Which of the following is equal to  $3.14 \times 10^6$ ?  
 1) 314                                    2) 3140

- 3) 3140000      4) None of the above

56.  $3889+12.952-?= 3854.002$

- 1) 47.095                      2) 47.752  
3) 47.932                      4) 47.95

**Directions to solve (Question No. 57 to 60):**

Some proverbs/idioms are given below together with their meanings. Choose the correct meaning of proverb/idiom. If there is no correct meaning given, 4.(i.e.) 'None of the above' will be the answer.

57. **To pick holes**

- 1) To find some reason to quarrel  
2) To destroy something  
3) To criticize someone  
4) None of the above

58. **To be the question**

- 1) To refer to  
2) To take for granted  
3) To raise objections  
4) None of the above

59. **To do oneself justice**

- 1) To dispense justice on our won  
2) To treat others with due respect  
3) To defends one's point of view  
4) None of the above

60. **To have an axe to grind**

- 1) A private end to serve  
2) To fail to arouse interest  
3) To have no result  
4) None of the above

**Directions to Solve (Question No. 61 to 66) :**

In the following questions four alternatives are given for the idiom/phrase italicized and underlined in the sentence. Choose the alternative which best expresses the meaning of idiom/phrase.

61. **I met him after a long time, but he gave methe cold shoulder.**

- 1) scolded me                      2) insulted me  
3) abused me                      4) ignored me

62. **Whe he heard that he had once again not been selected he lost heart?**

- 1) became desperate      2) felt sad

- 3) became angry

- 4) became discouraged

63. **The cricket match proved to be a big draw.**

- 1) a keen contest  
2) a huge attraction  
3) a lovely spectacle  
4) a game without any result

64. **Don't lose patience, things will improve by and by.**

- 1) soon                              2) finally  
3) gradually                      4) unexpectedly

65. **Discipline is on the wane in schools and colleges these days.**

- 1) declining                      2) increasing  
3) spreading                      4) spiraling

66. **His speech went down well with the majority of the audience.**

- 1) found acceptance with  
2) was attentively listened to by  
3) was appreciated by  
4) was applauded by

67. **In how many different ways can the letters of the word 'CORPORATION' be arranged so that the vowels always come together?**

- 1) 810                              2) 1440  
3) 2880                              4) 50400

68. **In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?**

- 1) 159                              2) 194  
3) 205                              4) 209

69. **A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one black ball is to be included in the draw?**

- 1) 32                              2) 48  
3) 64                              4) 96

70. **If  $35 + 125 = 17.88$ , then what will be the value of  $80+65?$**

- 1) 13.41                      2) 20.46  
3) 21.66                      4) 22.35
71. A bag contains 4 white, 5 red and 6 blue balls. Three balls are drawn at random from the bag. The probability that all of them are red, is
- 1)  $\frac{1}{22}$                               2)  $\frac{3}{22}$   
3)  $\frac{2}{91}$                               4)  $\frac{2}{77}$
72. How many times are the hands of a clock at right angle in a day?
- 1) 22                              2) 24  
3) 44                              4) 48
73. An on-line commercial site such as Amazon.com is an example of a(n)
- 1) single-user database application  
2) multi-user database application  
3) e-commerce database application  
4) data mining database application
74. The primary key is selected from the
- 1) composite keys              2) determinants  
3) candidate keys              4) foreign keys
75. For some relations, changing the data can have undesirable consequences called
- 1) referential integrity constraints  
2) modification anomalies  
3) normal forms  
4) transitive dependencies
76. The memory which is programmed at the time it is manufactured
- 1) RAM                              2) ROM  
3) POM                              4) PROM
77. MS-DOS operating system consists of
- 1) MSDOS.SYS              2) IO.SYS  
3) COMMAND.COM      4) All of the above
78. TCP port number 80 is usually reserved for?
- 1) EMAIL                              2) HTTP  
3) UDP                                      4) HTTPS
79. Which OSI layer performs encryption/decryption?
- 1) network                              2) session  
3) presentation                      4) application
80. \_\_\_\_\_ tags, when placed on an animal, can be used to record and track in a database all of the animal's movements.
- 1) POS                                      2) RFID  
3) PPS                                      4) GPS
81. Word processing, spreadsheet, photo-editing are examples of
- 1) application software  
2) system software  
3) operating system software  
4) platform software
82. Servers are computers that provide resources to other computers connected to a
- 1) network  
2) mainframe  
3) supercomputer  
4) client
83. Smaller and less expensive PC-based servers are replacing \_\_\_\_\_ in many businesses.
- 1) supercomputers              2) clients  
3) laptops                              4) mainframes
84. All of the following are examples of real security and privacy risks EXCEPT
- 1) hackers                              2) spam  
3) viruses                              4) identity theft
85. Which of the following is an example of an input device?
- 1) Scanner                              2) Speaker  
3) CD                                      4) Printer
86. DSL is an example of a(n) \_\_\_\_\_ connection.
- 1) network                              2) wireless  
3) slow                                      4) broadband
87. A string of eight Os and Isis called a
- 1) megabyte                              2) byte  
3) kilobyte                              4) gigabyte
88. \_\_\_\_\_ controls the way in which the computer system functions and provides a means by which users can interact with the computer.
- 1) The platform  
2) The operating system  
3) Application software  
4) The motherboard



## MCA 2015 – DETAILED SOLUTIONS

1. (2)

$$\begin{aligned} \text{Distance} &= 600 \text{ m} = \frac{600}{1000} = \text{km} \\ &= 0.6 \text{ km} \end{aligned}$$

$$\text{Time taken} = 5 \text{ minutes} \frac{5}{6} = \text{hrs.}$$

$$\begin{aligned} \text{Now speed} &= \frac{\text{Distance}}{\text{Time taken}} \\ &= \frac{0.6}{\left(\frac{5}{60}\right)} = \frac{0.6 \times 60}{5} = 7.2 \text{ km/hr.} \end{aligned}$$

2. (3)

Let the speed of the car be  $x$  km/hr.

Then speed of the train

$$\begin{aligned} &= 150\% \text{ of } x \\ &= \frac{150}{100}x = \frac{3x}{2} \text{ km/hr} \end{aligned}$$

According to the problem

$$\begin{aligned} \frac{75}{x} &= \frac{75}{\left(\frac{3x}{2}\right)} + \frac{12.5}{60} \\ \Rightarrow \frac{75}{x} - \frac{150}{3x} &= \frac{12.5}{60} \\ \Rightarrow \frac{75}{3x} &= \frac{12.5}{60} \\ \therefore x &= \frac{75 \times 60}{3 \times 12.5} = 120 \text{ km/hr.} \end{aligned}$$

3. (4)

Let the total number of apples be  $x$ 

$$\text{Apples sold} = 40\% \text{ of } x$$

$$\begin{aligned} \text{Apples not sold} &= (100-40)\% \text{ of } x \\ &= 60\% \text{ of } x \end{aligned}$$

According to the problem

$$\begin{aligned} 60\% \text{ of } x &= 420 \\ \Rightarrow \frac{60}{100}x &= 420 \\ \therefore x &= \frac{420 \times 100}{60} = 700 \end{aligned}$$

4. (\*)

$$\begin{aligned} \frac{25 \times 2^{-4}}{50 \times 2^{-4}} &= \frac{1}{2 \times 2^4 \times 2^6} \\ &= \frac{1}{2^{11}} = 2^{-11} \end{aligned}$$

5. (1)

$$20\% \text{ of } a = b$$

$$\frac{20}{100}a = b$$

$$\frac{a}{5} = b$$

$$\text{Now } b\% \text{ of } 20 = \frac{a}{5} \% \text{ of } 20$$

$$= \frac{\frac{a}{5}}{100} \times 20 = \frac{a}{100} \times 4$$

$$= \frac{4}{100} \times a$$

$$= 4\% \text{ of } a$$

$$\therefore b\% \text{ of } 20 = 4\% \text{ of } a$$

6. (4)

$$5\% \text{ of } A + 4\% \text{ of } B = \frac{2}{3} (\text{6\% of } A + \text{8\% of } B)$$

$$\Rightarrow \frac{5}{100}A + \frac{4}{100}B = \frac{2}{3} \left( \frac{6}{100}A + \frac{8}{100}B \right)$$

$$= \frac{4A}{100} + \frac{16B}{300}$$

$$\Rightarrow \frac{5A}{100} - \frac{4A}{100} = \frac{16B}{300} - \frac{4B}{100}$$

$$\frac{A}{100} = \frac{16B - 4B}{300} = \frac{4B}{300}$$

$$\Rightarrow A : B = 4 : 3$$

7. (2)

$$X = 120\% \text{ of } Y = \frac{120}{100}Y = \frac{6Y}{5}$$

$$\text{Also } X + Y = 550$$

$$\Rightarrow \frac{6Y}{5} + Y = 550$$

$$\Rightarrow \frac{11Y}{5} = 550$$

$$\therefore Y = \frac{550 \times 5}{11} = \text{Rs. } 250$$

8. (3)

Let the length and breadth of the rectangle be  $x$  and  $y$  respectively.

$$\text{Then area} = xy$$

$$\text{New length} = 120\% \text{ of } x$$

$$= \frac{120}{100}x = \frac{6x}{5}$$

$$\text{New breadth} = 120\% \text{ of } y = \frac{6y}{5}$$

$$\text{New area} = \frac{6x}{5} \times \frac{6y}{5} = \frac{36}{25}xy$$

$$\text{Increase in Area} = \frac{36xy}{25} - xy = \frac{11xy}{25}$$

Percentage increase in Area

$$= \left( \frac{11xy}{25} \right) \times 100 = \frac{11}{25} \times 100 = 44\%$$

**Short-cut**If two sides of a rectangle are increased by  $X\%$  and  $Y\%$ 

then percentage increase in area

$$= \left( X + Y + \frac{XY}{100} \right) \%$$

In this problem  $X = 20\%$ 

$$Y = 20\%$$



∴ Percentage increase in Area

$$= 20 + 20 + \frac{20 \times 20}{100}$$

$$= 40 + 4 = 44\%$$

9. (4)

Let the length and breadth of the towel be x and y respectively.

Then its area = xy

New length = 80% of x

$$= \frac{80}{100}x = \frac{4x}{5}$$

New breadth = 90% of y

$$= \frac{90}{100}y = \frac{9y}{10}$$

New area =  $\frac{4x}{5} \times \frac{9y}{10} = \frac{36xy}{50}$

Decrease in Area =  $xy - \frac{36xy}{50} = \frac{14xy}{50}$

Decrease % =  $\frac{\left(\frac{14xy}{50}\right)}{xy} \times 100 = 28\%$

**Short – cut**

If the length and breadth of rectangle are decreased by X % and Y % then percentage decrease in Area

$$= \left(X + Y - \frac{XY}{100}\right) \%$$

In this problem,

X = 20%

Y = 10%

Percentage decrease in Area

$$= 20 + 10 - \frac{20 \times 10}{100}$$

$$= 30 - 2 = 28\%$$

10. (2)

$$112 \times 5^4 = 112 \times 5^2 \times 5^2$$

$$= 112 \times 25 \times 25$$

$$= 70,000$$

11. (2)

$$? = 935421 \times 625$$

$$= 584638125$$

12. (1)

Largest 4 digit number = 9999

$$\begin{array}{r} 113 \\ 88 \overline{) 9999} \\ \underline{88} \phantom{00} \\ 119 \phantom{00} \\ \underline{88} \phantom{00} \\ 319 \phantom{00} \\ \underline{264} \phantom{00} \\ 55 \end{array}$$

On dividing 9999 by 88, remainder = 55  
Therefore required number = 9999 - 55 = 9944

13. (4)

Let x be the number

On dividing x by 5, remainder is 3

Therefore

$$x = 5k + 3$$

$$x^2 = (5k + 3)^2$$

$$= 25k^2 + 30k + 9$$

$$= 25k^2 + 30k + 5 + 4$$

$$= 5(5k^2 + 6k + 1) + 4$$

Therefore when  $x^2$  is divided by 5

$$\text{remainder} = 4$$

14. (2)

A desert is an and tract of land. Not all deserts are flat (choice d). Not all deserts have cacti or oases (choices a and c).

15. (1)

Lightning is provided from a discharge of electricity, so electricity is essential. Thunder and rain are not essential to the production of lightning (choices b and d). brightness may be a byproduct of lightning, but it is not essential(choice c).

16. (2)

Diploma will have certainly 'curriculum'.

17. (3)

A faculty consists of a group of teachers and cannot exist without them. The faculty may work in buildings(choice a), but the buildings aren't essential. They may use tectbooks (choice b) and

attend meetings (choice d), but these aren't essential either.

18. (2)

A recipe is a list of directions to make something. Recipes may be used to prepare desserts (choice a), among other things. One does not need a cookbook (choice c) to have a recipe, and utensils (choice d) may or may not be used to make a recipe.

19. (1)

A dome is a large rounded roof or ceiling, so being rounded is essential to a dome. A geodesic dome (choice b) is only one type of dome. Some, but not all domes, have copper roofs (choice d). domes are often found on government buildings (choice c), but domes exist in many other places.

20. (1)

Embezzle—steal or misappropriate money placed in one's trust or belonging to the organization for which one works).

"she had embezzled £5,600,000 in company funds"

21. (2)

CHASTE –

1. Not having experienced sexual intercourse; virginal
2. Abstaining from sexual intercourse, esp that which is unlawful or immoral
3. (of conduct, speech, etc) pure; decent; modest
4. (of style or taste) free from embellishment; simple; restrained

**Directions to Solve (Question No. 26 to 29):**

The sentences are to be arranged as : V,II,IV, III, I

- V. As far as the issue of tackling piracy is concerned, both the industry and government have already started initiating action.
- II. The industry on its part has formed an organization to specially gather information, educate and drag and software pirates to courts.
- IV. The Government on the other hand has initiated National Enforcements Committees.
- III. But more than the legality, there is always a different way of looking at piracy and that is in terms of morality.

I. Would you steal a software programme out of retail shop?

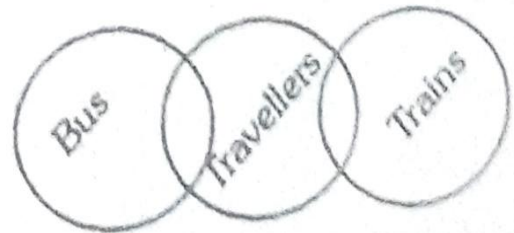
26. (2)

27. (1)

28. (4)

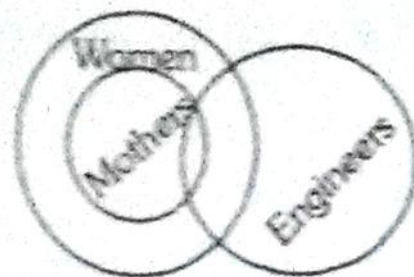
29. (4)

38. (3)

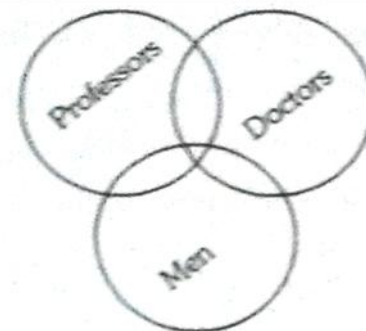


39. (1)

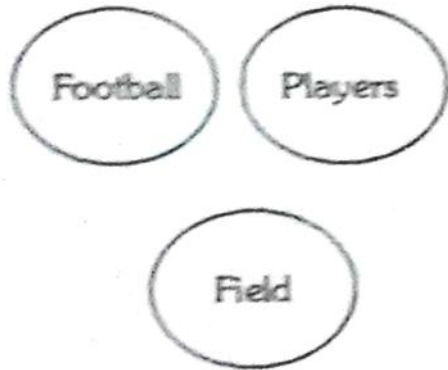
All mothers are women. Some mothers and some women are engineers.



40. (3)

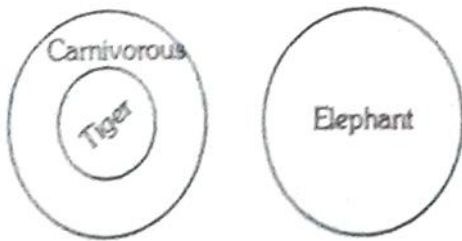


41. (3)



42. (4)

Tiger is Carnivorous and elephant is different from these two



43. (1)

SI = 3360 ; n=4 years ; R = 8%

$$\begin{aligned} \text{Principal} = P &= \frac{SI \times 100}{nR} \\ &= \frac{3360 \times 100}{4 \times 8} = \text{Rs. } 10500 \end{aligned}$$

44. (3)

Let the average of 8 persons be  
Then total weight of 8 persons = 8x

$$\text{New average} = x + 2.5$$

Let the weight of the new person be y kg.

According to the problem

$$\begin{aligned} 8x - 65 + y &= 8(x + 2.5) \\ &= 8x + 20 \end{aligned}$$

$$\therefore y = 20 + 65 = 85 \text{ kg}$$

45. (2)

Let the present ages of husband

Wife and child be x, y, z years respectively

Three years ago average

$$= \frac{(x-3) + (y-3) + (z-3)}{3} = 27$$

$$\Rightarrow \frac{x+y+z-9}{3} = 27$$

$$x + y + z - 9 = 81$$

$$\therefore x + y + z = 81 + 9 = 90 \quad \dots(1)$$

5 years ago average age of wife and child is 20 years

$$\Rightarrow \frac{(y-5) + (z-5)}{2} = 20$$

$$y + z - 10 = 40$$

$$\therefore y + z = 50 \quad \dots(2)$$

From (1) and (2)

$$x + 50 = 90$$

$$\therefore x = 90 - 50 = 40 \text{ years}$$

Present age of the husband = 40 years

46. (4)

If a month of 30 days starts with Sunday, then there are 5 Sundays in that month.

$$\begin{aligned} \text{Average} &= \frac{5 \times 510 + 25 \times 240}{30} \\ &= \frac{2550 + 6000}{30} = \frac{8550}{30} = 285 \end{aligned}$$

47. (3)

Let the average be A and Total students be x  
Then

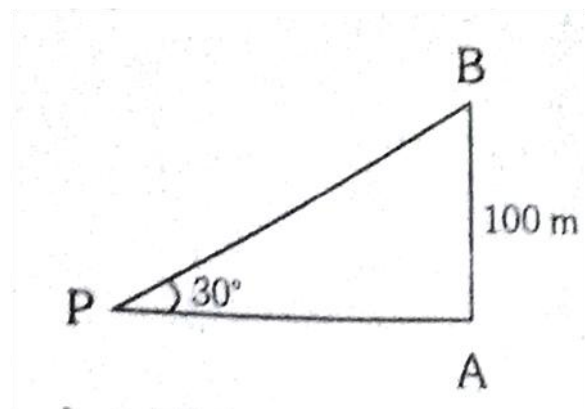
$$\begin{aligned} (A + 0.5)x &= Ax + (83 - 63) \\ &= Ax + 20 \end{aligned}$$

$$Ax + 0.5x = Ax + 20$$

$$\therefore 0.5x = 20$$

$$x = \frac{20}{0.5} = 40$$

48. (3)



Let AB be the tower.

$$\tan 30 = \frac{AB}{PA} = \frac{100}{PA}$$

$$\frac{1}{\sqrt{3}} = \frac{100}{PA}$$

$$PA = 100\sqrt{3}$$

$$= 100 \times 1.73 = 173 \text{ m}$$

49. (1)

Let the age of the youngest child be  $x$  years

Then

$$x+(x+3)+(x+6)+(x+9)+(x+12) = 50$$

$$5x+30 = 50$$

$$5x = 50-30 = 20$$

$$x = \frac{20}{5} = 4$$

50. (4)

Let the three consecutive odd integers be  $x$ ,

$x+2$ ,  $x+4$

According to the problem

$$3x = 2(x+4)+3$$

$$= 2x+8+3$$

$$x = 11$$

Therefore third integer

$$x = 4$$

$$= 11+4 = 15$$

51. (3)

A can give 15 points to B in 60

⇒ In a game of 60.

A will have to get 60 points while B will have to get =  $60-15 = 45$  points

A can give 20 points to C in 60

⇒ In a game of 60, A will have to get 60 points while C will have to get  $60-20 = 40$  points.

i.e., When B scores 45 points, C scores 40 points

When B scores 90 points c will score

$$\frac{40 \times 90}{45} = 80 \text{ points}$$

If B scores 90 points then C scores 80 points

⇒ In a game of 90, B can give C

$$= 90-80 = 10 \text{ points}$$

52. (3)

When A cover 100m, B cover  $100-25=75$ m

When B cover 100m, C cover  $100-4 = 96$ m

When B cover 75m, C can cover

$$\frac{96 \times 75}{100} = 72 \text{m}$$

i.e., when A cover 100m,

B cover 75m and C cover 72m

Therefore in 100m race

A can beat C by  $100-72 = 28$ m

53. (2)

Let 1 man's 1 day's work be  $x$

and 1 woman's 1 day's work be  $y$

$$\text{Then } 4x+6y = \frac{1}{8}$$

$$3x+7y = \frac{1}{10}$$

solving

$$12x+18y = \frac{3}{8}$$

$$12x+28y = \frac{4}{10}$$

$$\Rightarrow 10y = \frac{4}{10} - \frac{3}{8} = \frac{16-15}{40} = \frac{1}{40}$$

$$\Rightarrow 10 \text{ women's 1 day's work} = \frac{1}{40}$$

∴ 10 women can complete the work in 40 days.

54. (1)

$$\frac{(x-a)}{b} + \frac{(x-b)}{a} = 2$$

$$\frac{a(x-a)+b(x-b)}{ab} = 2$$

$$ax-a^2+bx-b^2 = 2ab$$

$$ax+bx = a^2+b^2+2ab$$

$$x(a+b) = (a+b)^2$$

$$\therefore x = \frac{(a+b)^2}{(a+b)} = a+b$$

55. (3)

$$3.14 \times 10^6 = 3.14 \times 1000000 \\ = 3140000$$

56. (4)

$$3889+12.952-? = 3854.002$$

$$3901.952-? = 3854.002$$

$$\therefore ? = 3901.952-3854.002 \\ = 47.95$$

67. (4)

In CORPORATION,

Vowels are O, O, A, I, O

Other letters are C, R, P, R, T, N

Considering vowels as one block there are 7 letters C, R, P, R, T, N, (OOAIO)

Among these 7 letters

R appears twice

$$\therefore \text{Number of arrangements} = \frac{7!}{2!} = 2520$$

In the block of vowels O appearing 3 times

$$\therefore \text{Vowels can be arranged in } \frac{5!}{3!} = 20 \text{ ways.}$$

$$\therefore \text{Required number of arrangements}$$

$$= 2520 \times 20 = 50400$$

68. (4)

Required number of ways

$$= ({}^6C_1 \times {}^4C_3) + ({}^6C_2 \times {}^4C_2) + ({}^6C_3 \times {}^4C_1) + {}^6C_4$$

$$= 6 \times 4 + \frac{6 \times 5}{1 \times 2} \times \frac{4 \times 3}{1 \times 2} + \frac{6 \times 5 \times 4}{1 \times 2 \times 3} \times 4 + \frac{6 \times 5 \times 4 \times 3}{1 \times 2 \times 3 \times 4}$$

$$= 24 + 90 + 80 + 15$$

$$= 209$$

69. (3)

Black balls = 3

Other balls = 2 + 4 = 6

Require number of ways

$$= ({}^3C_1 \times {}^6C_2) + ({}^3C_2 \times {}^6C_1) + {}^3C_3$$

$$= 3 \times \frac{6 \times 5}{1 \times 2} + \frac{3 \times 2}{1 \times 2} \times 6 + 1$$

$$= 45 + 18 + 1$$

$$= 64$$

70. (4)

$$35 + 125 = 17.88$$

$$35 + (25 \times 5) = 17.88$$

$$35 + (\sqrt{25} \times 5) = 17.88$$

$$35 + (5 \times 5) = 17.88$$

$$[Take 5 \times 5 = 55]$$

$$\overbrace{35 + 55}^{+} = 17.88$$

$$(3+5)5 = 17.88$$

$$85 = 17.88$$

$$5 = \frac{17.88}{8} = 22.35$$

Now

$$80 + 65$$

$$= (16 \times 5) + 65$$

$$= (\sqrt{16} \times 5) + 65 = (4 \times 5) + 65$$

$$= 45 + 65 [Take 4 \times 5 = 105]$$

$$= (4+6) 5 = 105$$

$$= 10 \times 2.235$$

$$= 22.35$$

71. (3)

Total balls = 4 + 5 + 6 = 15

Required probability

$$= \frac{{}^5C_3}{{}^{15}C_3}$$

$$= \frac{\left(\frac{5 \times 4 \times 3}{1 \times 2 \times 3}\right)}{\left(\frac{15 \times 14 \times 13}{1 \times 2 \times 3}\right)}$$

$$= \frac{5 \times 4 \times 3}{15 \times 14 \times 13} = \frac{2}{91}$$

72. (3)

If you switch to rotating coordinate system in which the hour hand stands still the minute hand makes 11 rotations and 50 it is at right angles with the hr hand in 22 times. Therefore in 1 day (24 hrs.) number of times the hands of a clock are at right angle is  $2 \times 22 = 44$  times.

73. (2)

Rabindranath Tagore sang VandeMataram in 1896 at the Calcutta Congress Session held at Beadon Square. DakhinaCharanSen sang it five years later in 1901 at another session of the congress at Calcutta. Poet Sarala Devi Chaudurani sang the song in the Benares Congress Session in 1905.

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