

IBPS RRB PO Prelims 2017| Memory Based Paper | For Practice

REASONING ABILITY

- What should come in place of question mark (?) in the following series based on the above arrangement?
ZN XD UG QK ?
(a) LK (b) LO
(c) LP (d) KP
(e) Other than the given options
- How many such pair of numbers are there in the given number "46579739" (Both backward and forward) same as far as according to numeric series?
(a) One (b) Two
(c) Three (d) More than three
(e) None of these.
- If it is possible to make only one meaningful word with the 1st, 2nd, 4th and 7th letters of the word 'ECUADOR' which would be the second letter of the word from the right? If more than one such word can be formed give 'Y' as the answer. If no such word can be formed, give 'Z' as your answer.
(a) Y (b) E (c) I
(d) Z (e) M
- If 1 is subtracted from each odd number and 2 is added to each even in the number 9436527, then how many digits will appear twice in the new number thus formed?
(a) Only 8 (b) Only 8 and 6 (c) 8, 6 and 4
(d) 2, 4 and 6 (e) None of these
- How many letter will be remain the same position in the word 'MONSTER' when they arranged in the ascending order from left to right?
(a) One (b) Two (c) Three
(d) More than Three (e) None
- Which of the following boxes is kept at the top?
(a) B (b) A (c) D
(d) E (e) None of these
- Choose the odd one out?
(a) B (b) G (c) A
(d) D (e) E
- Which of the following boxes is kept between F and A?
(a) B (b) G
(c) C (d) H
(e) None as box F is immediately above box A
- How many boxes are there between C and A
(a) Less than 2 (b) 4 (c) 5
(d) 6 (e) None of these

Directions (11-15): In these questions, relationships between different elements are shown in the statements. These statements are followed by two conclusions. Give answer

- (a) if only conclusion I follows
(b) if only conclusion II follows
(c) if either conclusion I or conclusion II follows
(d) if neither conclusion I nor conclusion II follows
(e) if both conclusions I and II follow

11. Statement: $R \geq S \geq T > U > X$; $T < V < W$
Conclusions: I. $R > X$ II. $X < W$

12. Statement: $E = F < G < H$; $G \geq I$
Conclusions: I. $H > I$ II. $E > I$

13. Statement: $A > B > F > C$; $D > E > C$
Conclusions: I. $C < A$ II. $B > D$

Directions (6-10): Read the following information carefully and answer the following questions.

Eight boxes A, B, C, D, E, F, G and H are place one above the other in any particular order. Box no. 1 is at the bottom and box no. 8 is at the top. Three boxes are placed between A and B. Box H is placed immediately below A. There are two boxes between H and G. There are as many boxes between C and D as between H and B. Box C is kept above D. Box E is kept immediately below box D. Three boxes are there between E and F.

- How many boxes are there above box D?
(a) 4 (b) 3 (c) 6
(d) 1 (e) None of these

- 14. Statement:** $K \leq L \leq M = N$; $P \geq O \geq N$
Conclusions: I. $K < P$ II. $K = P$

- 15. Statement:** $D < E < F < G$; $K > F$
Conclusions: I. $K \leq G$ II. $K > D$

Directions (16-20): Read the following information carefully and answer the following questions.

Seven persons A, B, C, D, E, F and G were born on different months viz. January, February, March, April, June, August and October of the same year, but not necessarily in the same order.

Only three persons were born before E and D is not one of them. F was not born immediately after E. B was born after F. A was born immediately before the month in which G was born. Only two persons were born between G and F.

- 16.** How many persons were born between C and E?
(a) Three (b) Two (c) Four
(d) Five (e) None of these
- 17.** Who amongst the following is the oldest?
(a) A (b) C (c) E
(d) B (e) F
- 18.** Who amongst the following was born between the months in which A and D were born?
(a) E (b) G (c) C
(d) B (e) Both E and G
- 19.** How many persons were born after D?
(a) One (b) Three (c) Four
(d) Two (e) None of these
- 20.** Who amongst the following is the person who was born in the month which has less than 30 days?
(a) F (b) B (c) G
(d) C (e) A

Directions (21-25): Study the following information carefully and answer the given questions:

In a certain code language

'card win team time' is written as 'la ta ja sa'

'fight game play card' is written as 'ja pa ra da'

'in win team fight' is written as 'da ta fa la'.

- 21.** What is the code for 'time'?
(a) sa (b) da (c) ja
(d) la (e) None of these
- 22.** 'card fight in' can be coded as?
(a) sa ja ra (b) fa ja da
(c) da ra ta (d) Can't be determined
(e) None of these
- 23.** What is the code for 'game'?
(a) ra
(b) pa
(c) Either ra or pa
(d) da
(e) None of these

- 24.** Which of the following is the code for 'in'?

(a) ta (b) da (c) la
(d) fa (e) None of these

- 25.** If 'game in risk' is coded as 'Pa fa xa' then what will be the code for 'risk card fight'?

(a) Ja sa da (b) ja da ra (c) sa da fa
(d) xa ja da (e) None of these

Directions (26-30): Study the following information to answer the given questions

Twelve people are sitting in a two parallel rows containing six people each in such a way that there is an equal distance between adjacent persons. In row 1 – A, B, P, Q, X and Y are seated (but not necessarily in the same order) and all of them are facing south. In row 2 – E, F, R, Z, S and U are seated (but not necessarily in the same order) and all of them are facing North. Therefore in the given seating arrangement each member seated in a row faces another member of the other row. Q sits fourth to the left of A. The one facing A sits third to the left of S. Only one person sits between S and E. E does not sit at any of the extreme ends of the line. The one facing U sits second to the right of B. U does not sit at any of the extreme ends of the line. Only two people sit between B and Y. The one facing B sits second to the left of Z. F is not an immediate neighbour of U. P is not immediate neighbour of Q.

- 26.** Which of the following groups of people represents the people sitting at extreme ends of both the rows?

(a) Q, Y, Z, R (b) F, Y, F, B (c) S, Y, Z, R
(d) Q, F, Z, B (e) Q, Y, Z, S

- 27.** Who amongst the following faces, F?

(a) Q (b) P (c) A
(d) X (e) B

- 28.** Which of the following is true with respect to the given information?

(a) B faces one of the immediate neighbours of Z.
(b) F sits exactly between R and E.
(c) None of the given options is true
(d) A is an immediate neighbour of B
(e) A faces U.

- 29.** Which of the following is true regarding X?

(a) B sits second to the right of X.
(b) F is an immediate neighbor of the person who faces X
(c) Both P and Y are immediate neighbours of X
(d) Only one person sits between X and A
(e) None of the given options is true

- 30.** Who amongst the following sits second to the right of the person who faces P?

(a) F (b) U (c) R
(d) E (e) S

Directions (31-35): Study the following information carefully and answer the questions given below:

Eight friends M, N, O, P, Q, R, S and T are sitting around a circular table with equal distance between them but not necessarily in the same order. Some of them are facing the centre with some face outside (i.e. opposite to centre).

O sits second to the right of R, R faces the centre. Only two people sit between O and N (either from O's right or O's left). S sits second to the right of O. T sits to the immediate right of N. S and N face opposite direction (i.e. if N faces the centre then S faces outside and vice versa). Immediate neighbor of S face the same direction (i.e. If one neighbor faces the centre then the other also faces the centre and vice-versa) Only three people sit between P and Q. Neither P nor M is an immediate neighbor of R. Q sits second to the right of M. Both T and Q face a direction opposite to that of O (i.e. if O faces the centre then both T and Q faces outside and vice-versa).

- 31.** Who sits exactly between M and P?
 (a) N (b) S (c) R
 (d) Q (e) None of these
- 32.** How many people in the given arrangement face the centre?
 (a) One (b) Three (c) Five
 (d) Four (e) None of these
- 33.** Who sits second to the right of T?
 (a) O (b) Q
 (c) S (d) R
 (e) Other than the given options
- 34.** Four of the following five are alike in a certain way based on the given seating arrangement and so form a group. Which is the one that does not belong to that group?
 (a) P (b) O (c) T
 (d) M (e) Q
- 35.** What is P's position with respect to R?
 (a) Second to the left (b) Third to the right
 (c) Third to the left (d) Sixth to the right
 (e) Second to the right

Directions (36-40): In each question below are given some statements followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements, disregarding commonly known facts.

Give answer

- (a) If only conclusion I follows.
 (b) If only conclusion II follows.
 (c) If either conclusion I or II follows.
 (d) If neither conclusion I nor II follows.
 (e) If both conclusions I and II follow.

36. Statements: All bags are purses.

No purse is black.
 All blacks are covers.

Conclusions: I. All bags are covers
 II. Some covers are purses.

37. Statements: Some cats are rats.
 Some rats are fishes.
 All fishes are birds.

Conclusions: I. Some fishes are rats.
 II. All cats being birds is a possibility

38. Statements: Some flowers are roses.
 No rose is red.
 All red are leaves.

Conclusions: I. Some flowers are definitely not red.
 II. Some leaves are definitely not roses.

39. Statements: All cards are sheets.
 All files are cards.
 Some sheets are papers.

Conclusions: I. All files being papers is a possibility.
 II. All files are not sheets.

40. Statements: Some flowers are roses.
 No rose is red.
 All red are leaves.

Conclusions: I. Some flowers are not leaves.
 II. No leave is a red.

QUANTITATIVE APTITUDE

Directions (41-45): What should come in place of the question mark (?) in following number series problems?

- 41.** 190, 94, 46, 22, ?, 4
 (a) 12 (b) 14 (c) 10
 (d) 8 (e) None of these
- 42.** 5, 28, 47, 64, 77, ?
 (a) 84 (b) 86 (c) 89
 (d) 88 (e) None of these

- 43.** 7, 4, 5, 12, 52, ?
 (a) 424 (b) 428 (c) 318
 (d) 440 (e) None of these
- 44.** 6, 4, 5, 11, 39, ?
 (a) 159 (b) 169 (c) 189
 (d) 198 (e) None of these
- 45.** 89, 88, 85, 78, 63, ?
 (a) 30 (b) 34 (c) 36
 (d) 32 (e) None of these

46. There are 3 consecutive odd numbers and 3 consecutive even numbers. The smallest even number is 9 more than largest odd number. If the square of average of all the 3 given odd number is 507 less than the square of the average of all the 3 given even number, what is the smallest odd number.

- (a) 11 (b) 13 (c) 17
(d) 19 (e) 9

47. A can complete a task in 15 days B is 50% more efficient than A. Both A and B started working together on the task and after few days B left task and A finished the remaining $\frac{1}{3}$ of the given work. For how many days A and B worked together.

- (a) 3 (b) 5 (c) 4
(d) 6 (e) 2

48. A boat can travel 9.6 km downstream in 36 min. If speed of the water current is 10% of the speed of the boat in downstream. How much time will boat take to travel 19.2 km upstream.

- (a) 2 hours (b) 3 hours (c) 1.25 hours
(d) 1.5 hours (e) 1 hour

49. A started a business with a initial investment of Rs. 1200. 'X' month after the start of business, B joined A with on initial investment of Rs. 1500. If total profit was 1950 at the end of year and B's share of profit was 750. Find 'X'

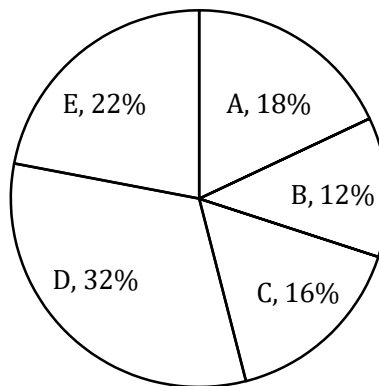
- (a) 5 month (b) 6 month (c) 7 month
(d) 8 month (e) 9 month

50. Ratio between curved surface area and total surface area of a circular cylinder is 3 : 5. If curved surface area is 1848 cm^2 then what is the height of cylinder.

- (a) 28 (b) 14 (c) 17
(d) 21 (e) 7

Directions (51-55): Given below is the pie chart which shows the percentage distribution of a book 'XYZ' publishes in 5 different stores.

Total books = 550



51. If number of female who bought the books in store E are 21 more than number of males who bought books from same store then find the number of females who bought book in store E.

- (a) 75 (b) 78 (c) 71
(d) 68 (e) 73

52. Find the central angle for the book D.

- (a) 117.5° (b) 115.2° (c) 112.8°
(d) 108.5° (e) 118.8°

53. If total books of another publisher 'MNP' is 20% more than books of 'XYZ' publisher then what will be total books sold by store A and B for publisher 'MNP'. Percentage-distribution for different stores for MNP remains same as for 'XYZ'

- (a) 200 (b) 178 (c) 181
(d) 186 (e) 198

54. What is the ratio of total books sold by store A and C together to the total books sold by store D and E together

- (a) 17 : 27 (b) 18 : 29 (c) 21 : 28
(d) 22 : 23 (e) 24 : 29

55. What is the difference between average of book sold by store A and E together and average books sold by store C and D together?

- (a) 33 (b) 11 (c) 22
(d) 44 (e) 20

Directions (56-60): In each of these questions, two equations (I) and (II) are given. You have to solve **both** the equations and give answer

- (a) if $x > y$ (b) if $x \geq y$
(c) if $x < y$ (d) if $x \leq y$
(e) if $x = y$ or no relationship can be established.

56. I. $x^2 + 9x + 20 = 0$ II. $y^2 = 16$

57. I. $x^2 - 7x + 12 = 0$ II. $3y^2 - 11y + 10 = 0$

58. I. $x^2 - 8x + 15 = 0$ II. $y^2 - 12y + 36 = 0$
 59. I. $2x^2 + 9x + 7 = 0$ II. $y^2 + 4y + 4 = 0$
 60. I. $2x^2 + 15x + 28 = 0$ II. $2y^2 + 13y + 21 = 0$
 61. Train A completely crosses train B which is 205 m long in 16 second. If they are travelling in opposite direction and sum of speed of both are 25 m/s. then find the difference (in meter) between lengths of both trains.
 (a) 5 (b) 6 (c) 8
 (d) 10 (e) 12
 62. A trader mixes 14 kg rice of variety A which costs Rs. 60/kg with 18 kg of quantity of type B rice. He sells the mixture at Rs. 65/Kg and earns a profit of $\frac{100}{3}\%$. Then what was the cost price of type B rice.
 (a) 30 (b) 20 (c) 40
 (d) 50 (e) 45

63. Present age of A is 3 years less than present age of B. Ratio of B's age 5 year ago and A's age 4 year hence is 3 : 4 then find present age (in years) of A.
 (a) 20 (b) 17 (c) 23
 (d) 26 (e) 29
 64. A bag contains 6 Red, 5 Green and 4 Yellow coloured balls. 2 balls are drawn at random after one another without replacement then what is the probability that atleast one ball is Green.
 (a) $\frac{2}{3}$ (b) $\frac{4}{5}$ (c) $\frac{3}{8}$
 (d) $\frac{4}{7}$ (e) $\frac{2}{7}$
 65. Cost price of B is 200 more than cost price of A. B is sold at 10% profit and A is sold at 40% loss and selling price of A and B are in the ratio 4 : 11. If A is sold at 20% loss then what will be selling price of A.
 (a) 320 (b) 400 (c) 240
 (d) 160 (e) 360

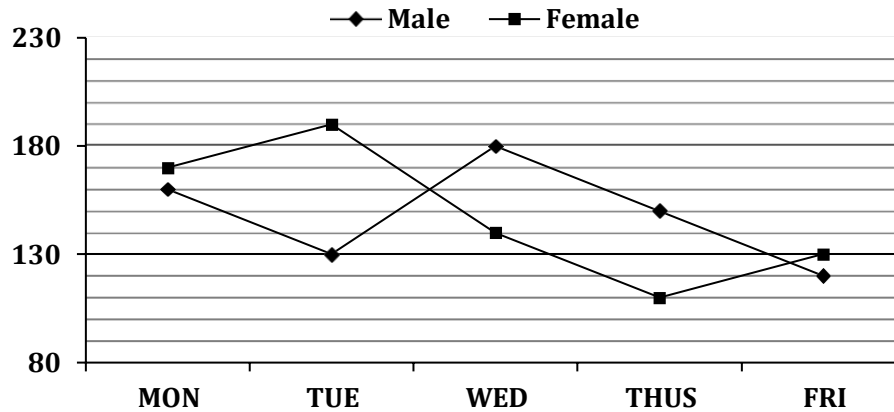
Directions (66-70): Read the following table carefully and answer the following questions—

No. of students and % of students passed out of those who appeared are given for two subjects from year 2001 to 2005 in a college XYZ.

Year	Statistics			Economics	
	No. of students appeared	% of students passed		No. of students appeared	% of students passed
2001	2200	45%		4200	40%
2002	2700	55%		3800	45%
2003	2500	35%		2600	60%
2004	3200	65%		4800	55%
2005	4800	60%		2200	50%

66. Find the average number of students who were failed in Economics in year 2002 and year 2003 together?
 (a) 1435 (b) 1565 (c) 1720
 (d) 1590 (e) None of these
67. Number of students failed in Statistics in the year 2003 is what % of the number of students failed in Economics in the same year?
 (a) 145.75% (b) 150% (c) 156.25%
 (d) 158.25% (e) None of these
68. Find the ratio between the total number of students appeared in Economics from 2002 to 2004 together and the total number of students appeared in Statistics from year 2003 to 2005 together?
 (a) 13 : 14 (b) 14 : 13 (c) 15 : 16
 (d) 16 : 15 (e) None of these
69. Find the difference between the total number of students passed in Statistics from year 2002 and total number of students failed in Economics from year 2005.
 (a) 690 (b) 385 (c) 485
 (d) 550 (e) 610
70. Find the average number of students appeared in Economics from year 2001 to 2004 together?
 (a) 3090 (b) 3015 (c) 3060
 (d) 3075 (e) 3850
- Direction (71-75):** What approximate value should come in place of question mark (?) in the following questions? (Note: You are not expected to calculate the exact value)
71. ? % of $(5284.89 \div 7.08) = 986.01 - 533.06$
 (a) 42 (b) 39 (c) 74
 (d) 65 (e) 60
72. $(1041.84 + ?) \div 3.02 = 1816.25 \div 4.01$
 (a) 442 (b) 337 (c) 385
 (d) 268 (e) 320
73. $69.3\% \text{ of } 445.12 \div 14.06 = 623.08 \div ?$
 (a) 28 (b) 19 (c) 21
 (d) 33 (e) 37
74. $?^2 + 114.09 - 24.06 \times 5.14 = 163.19$
 (a) 7 (b) 13 (c) 11
 (d) 15 (e) 19
75. $768.16 \div 11.87 \times \sqrt{257} - 58.05 = ?$
 (a) 1033 (b) 1175 (c) 966
 (d) 880 (e) 975

Directions (76-80): Study the following line graph carefully and answer the following questions. Number of males and number of females are given. They are visiting a place from Monday to Friday.



76. Find the ratio of the total number of males visited the place on Tuesday and Thursday together to the total number of females visited the place on Monday and Friday together?

- (a) 29 : 30 (b) 30 : 29 (c) 25 : 26
(d) 26 : 25 (e) None of these

77. Total number of males and females together visited the place on Tuesday are what percent more/less than the total number of male and females together visited the place on Thursday ?

- (a) $26\frac{12}{13}\%$ (b) $25\frac{3}{13}\%$ (c) $26\frac{3}{13}\%$
(d) $25\frac{7}{13}\%$ (e) None of these

78. Find the difference between the total number of females visited the place from Monday to Wednesday and the total number of males visited the place from Wednesday to Friday?

- (a) 30 (b) 60 (c) 40
(d) 50 (e) None of these

79. If on Saturday the number of males and number of females increased by 25% and 20% respectively as compared to that on Friday then find the total number of males and females together visited the place on Saturday?

- (a) 196 (b) 306 (c) 316
(d) 206 (e) 216

80. Total number of males and females visited the place on Monday and Tuesday together is how much more than the total number of males and females visited the place on Thursday and Friday together?

- (a) 175 (b) 125 (c) 150
(d) 160 (e) 130

Solutions

REASONING ABILITY

1. (c); LP

2. (d);

4 6 5 7 9 7 3 9

3. (a); Race, Care

4. (c);

9 4 3 6 5 2 7

8 6 2 8 4 4 6

5. (a);

M O N S T E R
E M N O R S T

Directions (6-10):

Number	Box
8	B
7	C
6	G
5	F
4	A
3	H
2	D
1	E

6. (c);
9. (e);

7. (a);
10. (e);

8. (e);

Directions (11-15):

11. (e); Both conclusion I and II follow.

12. (a); Only conclusion I follows.

13. (a); Only conclusion I follows.

14. (c); Either conclusion I or II follows.

15. (b); Only conclusion II follows.

Directions (16-20):

Month	Person
January	C
February	A
March	G
April	E
June	D
August	F
October	B

16. (b); 17. (b); 18. (e);

19. (d); 20. (e);

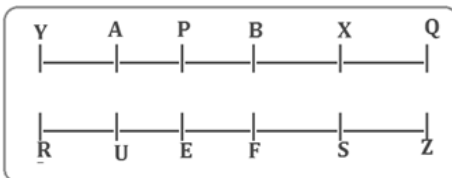
Directions (21-25):

Word	Code
Card	ja
Time	sa
Win/team	la/ta
Fight	da
Game/Play	pa/ra
In	fa

21. (a); 22. (b); 23. (c);

24. (d); 25. (d);

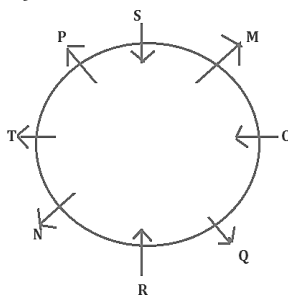
Direction (26-30):



26. (a); 27. (e); 28. (e);

29. (b); 30. (e);

Direction (31-35):

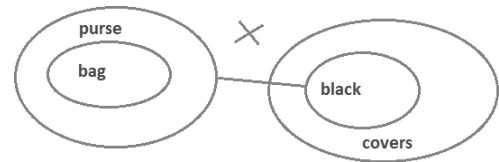


31. (b); 32. (b); 33. (c);

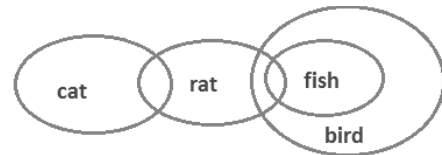
34. (b); 35. (c);

Directions (36-40):

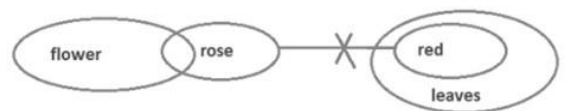
36. (d);



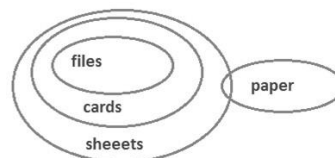
37. (e);



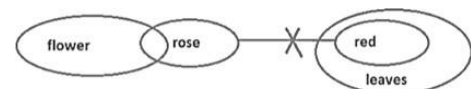
38. (e);



39. (a);



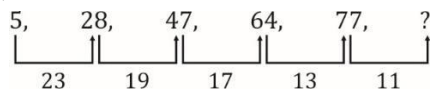
40. (d);



QUANTITATIVE APTITUDE

41. (c); Series is $\div 2 - 1, \div 2 - 1$
 $(22 \div 2) - 1 = 10$

42. (d);



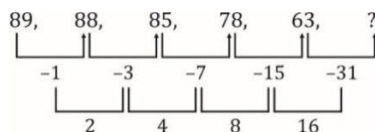
Adding prime No.

$$77 + 11 = 88$$

43. (a); $(7+1) \times 0.5 = 4$
 $(4+1) \times 1 = 5$
 $(5+1) \times 2 = 12$
 $(12+1) \times 4 = 52$
 $(52+1) \times 8 = 424$

44. (c); $(6 \times 1) - 2 = 4$
 $(4 \times 2) - 3 = 5$
 $(5 \times 3) - 4 = 11$
 $(11 \times 4) - 5 = 39$
 $(39 \times 5) - 6 = 189$

45. (d);



$$63 - 31 = 32$$

46. (a); Let a consecutive odd numbers
 $= x - 2, x$ and $x + 2$
 and consecutive even numbers
 $= y - 2, y, y + 2$
 So, $y - 2 = 9 + x + 2$
 $y - x = 13$... (i)
 and
 $(x)^2 + 507 = (y)^2$
 $y^2 - x^2 = 507$
 $(x + y)(y - x) = 507$
 $(x + y) = \frac{507}{13} \Rightarrow x + y = 39$... (ii)
 Solving (i) and (ii) $y = 26$ and $x = 13$
 so smallest odd numbers $= x - 2 = 13 - 2 = 11$

47. (c); A complete work in 15 days.
 B will complete work in 10 days.
 They together will complete whole work
 $= \frac{15 \times 10}{25} = 6 \text{ days}$
 A and B together worked for $= 6 \times \frac{2}{3} = 4 \text{ days}$

48. (d); Speed of downstream $= \frac{9.6}{36} \text{ km/min}$

$$= 16 \text{ km/hr}$$

Speed of current $= 1.6 \text{ km/hr}$

Let speed of man in still water $= x$

$$\text{So, } x = 16 - 1.6 = 14.4 \text{ km/hr}$$

$$\text{Required time in upstream} = \frac{19.2}{14.4 - 1.6}$$

$$= 1.5 \text{ hours}$$

49. (b); Ratio of profit of A and B $= 1200 : 750$
 $= 24 : 15 = 8 : 5$

$$\text{So, } \frac{1200 \times 12}{1500 \times y} = \frac{8}{5}$$

$$y = 6 \text{ months}$$

$$x = 6 \text{ month}$$

50. (d); $\frac{2\pi rh}{2\pi r(r+h)} = \frac{3}{5}$
 $5h = 3r + 3h$
 $2h = 3r$
 and
 $2\pi rh = 1848$
 $2 \times \frac{22}{7} \times \frac{2}{3} h \times h = 1848$
 $h = 21$

51. (c); Let male who purchased book from Store E $= x$
 Then

$$x + x + 21 = \frac{22}{100} \times 550$$

$$x = 50$$

$$\text{Required number of females} = 50 + 21 = 71$$

52. (b); $\frac{18}{5} = \frac{x}{32}$
 $x = \frac{18 \times 32}{5} = 18 \times 6.4 = 115.2$

53. (e); Total books of store XYZ $= \frac{120}{100} \times 550$
 $= 660$

$$\text{Total books sold by store A and B} \\ = (18\% + 12\%) \text{ of } 660 = 198$$

54. (a); Required ratio $= (18\% + 16\%) : (32\% + 22\%)$
 $= 34 : 54 = 17 : 27$

55. (c); Required difference
 $= \frac{1}{2} [(32\% + 16\%) - (18\% + 22\%)] 550$
 $= \frac{1}{2} \times 8\% \text{ of } 550 = 4\% \text{ of } 550 = 22$

56. (d); I $x^2 + 5x + 4x + 20 = 0$
 $x(x + 5) + 4(x + 5) = 0$
 $(x + 4)(x + 5) = 0$
 $x = -4, -5$

II. $y^2 = 16$
 $y = \pm 4$
 $\therefore x \leq y$

57. (a); I. $x^2 - 7x + 12 = 0$
 $x^2 - 4x - 3x + 12 = 0$
 $x(x - 4) - 3(x - 4) = 0$
 $(x - 3)(x - 4) = 0$
 $x = 3, 4$

II. $3y^2 - 11y + 10 = 0$
 $3y^2 - 6y - 5y + 10 = 0$
 $3y(y - 2) - 5(y - 2) = 0$
 $(3y - 5)(y - 2) = 0$
 $y = 2, \frac{5}{3}$
 $\therefore x > y$

58. (c); I. $x^2 - 8x + 15 = 0$
 $x^2 - 3x - 5x + 15 = 0$
 $x(x - 3) - 5(x - 3) = 0$
 $(x - 3)(x - 5) = 0$
 $x = 3, 5$

II. $y^2 - 12y + 36 = 0$
 $y^2 - 6y - 6y + 36 = 0$
 $y(y - 6) - 6(y - 6) = 0$
 $(y - 6)(y - 6) = 0$
 $y = 6$
 $\therefore x < y$

59. (e); I. $2x^2 + 9x + 7 = 0$
 $2x^2 + 7x + 2x + 7 = 0$
 $x(2x + 7) + 1(2x + 7) = 0$
 $(x + 1)(2x + 7) = 0$
 $x = -1, -\frac{7}{2}$

II. $y^2 + 4y + 4 = 0$
 $y^2 + 2y + 2y + 4 = 0$
 $y(y + 2) + 2(y + 2) = 0$
 $(y + 2)(y + 2) = 0$
 $y = -2, -2$
 \therefore No relation.

60. (d); I. $2x^2 + 15x + 28 = 0$
 $2x^2 + 8x + 7x + 28 = 0$
 $2x(x + 4) + 7(x + 4) = 0$
 $(2x + 7)(x + 4) = 0$
 $x = (-\frac{7}{2}), -4$

II. $2y^2 + 13y + 21 = 0$
 $2y^2 + 7y + 6y + 21 = 0$
 $y(2y + 7) + 3(2y + 7) = 0$
 $(y + 3)(2y + 7) = 0$
 $y = -3, -\frac{7}{2}$
 $x \leq y$

61. (d); In 16 second distance covered by both
 $= 16 \times 25 = 400$ m
 So length of A = $400 - 205 = 195$
 Required difference = 10 m

62. (c); Let cost price of mixture = y
 $So, \frac{4}{3}y = 65$
 $y = 48.75$
 From mixture and allegation

$$\begin{array}{ccc} 60 & & x \\ & \searrow & \nearrow \\ & 48.75 & \\ & \nearrow & \searrow \\ 14 & & 18 \\ \frac{7}{9} = \frac{48.75 - x}{60 - 48.75} \end{array}$$

$78.75 = 438.75 - 9x$
 $360 = 9x$
 $x = 40$ Rs./kg

63. (a); Let B's age = x
 So A's age = $x - 3$
 $\frac{x-5}{x+1} = \frac{3}{4}$
 $x = 23$
 A's age = $23 - 3 = 20$ years

64. (d); Probability that no ball is green
 $\frac{{}^{10}C_1 \times {}^9C_1}{{}^{15}C_4} = \frac{90}{{}^{15}C_4} = \frac{3}{7}$
 Required probability = $1 - \frac{3}{7} = \frac{4}{7}$

65. (a); Let C.P. of A = x
 So C.P. of B = $200 + x$
 According to question
 $\frac{\frac{110}{100}(x+200)}{\frac{60}{100}x} = \frac{11}{4} \Rightarrow \frac{x+200}{6x} = \frac{1}{4}$
 $x = 400$
 If it is sold at 20% loss then selling price
 $= \frac{80}{100} \times 400 = 320$

66. (b); No. of students failed in Economics in year 2002
 $= \frac{(100-45)}{100} \times 3800 = 2090$
 No. of students failed in Economics in year 2003
 $= \frac{(100-60)}{100} \times 2600 = 1040$
 Required average = $\frac{2090+1040}{2} = 1565$
 Short trick = $\frac{55 \times 38 + 40 \times 26}{2} = 1565$

67. (c); No. of students failed in Statistics in year 2003
 $= \frac{100-35}{100} \times 2500 = 1625$
 No. of students failed in Economics in year 2003
 $= \frac{100-60}{100} \times 2600 = 1040$
 Required % = $\frac{1625}{1040} \times 100 = 156.25\%$
 Short trick = $\frac{65 \times 25}{40 \times 26} \times 100 = 156.25\%$

68. (d);Total no. of students appeared in Economics from 2002 to 2004
 $= 3800 + 2600 + 4800 = 11200$
 Total no. of students appeared in Statistics from 2003 to 2005
 $= 2500 + 3200 + 4800 = 10500$
 Required ratio = $11,200 : 10,500 = 16 : 15$

69. (b);Total no. of students passed in Statistics in year 2002 = $\frac{55}{100} \times 2700 = 1485$
 Total no. of students failed in Economics in year 2005 = $\frac{50}{100} \times 2200 = 1100$
 Required difference = $1485 - 1100 = 385$
 Short trick = $55 \times 27 - 50 \times 22 = 385$

70. (e);Average no. of students appeared in Economics from year 2001 to 2004 together
 $= \frac{4200+3800+2600+4800}{4} = \frac{15400}{4} = 3850$

71. (e); $\frac{?}{100} \times 750 = 450 \Rightarrow ? \approx 60$

72. (e); $\frac{(1042+?)}{3.02} = 454 \Rightarrow ? = 320$

73. (a); $\frac{310}{14} = \frac{625}{?} \Rightarrow ? \approx 28$

74. (b); $?^2 = 170 \Rightarrow ? \approx 13$

75. (c); $\approx 64 \times 16 - 58 \approx 966$

76. (a);Total no. of males visited on Tuesday and Thursday = $140 + 150 = 290$
 Total no. of females visited on Monday and Friday = $170 + 130 = 300$
 Required ratio = $290 : 300 = 29 : 30$

77. (a);Total no. of males and females together on Tuesday = $140 + 190 = 330$
 Total no. of males and females together on Thursday = $150 + 110 = 260$
 Required % = $\frac{330-260}{260} \times 100 = 26 \frac{12}{13}\%$

78. (d);Total no. of females visited from Monday to Wednesday = $170 + 190 + 140 = 500$
 Total no. of males visited from Wednesday to Friday = $180 + 150 + 120 = 450$
 Required difference = $500 - 450 = 50$

79. (b);On Saturday —
 Total no. of males visited the place
 $= \frac{125}{100} \times 120 = 150$
 Total no. of females visited the place
 $= \frac{120}{100} \times 130 = 156$
 Required males and females
 $= 150 + 156 = 306$

80. (c);Total males and females visited the place on Monday and Tuesday together
 $= 160 + 140 + 170 + 190 = 660$
 Total males and females visited the place on Thursday and Friday together
 $= 150 + 120 + 110 + 130 = 510$
 Required no. of persons = $660 - 510 = 150$

