IBPS RRB PO Pre 2025 Memory Based Paper Based on 22nd November 1st Shift

Directions (1-5): Read the given information carefully and answer the related questions:
Nine persons A, B, C, D, E, F, G, H and I sit in a row facing north but not in the same order as given. Three persons sit between B and G. C sits second to the right of G. H sits third to the left of C. E and H sit adjacent to each other. One person sits between E and A. F sits second to the left of D.

Q1. What is the position of I with respect to G?
(a) Immediate right
(b) Fifth to the left
(c) Second to the right
(d) Third to the left
(e) Third to the right

Q2. How many persons sit to the left of F?
(a) One
(b) Four
(c) Five
(d) Two
(e) Three

Q3. Number of persons sit between D and H is same as _____.
(a) Between G and C
(b) To the left of B
(c) Between E and B
(d) Between I and A
(e) To the right of F

Q4. Who among the following sits fourth to the left of C?
(a) E
(b) A
(c) I
(d) B
(e) F

Q5. Which of the following statement is correct?
I. A sits at one of the extreme ends
II. G sits exactly middle of the row
III. C and F are not immediate neighbors to each other
(a) Only I and III
(b) Only II
(c) Only I and II
(d) Only II and III
(e) Only I

Directions (6-8): Read the given information carefully and answer the related questions:
Six persons A, B, C, D, E and F – of a group, and each have different height.
A's height is more than B but less than C. Two persons are in between C and D. Number of persons smaller to A is same as the number of persons taller to E. Less than two persons are junior to F.

Q6. How many persons are in between A and F?
(a) None
(b) One
(c) Two
(d) Three
(e) Four

Q7. Who among the following person is 3rd tallest?
(a) A
(b) F
(c) B
(d) C
(e) D

Q8. Who among the following is immediate shorter to E?
(a) A
(b) C
(c) D
(d) B
(e) F

Q9. In the number **'9391648'**, how many pairs of the digits have the same number between them (both forward and backward direction) in the number series?
(a) Four
(b) Two
(c) One
(d) Three
(e) More than four

Directions (10-12): In this question, the relationship between different elements is shown in the statements. The statements are followed by conclusions. Study the conclusions based on the given statement and select the appropriate answer.

Q10. Statements:
W > T > K ≥ J; S ≥ M > K < D
Conclusions:
I. J < S
II. D > W
(a) If only conclusion I is true
(b) If only conclusion II is true
(c) If either conclusion I or II is true
(d) If neither conclusion I nor II is true
(e) If both conclusions I and II are true

Q11. Statements: G > R ≥ N < A = O ≥ X = C > P ≥ U
Conclusions:
I. A ≥ U
II. X < G
(a) If only conclusion I is true
(b) If only conclusion II is true
(c) If either conclusion I or II is true
(d) If neither conclusion I nor II is true
(e) If both conclusions I and II are true

Q12. Statements: X ≥ Z > L; P ≤ F = G; Y ≤ T = L ≤ P
Conclusions:
I. X > T
II. Y ≤ G
(a) If only conclusion I is true
(b) If only conclusion II is true
(c) If either conclusion I or II is true
(d) If neither conclusion I nor II is true
(e) If both conclusions I and II are true

Directions (13-17): Read the given information carefully and answer the related questions:
Nine boxes A, B, C, D, E, F, G, H and I are placed one above another in a stack but not in the same order as given.
Box A is placed four boxes above box C. Box G and box A are placed adjacent to each other. Two boxes are placed between box G and box B. Box E is placed immediately above box B but below box D. More than four boxes are placed above box E. Box I is placed two boxes above box F.

Q13. If box D is related to box G, in the similar way, box A is related to box B, then which box is related to box H?
(a) Box E
(b) Box C
(c) Box I
(d) Box F
(e) Box B

Q14. If all boxes are arranged as per alphabetical order from top to bottom, then how many boxes will remain unchanged at their position?
(a) None
(b) One
(c) Three
(d) More than three
(e) Two

Q15. Which of the following box is placed just below box H?
(a) Box B
(b) Box E
(c) Box A
(d) Box C
(e) Box F

Q16. How many boxes are placed between box I and box A?
(a) One
(b) Five
(c) Two
(d) Four
(e) Three

Q17. What is the position of box D with respect to box G?
(a) Four boxes below
(b) Five boxes above
(c) Two boxes above
(d) Three boxes below
(e) Immediate above

Directions (18-22): Read the given information carefully and answer the related questions:
Seven persons K, L, M, N, O, P and Q work on different designations in a company. The designations are CEO, COO, AM, GM, AGM, Manager and Clerk where CEO is seniormost and Clerk is the junior most designation. The persons also like different items i.e., pencil, fruit, rubber, paper, color, cutlery and brush. The information of persons and items is not necessarily used in the same manner as given.
P is four designations junior to the one who likes paper. K is senior to GM but not like paper and cutlery. Two persons are designated between K and Q. The number of persons senior to Q is same as the number of persons junior to the one who likes pencil. M is immediately junior to the one who likes cutlery but M is not clerk. Two persons are designated between N and the one who likes brush. O is immediately senior to the one who likes color. The one who is CEO does not like rubber.

Q18. What is the designation of L?
(a) Manager
(b) AGM
(c) Clerk
(d) AM
(e) COO

Q19. The one who is designated as CEO likes which item?
(a) Brush
(b) Rubber
(c) Cutlery
(d) Fruit
(e) Pencil

Q20. Which of the following combination is correct?
(a) AGM - P
(b) K - brush
(c) AM - fruit
(d) COO - Q
(e) M - paper

Q21. Who among the following is three persons senior to the one who likes color?
(a) The one who likes cutlery
(b) The one who is COO
(c) M
(d) Q
(e) The one who likes pencil

Q22. How many persons are senior to O?
(a) Two
(b) None
(c) Three
(d) Four
(e) One

Directions (23-25): Study the following information carefully and answer the questions given below:
A person starts walking from his office and walks for 12m in the east direction and reached Point P. From point P, he takes a right turn and walks 10m to reach point Q. From point Q, he takes a right turn and walks 7m to reach point R. From point R, he turns left and walks 2m to reach point S. Finally, from point S, he turns right and walks 5m to reach point U.

Q23. What is the direction of point U with respect to office?
(a) South-east
(b) North-west
(c) South-west
(d) South
(e) West

Q24. If Point G is 31m west of Point R, then what will be the shortest distance between point P and point G?
(a) √686m
(b) √566m
(c) 26m
(d) 24m
(e) None of these

Q25. If office is 10m north of Point M then in which direction is Point S with respect to Point M?
(a) North-east
(b) South-east
(c) North-west
(d) West
(e) South-west

Directions (26-29): In each question below some statements are given 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

Q26. Statements:
Only project are completed
Some project are difficult
All difficult are easy
Conclusions:
I. Some completed are not difficult
II. All easy being project is a possibility

Q27. Statements:
Only a few hut is house
Some house are bricks
No bricks are cement
Conclusions:
I. No Hut is cement
II. Some house are not cement

Q28. Statements:
Only a few digital are network.
All network is growth.
All growth is reward.
Conclusions:
I. Some digital is growth
II. All digital being network is a possibility

Q29. Statements:
Some glue is not paper
Only a few paper is pencil
All pencil is sharpener
Conclusions:
I. No glue is sharpener
II. Some glue is sharpener

Directions (30-32): Study the information carefully and answer the questions given below.
There are eight members in a three-generation family. No single parent is there in the family. S is the sister of W. K is the only daughter of P. U is the grandson of W. J is the sister-in-law of K who is not married. U is the son of R. W is not the mother of J. S doesn't have a brother. J has two children. R is the father of Q.

Q30. How is J related to P?
(a) Mother
(b) Daughter
(c) Sister
(d) Son-in-law
(e) Daughter-in-law

Q31. If K is married to M, then how is R related to M?
(a) Sister-in-law
(b) Brother-in-law
(c) Sister
(d) Nephew
(e) Can't be determined

Q32. If the number of males and females member of the family are equal then how is Q related to K?
(a) Brother
(b) Daughter
(c) Nephew
(d) Neice
(e) Can't be determined

Q33. Find the odd-one out.
(a) DFI
(b) MOR
(c) SUX
(d) HJL
(e) EGJ

Q34. In the number **'478732359'**, if all the odd places digit are subtracted by 1 and all the even places are added by 1 from left end, then how many digits are not repeated in the new number formed after rearrangement?
(a) 8
(b) 6, 7 and 8
(c) 7 and 8
(d) 6
(e) 6 and 7

Directions (35-39): Read the given information carefully and answer the related questions:
Eight persons A, B, C, D, E, F, G and H sit around a circular table but not in the same order as given. Some of them face inside and some face outside.
One person sits between B and C. H sits second to the right of C. Two persons sit between H and A. D sits immediate left of A. Both the immediate neighbors of A face opposite direction of A. Three persons sit between G and E. G and B face same direction but they do not sit adjacent to each other. Less than three persons face outside.

Q35. What is the position of B with respect to F?
(a) 2nd to the right
(b) 3rd to the right
(c) 2nd to the left
(d) 4th to the right
(e) 3rd to the left

Q36. Four of the following five are similar in a certain manner and related to a group. Who among the following is not related to the group?
(a) F
(b) H
(c) G
(d) D
(e) B

Q37. How many persons sit between E and D when counted from the left of D?
(a) Four
(a) Three
(c) One
(d) Two
(e) Five

Q38. Who among the following sits immediate left of H?
(a) D
(b) B
(c) E
(d) F
(e) G

Q39. Which of the following statement is/are correct?
(a) H and C face the same direction
(b) D face inside
(c) All options are correct
(d) F sits opposite to B
(e) E sits immediate right of C

Q40. If we form a four-letter meaningful word using the 3rd, 4th, 5th, and 7th letters from the left end of the word "**HIERACHY**" then what would be the second letter from the left end of that meaningful word? If no meaningful word is formed, mark the answer as X. If more than one meaningful word is formed, mark the answer as Z.
(a) Z
(b) H
(c) A
(d) X
(e) E

Directions (41-46): Read the following table carefully and answer the questions given below. The table shows the total number of mangoes sold and the percentage of mangoes sold to females by four shops.

Shops	Total number of mangoes sold	Percentage of mangoes sold to females
A	480	75%
B	560	60%
C	320	45%
D	750	80%

Q41. Find the difference between the total number of mangoes sold to males by shops A and C together and the total number of mangoes sold to females by shops B and D together.
(a) 660
(b) 640
(c) 650
(d) 610
(e) 630

Q42. The total number of mangoes sold by shop E is 25% more than that of shop C. If the number of mangoes sold to males by shop E is 3/4 of the total number of mangoes sold to males by shop B, then find the number of mangoes sold to females by shop E.
(a) 232
(b) 239
(c) 243
(d) 227
(e) 210

Q43. The total number of mangoes sold to males by shop D is what percentage more or less than the total number of mangoes sold to females by shop A?
(a) 125%
(b) 175%
(c) 150%
(d) 120%
(e) 140%

Q44. The number of mangoes sold by shop C to males and females at 25% and 50% profit, respectively. If the cost price of each mango sold by shop C is Rs 20, then find the overall profit earned by shop C (in Rs).
(a) 3120
(b) 4450
(c) 2320
(d) 3390
(e) 3450

Q45. 5/8 of the number of mangoes sold to females by shop B are rotten, and the total number of rotten mangoes sold by shop B is 315. Find the number of fresh mangoes sold to males by shop B.
(a) 104
(b) 123
(c) 119
(d) 113
(e) 134

Q46. The total number of apples sold by shop D is 20% less than the average number of mangoes sold by shops B and C. The total number of apples sold to males by shop D and the total number of mangoes sold to females by shop B are in the ratio of 9:16, respectively. Find the total number of apples sold to females by shop D.
(a) 114
(b) 153
(c) 109
(d) 123
(e) 163

Q47. A man invested Rs P in simple interest at 10% p.a. for two years and received interest of Rs 525. If he invested Rs 500 more in compound interest at the same rate for the same period, then find the compound interest he received (in Rs).
(a) 656.25
(b) 666.26
(c) 655.25
(d) 635.25
(e) 645.25

Q48. The speed of a boat in still water is 14.4 km/hr and the ratio of downstream to upstream speed of the boat is 3:1 respectively. Find the time taken by the boat to cover 216 km downstream (in hours).
(a) 8
(b) 10
(c) 7
(d) 5.5
(e) 12

Q49. A vessel contains milk and water in the ratio of 4:1, respectively. If 20 liters of mixture are taken out and 5 liters of milk are added to the mixture, then the ratio of milk to water becomes 13:2, respectively. Find the initial quantity of water (in liters).
(a) 12
(b) 9
(c) 5
(d) 6
(e) 7

Q50. A and B together can complete a work in 18 days, and B alone can complete the same work in 45 days. If 50% of the work is completed by A in (X + 10) days, then find X.
(a) 10
(b) 8
(c) 6
(d) 4
(e) 5

Q51. The ratio of the cost price to the selling price of an article is 20:27. The marked price of the article is Rs 4500, and it is sold after allowing a discount of 25%. Find the profit (in Rs).
(a) 925
(b) 900
(c) 875
(d) 775
(e) 1090

Q52. A square is cut into four equal smaller squares. The total perimeter of the original square is 168 cm. A circle is drawn whose radius is equal to the side of one smaller square. Find the area of the circle (in cm^2).
(a) 1386
(b) 1674
(c) 1342
(d) 1459
(e) 1214

Q53. A started a business with an investment of Rs 4500. After a few months, B joined the partnership with an investment of Rs 6000. At the end of the year, the total profit was Rs 2600, out of which B's share was Rs 800. Find the time period (in months) for which B invested his money in the business.
(a) 6
(b) 4
(c) 3
(d) 5
(e) 9

Q54. In a college, total non-technical girls' students are 20% less than total technical girls' students and 36% of students in college are girls. If technical girls' students are 50% of technical boys' students, then find non-technical boys' students are what percent less than technical boys' students?
(a) 35%
(b) 40%
(c) 50%
(d) 30%
(e) 25%

Q55. Length of train A is 25% more than length of train B and speed of train A is 90 km/hr. If train A crosses a pole in 12 seconds and train B crosses train A in 36 seconds while running in same direction, then find time taken by train B to cross a 400 meters long platform.
(a) 10 seconds
(b) 12 seconds
(c) 15 seconds
(d) 16 seconds
(e) 18 seconds

Q56. Age of Akash one year hence will be half of the present age of Ayush and present age of Akash is 25% less than the present age of Adarsh. If Adarsh is eighteen years younger than Ayush, then find age of Akash six years ago?
(a) 15 years
(b) 25 years
(c) 20 years
(d) 18 years
(e) 12 years

Direction (57-62): Find the approximate value of question mark (?) in the following questions.

Q57. $\frac{2079.001}{?} = \sqrt[3]{1331.01} - 35.01 \times 11.99 + 639.99$
(a) 9
(b) 13
(c) 7
(d) 15
(e) 12

Q58. $? + 247.01 - 156.09 = (17.01)^2 + 15.01\%\ of\ 79.99$
(a) 200
(b) 275
(c) 250
(d) 210
(e) 260

Q59. $\sqrt{1443.98} + (16.02)^2 = 6 \times (?)^2$
(a) 12
(b) 8
(c) 7
(d) 11
(e) 14

Q60. $32.04\%\ of\ 1499.98 - 70.01\%\ of\ 600.01 + 2.99 \times 7.01 = (?)^2$
(a) 5
(b) 14
(c) 7
(d) 11
(e) 9

Q61. $\frac{?}{3} + 171.01 + 156.99 = 321.09 + 249.01 - 97.99$
(a) 468
(b) 432
(c) 420
(d) 480
(e) 456

Q62. $59.99\%\ of\ 800 - 12.01\%\ of\ 900.1 = ? + \frac{4}{7}\ of\ 91.01$
(a) 461
(b) 320
(c) 142
(d) 280
(e) 456

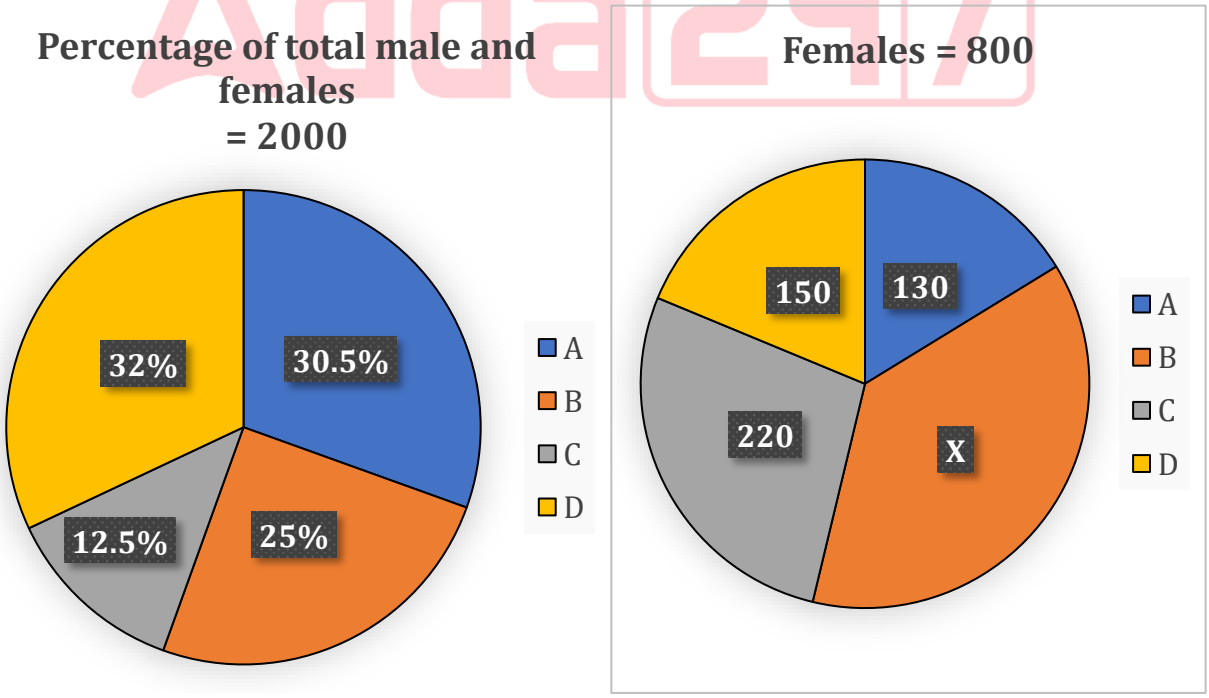
Direction (63-65): Read the data carefully and answer the following questions.
There are two buses A and B. Total number of seats in A is 40 and out of that 6 seats are vacant. The number of males occupied the seat in A is 6 more than that of females occupied the seats. The vacant seats in B is 50% less than that of A. The ratio of male occupied to females occupied the seats in bus B is 10:7. Total occupied seats in B is 50% more than A.

Q63. Find the difference between total seats in A and B.
(a) 94
(b) 92
(c) 96
(d) 100
(e) 95

Q64. Find the total seats occupied by females in both the buses is what percentage of total seats in A.
(a) 84.25%
(b) 82%
(c) 81.25%
(d) 87.5%
(e) 81.2%

Q65. Find the ratio of occupied seats in B to vacant seats in both the buses.
(a) 4:5
(b) 2:5
(c) 5:6
(d) 7:10
(e) 17:3

Direction (66-70): Read the information carefully and answer the following questions. The pie chart shows the percentage of total students (male and females) in four colleges and another pie chart shows the number of females in these colleges.



Q66. Find the average number of males in B, C & D.
(a) 240
(b) 120
(c) 360
(d) 100
(e) 150

Q67. Find the ratio of males in college C and D together to females in A and C together.
(a) 24:25
(b) 52:35
(c) 35:36
(d) 9:10
(e) 15:14

Q68. Find the total females in C and B together is what percentage of total students in D.
(a) 84.25%
(b) 82%
(c) 81.25%
(d) 100%
(e) 81.2%

Q69. In college D, total number of students is 3X, out of that 35% are females. Find the males in D is what percentage more/less than total students in B.
(a) 15%
(b) 12%
(c) 16%
(d) 10%
(e) 17%

Q70. Find the difference between total students in A & B together and twice the males in B.
(a) 740
(b) 720
(c) 760
(d) 710
(e) 750

Directions (71-75): What will come in the question (?) mark in the following number series.

Q71. 1.8, 9, 36, 108, ?, 216,
(a) 180
(b) 280
(c) 192
(d) 216
(e) 264

Q72. 157, ?, 171, 150, 185, 164
(a) 126
(b) 136
(c) 148
(d) 154
(e) 140

Q73. 224, 207, 188, 165, 136, ?
(a) 115
(b) 102
(c) 104
(d) 103
(e) 105

Q74. 4, ?, 39, 103, 228, 444
(a) 9
(b) 10
(c) 16
(d) 8
(e) 12

Q75. 6, 7, 16, 51, 208, ?
(a) 970
(b) 845
(c) 1085
(d) 985
(e) 1045

Directions (76 –80): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answers.

Q76. I. $x^2+12x+35=0$
II. $y^2+7y+10=0$
(a) $x \geq y$
(b) $x \leq y$
(c) $x>y$
(d) $x<y$
(e) x=y or no relation.

Q77. I. $x^2 - 7x - 60 = 0$
II. $y^2 + 13y + 40 = 0$
(a) $x \geq y$
(b) $x \leq y$
(c) $x>y$
(d) $x<y$
(e) x=y or no relation.

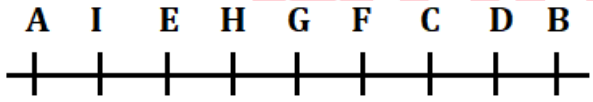
Q78. I. $x^2 + x - 12 = 0$
II. $y^2 + 2y - 15 = 0$
(a) x > y
(b) x ≥ y
(c) x < y
(d) x ≤ y
(e) x = y or no relation can be established between x and y.

Q79. I. $x^2 + 11x + 24 = 0$
II. $4y^2 + 13y + 10 = 0$
(a) x > y
(b) x ≥ y
(c) x < y
(d) x ≤ y
(e) x = y or no relation can be established between x and y.

Q80. I. $2x^2 + 13x + 21 = 0$
II. $y^2 + 6y + 9 = 0$
(a) x > y
(b) x ≥ y
(c) x < y
(d) x ≤ y
(e) x = y or no relation can be established between x and y.

Solutions

Solutions (1-5):

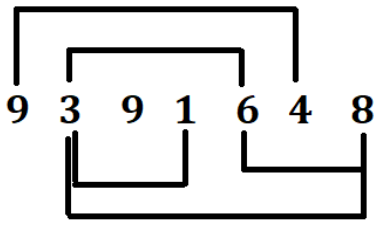


S1. Ans.(d)
S2. Ans.(c)
S3. Ans.(e)
S4. Ans.(a)
S5. Ans.(c)

Solutions (6-8):
Sol. C > A > B > D > E > F

S6. Ans.(b)
S7. Ans.(c)
S8. Ans.(e)

S9. Ans.(e)
Sol.



S10. Ans.(a)
Sol. I. J < S (True)
II. D > W (False)

S11. Ans.(d)
Sol. I. A ≥ U (False)
II. X < G (False)

S12. Ans.(e)
Sol. I. X > T (True)
II. Y ≤ G (True)

Solutions (13-17):

Boxes
I
D
F
G
A
E
B
H
C

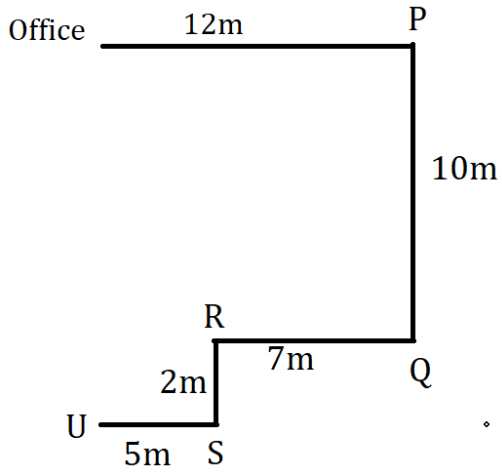
S13. Ans.(a)
S14. Ans.(b)
S15. Ans.(d)
S16. Ans.(e)
S17. Ans.(c)

Solutions (18-22):

Designations	Persons	Items
CEO	K	Fruit
COO	N	Cutlery
AM	M	Paper
GM	Q	Pencil
AGM	O	Brush
Manager	L	Color
Clerk	P	Rubber

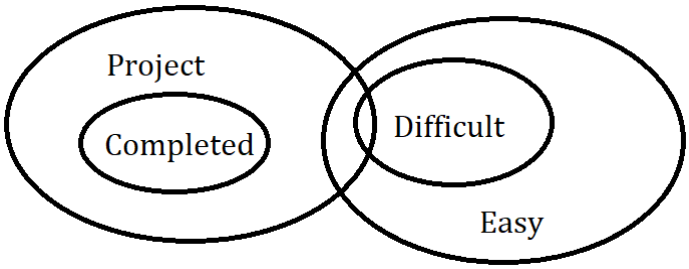
S18. Ans.(a)
S19. Ans.(d)
S20. Ans.(e)
S21. Ans.(c)
S22. Ans.(d)

Solutions (23-25):

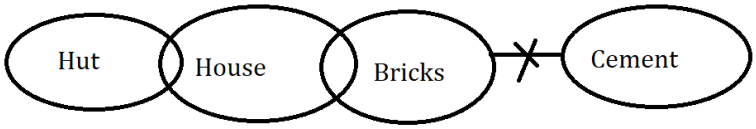


S23. Ans.(d)
S24. Ans.(c)
S25. Ans.(b)

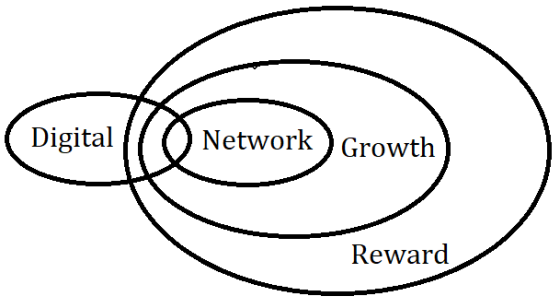
S26. Ans.(e)
Sol.



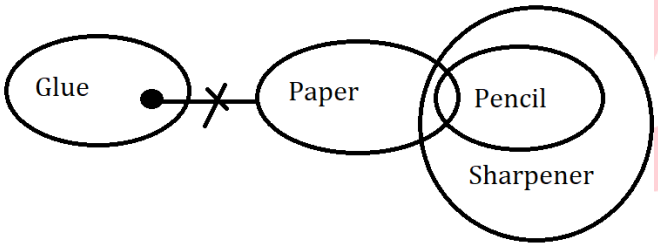
S27. Ans.(b)
Sol.



S28. Ans.(a)
Sol.



S29. Ans.(c)
Sol.



Solutions (30-32):
Sol.

S (-) — W (-) = P (+)
|
K (-) — R (+) = J (-)
|
Q (-/+) — U (+)

S30. Ans.(e)

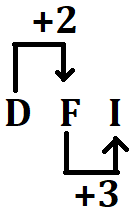
S31. Ans.(b)
Sol.

S (-) — W (-) = P (+)
|
M(+) = K (-) — R (+) = J (-)
|
Q (-/+) — U (+)

S32. Ans.(c)

S33. Ans.(d)

Sol. Logic here is:

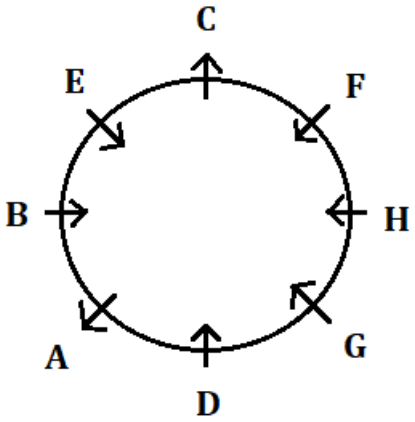


S34. Ans.(e)

Sol. 478732359 = 387823268

387823268

Solutions (35-39):



S35. Ans.(b)

S36. Ans.(a)

S37. Ans.(d)

S38. Ans.(e)

S39. Ans.(b)

S40. Ans.(a)

Sol. Meaningful words formed – HARE, HEAR.

Solutions (41-46)

For shop A

Total number of mangoes sold = 480

Number of mangoes sold to females = $480 \times \frac{75}{100} = 360$

Number of mangoes sold to males = 480 – 360 = 120

Shops	Total number of mangoes sold	Number of mangoes sold to females	Number of mangoes sold to males
A	480	360	120
B	560	336	224
C	320	144	176
D	750	600	150

S41. Ans.(b)

Sol. Total number of mangoes sold to males by shops A and C together = 120 + 176 = 296

Total number of mangoes sold to females by shops B and D together = 336 + 600 = 936

Required difference = 936 – 296 = 640

S42. Ans.(a)

Sol. The total number of mangoes sold by shop E = $\frac{125}{100} \times 320 = 400$

The number of mangoes sold to males by shop E = $\frac{3}{4} \times 224 = 168$

The number of mangoes sold to females by shop E = 400 – 168 = 232

S43. Ans.(e)

Sol. Required percentage = $\frac{360-150}{150} \times 100 = 140\%$

S44. Ans.(c)

Sol. The number of mangoes sold by shop C to males = 176

Total Profit earned from males = $176 \times 20 \times \frac{25}{100} = 880$ Rs

The number of mangoes sold by shop C to females = 144

Total Profit earned from females = $144 \times 20 \times \frac{50}{100} = 1440$ Rs

Required sum = 1440 + 880 = 2320 Rs

S45. Ans.(c)

Sol. The number of rotten mangoes sold to females by shop B = $336 \times \frac{5}{8} = 210$

The number of rotten mangoes sold to males by shop B = 315 – 210 = 105

The number of fresh mangoes sold to males by shop B = 224 – 105 = 119

S46. Ans.(e)

Sol. The total number of apples sold by shop D = $\frac{80}{100} \times \frac{560+320}{2} = 352$

The total number of apples sold to males by shop D = $336 \times \frac{9}{16} = 189$

The total number of apples sold to females by shop D = 352 – 189 = 163

S47. Ans.(a)

Sol. Information Given in the Question:

Simple Interest Rate = 10% p.a.

Time = 2 years

Simple Interest (SI) = Rs 525

Additional investment = Rs 500

Compound Interest (CI) for same rate and period to be calculated on (P + 500)

Concept/Formula Used in the Question:

Simple Interest = (Principal × rate × Time) / 100

Cumulative compound Interest = $\left(R + R + \frac{(R \times R)}{100}\right)\%$

R = Rate

Detailed Explanation:

Given,

$\frac{P \times R \times T}{100} = 525$

$= \frac{P \times 10 \times 2}{100} = 525$

$\frac{20P}{100} = 525$

$P = \frac{525 \times 100}{20} = 2625$ Rs

Cumulative compound Interest = $\left(10 + 10 + \frac{(10 \times 10)}{100}\right)\%$

= 21%

Required interest = $\frac{21}{100} \times (2625 + 500)$

= Rs 656.25

S48. Ans.(b)

Sol. Information Given in the Question:

Speed of boat in still water = 14.4 km/hr

Ratio of downstream to upstream speed = 3 : 1

Distance to be covered downstream = 216 km

Concept/Formula Used in the Question:

Let downstream speed = 3x, upstream speed = x

Boat speed in still water = (downstream + upstream) / 2 = 14.4 km/hr

Use:

$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$

$\Rightarrow \text{Time} = \frac{\text{Distance}}{\text{Speed}}$

Detailed Explanation:

Let the downstream speed = 3x km/hr

Then, upstream speed = x km/hr

So, boat speed in still water = (3x + x)/2 = 2x

Given:

2x = 14.4

⇒ x = 7.2 km/hr

Now, downstream speed = 3x = 3 × 7.2 = 21.6 km/hr

Time taken to cover 216 km downstream = Distance / Speed

= 216 / 21.6 = 10 hours

S49. Ans.(d)

Sol. Information Given in the Question:

A vessel contains milk and water in the ratio of 4:1, respectively.

20 liters of mixture are taken out and 5 liters of milk are added to the mixture, then the ratio of milk to water becomes 13:2, respectively

Detailed Explanation:

Let initial quantity of mixture = x liters

Then:

Quantity of Milk = $\frac{4}{5}$x

Quantity of Water = $\frac{1}{5}$x

ATQ,

$$\frac{\frac{4}{5}x - 20 \times \frac{4}{5} + 5}{\frac{1}{5}x - 20 \times \frac{1}{5}} = \frac{13}{2}$$

$$\frac{\frac{4}{5}x - 11}{\frac{1}{5}x - 4} = \frac{13}{2}$$

$$\frac{4x - 55}{x - 20} = \frac{13}{2}$$

8x – 110 = 13x – 260

150 = 5x

30 = x

Quantity of Water = $\frac{30}{5}$ = 6 liters

S50. Ans.(e)

Sol. Information Given in the Question:

A and B together complete the work in 18 days.

B alone completes the work in 45 days.

A alone completes 50% of the work in (X + 10) days.

Concept/Formula Used in the Question:

Work done = Efficiency × Time

Detailed Explanation:

Let the total work (LCM of 18 and 45) = 90 units

Efficiency of A and B together = 90/18 = 5 units/day
Efficiency of B = 90/45 = 2 units/day
Efficiency of A = 5 - 2 = 3 units/day
50% of the work done by A = $\frac{90\times\frac{50}{100}}{3} = \frac{45}{3} = 15$ days
ATQ,
15 = X + 10
5 = X

S51. Ans.(c)
Sol. Information Given in the Question:
Ratio of Cost Price (CP) to Selling Price (SP) = 20:27
Marked Price (MP) = Rs. 4500
Discount = 25%
Concept/Formula Used in the Question:
SP = MP × (1 - Discount%)
Profit % = [(SP - CP)/CP] × 100
Detailed Explanation:
Selling price =$4500 \times \frac{75}{100} = 3375$ Rs
Cost price = $3375 \times \frac{20}{27} = 2500$ Rs
Profit = 3375 – 2500 = Rs 875

S52. Ans.(a)
Sol. Information Given in the Question:
The perimeter of the original square = 168 cm
The square is divided into 4 equal smaller squares
A circle is drawn whose radius = side of one smaller square
We are to find the area of the circle.
Concept/Formula Used in the Question:
Perimeter of square = 4 × side
Area of circle = $\pi \times r^2$
When a square is divided into 4 equal smaller squares, each smaller square's side = (original side) / 2
Detailed Explanation:
Let the side of the original square be S
Given:
4 × S = 168 ⇒ S = 168 / 4 = 42 cm
Since the square is divided into 4 equal smaller squares,
Each smaller square has side = 42 / 2 = 21 cm
The circle is drawn with radius = 21 cm
Area of the circle = $\pi \times r^2$ = (22/7) × 21 × 21 =
= (22/7) × 441 = 1386 cm^2

S53. Ans.(b)

Sol. Information Given in the Question:

A's investment = Rs 4500 (for 12 months)

B's investment = Rs 6000 (for unknown time period)

B's share of profit = Rs 800

Total profit = Rs 2600

Concept/Formula Used in the Question:

Profit is divided in the ratio of (Investment × Time)

Let B's investment time = x months

Then,

A's share : B's share = (4500 × 12) : (6000 × x)

Detailed Explanation:

A's capital × time = 4500 × 12 = 54000

B's capital × time = 6000 × x

Profit ratio = 54000 : 6000x

= 9 : x

Total profit = 2600 Rs

B's share = 800 Rs

⇒ A's share = 2600 - 800 = 1800 Rs

ATQ,

$\frac{9}{x} = \frac{1800}{800}$

x = 4

S54. Ans.(b)

Sol. Information Given in the Question:

Non-technical girls = 20% less than technical girls

Girls = 36% of total students

Technical girls = 50% of technical boys

Required: % less of non-technical boys compared to technical boys

Detailed Explanation:

Let total students in college = 100a

Total boys = $100a \times \frac{(100-36)}{100} = 64a$

Total girls = $100a \times \frac{36}{100} = 36a$

Let us assume that technical girl student = b

So, nontechnical girl student = 0.8b

So, total girl students = 1.8b = 36a

Technical girls' students (b)= $36a \times \frac{1}{1.8} = 20a$

Total technical boys' students = $20a \times 2 = 40a$

Total non - technical boys' students = (64a – 40a) = 24a

Required percentage = $\frac{40a-24a}{40a} \times 100 = 40\%$

S55. Ans.(d)

Sol. Information Given in the Question:

Speed of train A = 90 km/hr

Train A crosses a pole in 12 seconds

Length of train A = 25% more than train B

Train B crosses train A in 36 seconds (same direction)

Required: Time taken by train B to cross a 400-meter platform

Concept/Formula Used in the Question:

Speed (in m/s) = (Speed in km/hr × 5)/18

Distance = Speed × Time

Relative speed when trains move in same direction = Difference of speeds

Total distance to cross = Length of train + Length of platform

Detailed Explanation:

Let the length of train B be 100x meters.

So, length of train A = 125x meters

ATQ –

$\frac{125x}{12} = 90 \times \frac{5}{18}$

$x = 2.4$

So, length of train B = 240 meters

And, length of train A = 300 meters

Now, the speed of train B = $\frac{240+300}{36} + 90 \times \frac{5}{18}$

= 40 m/sec

Required time = $\frac{240+400}{40}$

= 16 seconds

S56. Ans.(d)

Sol. Information Given in the Question:

Akash's age (1 year later) = ½ × Ayush's present age

Akash's current age = 25% less than Adarsh's current age

Adarsh = Ayush – 18 years

Required: Akash's age 6 years ago

Detailed Explanation:

Let present age of Adarsh be 4y years.

So, present age of Akash = $4y \times \frac{75}{100}$

= 3y years

And, present age of Ayush = $(3y + 1) \times 2$

= $(6y + 2)$ years

ATQ,

$6y + 2 - 4y = 18$

$y = 8$ years

Hence, age of Akash 6 years ago = $3y - 6$ = 18 years

S57. Ans.(a)

Sol. $\frac{2079}{?} = 11 - 420 + 640$

$\frac{2079}{?} = 231$

$? = 9$

S58. Ans.(d)

Sol. $? + 247 - 156 = 289 + \frac{15}{100} \times 80$

$? + 91 = 289 + 12$

$? = 210$

S59. Ans.(c)

Sol. $38 + 256 = 6 \times (?)^2$

$(?)^2 = \frac{294}{6}$

$? = 7$

S60. Ans.(e)

Sol. $\frac{32}{100} \times 1500 - \frac{70}{100} \times 600 + 21 = (?)^2$

$(?)^2 = 480 - 420 + 21$

$(?)^2 = 81$

$? = 9$

S61. Ans.(b)

Sol. $\frac{?}{3} = 321 + 249 - 98 - 157 - 171$

$\frac{?}{3} = 144$

$? = 432$

S62. Ans.(b)

Sol. $60\%\ of\ 800 - 12\%\ of\ 900 = ? + \frac{4}{7}\ of\ 91$

$480 - 108 = ? + 52$

$320 = ?$

Solutions (63-65):

Total seats in A = 40

Vacant seats in A = 6

Occupied seats in A = 40-6=34

Male +female=34

Male =6+female

Solving above two equation

Seats occupied by males =20
Seats occupied by females =14
Vacant seats in B = 50% of 6 = 3
Male occupied and females occupied the seats in bus B is 10x and 7x.
Occupied seats in B = 150% of 34= 51
17x = 51
3 = x

Buses	Total seats	Vacant seats	Occupied seats	Occupied by males	Occupied by females
A	40	6	34	20	14
B	54	3	51	30	21

S63. Ans.(a)
Sol. Required difference = 40 + 54 = 94

S64. Ans.(d)
Sol. Required answer = $\frac{14+21}{40} \times 100 = 87.5\%$

S65. Ans.(e)
Sol. Required ratio = 51:9 = 17:3

Solutions (66-70):
Total females in B = 800 – (130+220+150)= 300=X

Colleges	Total students	Female	Males
A	30.5% of 2000=610	130	610 – 130 = 480
B	25% of 2000 = 500	300	500-300 = 200
C	12.5% of 2000 = 250	220	250 – 220 = 30
D	32% of 2000 = 640	150	640 – 150 = 490

S66. Ans.(a)
Sol. Required average = $\frac{200+30+490}{3} = 240$

S67. Ans.(b)
Sol. Required ratio = 30+490: 130+220 = 520:350 = 52:35

S68. Ans.(c)
Sol. Required answer = $\frac{300+220}{640} \times 100 = 81.25\%$

S69. Ans.(e)
Sol. Total students in D = 3X = 3 ×300=900
Females = 35% of 900 = 315
Males = 900 – 315 = 585
Required answer $\frac{585-500}{500} \times 100 = 17\%$

S70. Ans.(d)
Sol. Required difference = (610+500)- 2×200= 710

S71. Ans.(d)
Sol. Pattern of series –
1.8 ×5=9
9 ×4=36
36 ×3=108
? = 108 ×2=**216**
216 ×1=216

S72. Ans.(b)
Sol. Pattern of series –
? = 157 – 21 = **136**
136 + 35 = 171
171 – 21 = 150
150 + 35 = 185
185 – 21 = 164

S73. Ans.(e)
Sol. Pattern of series –
Subtraction of consecutive prime number
224 – 17 = 207
207 – 19 = 188
188 – 23 = 165
165 – 29 = 136
? = 136 – 31 = **105**

S74. Ans.(e)
Sol. Pattern of series –
? = $4+2^3$ = **12**
12+27 = 39
39 + 64 = 103
103 + 125 = 228
228 + 216 = 444

S75. Ans.(e)
Sol. Pattern of series -
6×1+1=7
7×2+2=16
16×3+3=51
51×4+4=208
? = 208×5+5=**1045**

S76. Ans.(b)
Sol. I. $x^2 + 5x + 7x + 35 = 0$
$x(x + 5) + 7(x + 5) = 0$
$(x + 5)(x + 7) = 0$
$x = -5, -7$
II. $y^2 + 7y + 10 = 0$
$y^2 + 2y + 5y + 10 = 0$
$y(y + 2) + 5(y + 2) = 0$
$(y + 2)(y + 5) = 0$
$y = -2, -5$
So, $x \leq y$.

S77. Ans.(a)
Sol. I. $x^2 - 12x + 5x - 60 = 0$
$x(x - 12) + 5(x - 12) = 0$
$(x - 12)(x + 5) = 0$
$x = 12, -5$
II. $y^2 + 8y + 5y + 40 = 0$
$y(y + 8) + 5(y + 8) = 0$
$(y + 8)(y + 5) = 0$
$y = -8, -5$
$x \geq y$

S78. Ans.(e)
Sol. I. $x^2 + 4x - 3x - 12 = 0$
$(x + 4)(x - 3) = 0$
$x = 3, -4$
II. $y^2 + 5y - 3y - 15 = 0$
$(y + 5)(y - 3) = 0$
$y = -5, 3$
No relation can be established

S79. Ans.(c)
Sol. I. $x^2 + 11x + 24 = 0$
$\Rightarrow x^2 + 8x + 3x + 24 = 0$
$\Rightarrow (x + 8)(x + 3) = 0$
$\Rightarrow x = -8, -3$
II. $4y^2 + 13y + 10 = 0$
$\Rightarrow 4y^2 + 8y + 5y + 10 = 0$
$\Rightarrow (y + 2)(4y + 5) = 0$
$\Rightarrow y = -2, -\frac{5}{4}$
$x < y$

S80. Ans.(d)

Sol. I. $2x^2 + 13x + 21 = 0$

$\Rightarrow 2x^2 + 7x + 6x + 21 = 0$

$\Rightarrow x(2x + 7) + 3(2x + 7) = 0$

$\Rightarrow (x + 3)(2x + 7) = 0$

$\Rightarrow x = -3, -\frac{7}{2}$

II. $y^2 + 6y + 9 = 0$

$\Rightarrow y^2 + 3y + 3y + 9 = 0$

$\Rightarrow y(y + 3) + 3(y + 3) = 0$

$\Rightarrow (y + 3)(y + 3) = 0$

$\Rightarrow y = -3$,-3

$\therefore y \geq x$