PRACTICE SET

INSTRUCTIONS

- **This practice set consists of two sections. Quantitative Aptitude (Qs. 1-40) & Reasoning Ability (Qs. 41-80).**
- **All the questions are compulsory.**
- **Each question has five options, of which only one is correct. The candidates are advised to read all the options thoroughly.**
- **There is negative marking equivalent to 1/4th of the mark allotted to the specific question for wrong answer.**

Time : 45 Min.   **Max. Marks : 80**

QUANTITATIVE APTITUDE

DIRECTIONS (Qs. 31-34): What will come in place of the questioon mark (?) in the following questions?

1. $9^3 \times 81^2 \div 27^3 = (3)?$
   (a) 3   (b) 4
   (c) 5   (d) 6
   (e) None of these

2. $572 \div 26 \times 12 - 200 = (2)?$
   (a) 5   (b) 6
   (c) 8   (d) 7
   (e) None of these

3. $4\frac{1}{2} - 2\frac{5}{6} = ? - 1\frac{7}{12}$
   (a) $3\frac{1}{4}$ (b) $3\frac{5}{12}$
   (c) $2\frac{7}{12}$ (d) $3\frac{3}{4}$
   (e) None of these

4. $36\% \text{ of } 245 - 40\% \text{ of } 210 = 10 - ?$
   (a) 4.2   (b) 6.8
   (c) 4.9   (d) 5.6
   (e) None of these

5. $4 + 4.44 + 0.4 + 44.04 + 444 = ?$
   (a) 497.24   (b) 487.66
   (c) 496.88   (d) 469.88
   (e) None of these

6. Ram had ₹ 2 lakh, part of which he lent at 15% per annum and rest at 12% per annum. Yearly interest accured was ₹ 27600. How much did he lent at 15%?

   (a) ₹120000   (b) ₹100000
   (c) ₹80000   (d) ₹60000
   (e) None of these

7. A and B can do a piece of work in 8 days, B and C can do the same work in 12 days. If A,B and C can complete the same work in 6 days, in how many days can A and C complete the same work?
   (a) 8 days   (b) 10 days
   (c) 12 days   (d) 16 days
   (e) None of these

8. Two trains each 200 m long move towards each other on parallel lines with velocities 20 km/h and 30 km/h, respectively. What is the time that elapses when they first meet until they have cleared each other ?
   (a) 20 s   (b) 24.8 s
   (c) 28.8 s   (d) 30 s
   (e) None of these

9. Ravi's brother is 3 years elder to him. His father was 28 years of age when his sister was born while his mother was 26 years of age when he was born. If his sister was 4 years of age when his brother was born, the ages of Ravi's father and mother, respectively when his brother was born were
   (a) 32 years and 23 years
   (b) 32 years and 29 years
   (c) 35 years and 29 years
   (d) 35 years and 33 years
   (e) None of these

10. Three unbiased coins are tossed. What is the probability of getting at least 2 heads?

    (a) $\frac{1}{4}$ (b) $\frac{1}{2}$

    (c) $\frac{1}{2}$ (d) $\frac{1}{8}$

    (e) None of these

11. If the sum of a few numbers is 450 and their mean is 50 and if another number 100 is included, the mean would become
    (a) 55
    (b) 60
    (c) 75
    (d) 150
    (e) None of these

12. In a mixture of 60 litres, the ratio of milk and water is 2 : 1. What amount of water must be added to make the ratio of milk and water as 1 : 2 ?
    (a) 42 Litres
    (b) 56 Litres
    (c) 60 Litres
    (d) 77 Litres
    (e) None of these

13. The average weight of 5 men is increased by 2 Kg when one of the men whose weight is 60 Kg is replaced by a new man. The weight of the new man is
    (a) 50 Kg
    (b) 65 Kg
    (c) 68 Kg
    (d) 70 Kg
    (e) None of these

14. Two-third of a consignment was sold at a profit of 5% and the remainder at a loss of 2% if the total profit was ₹400, what was the value of the consignment ?
    (a) ₹13,000/-
    (b) ₹17,000/-
    (c) ₹15,000/-
    (d) ₹40,000/-
    (e) None of these

15. The sum of the number of boys and girls in a school is 150. If the number of boys is x, then the number of girls becomes x% of the total number of students. How many boys are there in the school ?
    (a) 51
    (b) 65
    (c) 60
    (d) 95
    (e) None of these

DIRECTIONS (Qs. 16-20): What approximate value should come in place of question mark (?) in the following questions?

You are not expected to calculate the exact value

16. 32.05% of 259.99 =?
    (a) 92
    (b) 88
    (c) 78
    (d) 90
    (e) 83

17. $\frac{1}{8}$ of $\frac{2}{3}$ of $\frac{3}{5}$ of 1715 = ?
    (a) 80
    (b) 85
    (c) 90
    (d) 95
    (e) 75

18. $25.05 \times 123.95 + 388.999 \times 15.001 = ?$
    (a) 900
    (b) 8950
    (c) 8935
    (d) 8975
    (e) 8995

19. $561 \div 35.05 \times 19.99 = ?$
    (a) 320
    (b) 330
    (c) 315
    (d) 325
    (e) 335

20. $(15.01)^2 \times \sqrt{730} = ?$
    (a) 6125
    (b) 6225
    (c) 6200
    (d) 6075
    (e) 6250

DIRECTIONS (Qs. 21-25): In each of these questions, a number series is given. In each series, only one number is wrong. Find out the wrong number.

21. 3601 3602 1803 604 154 36 12
    (a) 3602
    (b) 1803
    (c) 604
    (d) 154
    (e) 36

22. 4 12 42 196 1005 6066 42511
    (a) 12
    (b) 42
    (c) 1005
    (d) 196
    (e) 6066

23. 2 8 12 20 30 42 56
    (a) 8
    (b) 42
    (c) 30
    (d) 20
    (e) 12

24. 32 16 24 65 210 945 5197.5
    (a) 945
    (b) 16
    (c) 24
    (d) 210
    (e) 65

25. 7 13 25 49 97 194 385
    (a) 13
    (b) 49
    (c) 97
    (d) 194
    (e) 25

DIRECTIONS (Qs. 26-30) : In the following questions two equations numbered I and II are given. You have to solve both equations and
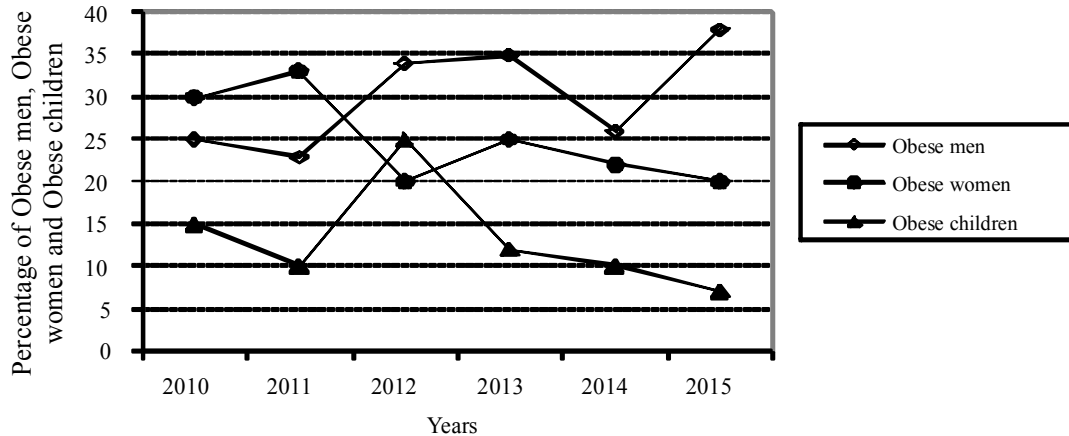
Give answer if
(a) $x > y$ (b) $x \geq y$
(c) $x < y$ (d) $x \leq y$
(e) $x = y$
or the relationship cannot be established

26. I. $x^2 - 7x + 10 = 0$
    II. $y^2 + 11y + 10 = 0$

27. I. $x^2 + 28x + 192 = 0$
    II. $y^2 + 16y + 48 = 0$

28. I. $2x - 3y = -3.5$
    II. $3x - 2y = -6.5$

29. I. $x^2 + 8x + 15 = 0$
    II. $y^2 + 11y + 30 = 0$

30. I. $x = \sqrt{3136}$
    II. $y^2 = 3136$

DIRECTIONS (Qs. 31-35): Study the following graph and table carefully and answer the questions given below them.

Total Number of Men, Women and Children in the state over the years

Years	Men	Women	Children
2010	54,000	38,000	15,000
2011	75,000	64,000	21,000
2012	63,000	60,000	12,000
2013	66,000	54,000	16,000
2014	70,000	68,000	20,000
2015	78,000	75,000	45,000

31. What was the **approximate** average of obese men, obese women and obese children in 2013?
(a) 12,683
(b) 12,795
(c) 12,867
(d) 12,843
(e) 12,787

32. The number of obese men in the year 2015 was what per cent of the men not suffering from obesity in the same year?
(a) 55
(b) 60
(c) 50.5
(d) 65.5
(e) None of these

33. What was the ratio of the obese women in the year 2014 to the obese men in the year 2014?
(a) 6 : 7
(b) 21 : 65
(c) 15 : 73
(d) 48 : 77
(e) None of these

34. What is the difference between the number of obese women and obese children together in the year 2012 and the number of obese men in the same year?
(a) 5,475
(b) 5,745
(c) 4,530
(d) 31,650
(e) None of these

35. What was the total number of children not suffering from obesity in the year 2010 and 2011 together?
(a) 4,350
(b) 31,560
(c) 4,530
(d) 31,650
(e) None of these

DIRECTIONS (Qs. 36-40) : These questions are based on the following data. Study it carefully and answer the questions that follow.

In a school having 400 students, boys and girls are in the ratio of 3 : 5. The students speak Hindi, English or both the languages. 12% of the boys speak only Hindi. 22% of the girls speak only English. 24% of the total students speak only Hindi and the number of boys speaking both the languages is six times the number of boys speaking only Hindi.

36. How many boys speak Hindi?
(a) 18
(b) 126
(c) 108
(d) 26
(e) None of these

37. How many girls speak only Hindi?
(a) 55
(b) 117
(c) 96
(d) 78
(e) None of these

38. How many students speak English?
(a) 304
(b) 79
(c) 225
(d) 117
(e) None of these

39. The number of girls speaking only Hindi is what per cent of the total number of students speaking only Hindi?
(a) 38.2%
(b) 71.8%
(c) 31.2%
(d) 78%
(e) None of these

40. What is the ratio of the number of boys to the number of girls speaking both the languages?
(a) 23 : 25
(b) 12 : 25
(c) 12 : 13
(d) 25 : 13
(e) None of these

REASONING ABILITY

DIRECTIONS (Qs. 41-45): In each question below are given two/three 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 conclusion II follows.**
(d) **if neither conclusion I nor conclusion II follows.**
(e) **if both conclusion I and conclusion II follow.**

41. **Statements** : No house is an apartment.
   Some bungalows are apartments.
   Conclusions : **I.** No house is a bungalow.
   II. All bungalows are houses.
42. **Statements** : Some gases are liquids.
   All liquids are water.
   Conclusions : **I.** All gases being water is a possibility.
   II. All such gases which are not water can never be liquids.
43. **Statements** : All minutes are seconds.
   All seconds are hours.
   No second is a day.
   Conclusions : **I.** No day is an hour.
   II. At least some hours are minutes.
(44-45): **Statements** : Some teachers are professors.
   Some lecturers are teachers.
44. **Conclusions** : **I.** All teachers as well as professors being lecturers is a possibility.
   II. All those teachers who are lecturers are also professors.
45. **Conclusions** : **I.** No professor is a lecturer.
   II. All lecturers being professors is a possibility.

DIRECTIONS (Qs. 46-50) : Study the following information carefully and answer the given questions :

A, B, C, D, E, F, G and H are sitting around a circle facing the centre but not necessarily in the same order.
   • B sits second to left of H's husband. No female is an immediate neighbour of B.
   • D's daughter sits second to right of F. F is the sister of G. F is not an immediate neighbour of H's husband.
   • Only one person sits between A and F. A is the father of G. H's brother D sits to the immediate left of H's mother. Only one person sits between H's mother and E.
   • Only one person sits between H and G. G is the mother of C. G is not an immediate neighbour of E.

46. What is position of A with respect to his mother-in-law ?
   (a) Immediate left   (b) Third to the right
   (c) Third to the left   (d) Second to the right
   (e) Fourth to the left
47. Who amongst the following is D's daughter ?
   (a) B   (b) C
   (c) E   (d) G
   (e) H
48. What is the position of A with respect to his grandchild ?
   (a) Immediate right   (b) Third to the right
   (c) Third to the left   (d) Second to the left
   (e) Fourth to the left
49. How many people sit between G and her uncle ?
   (a) One   (b) Two
   (c) Three   (d) Four
   (e) More than four
50. Four of the following five are alike in a certain way based on the given information and so form a group. Which is the one that does not belong to that group ?
   (a) F   (b) C
   (c) E   (d) H
   (e) G

DIRECTIONS (Qs. 51) :Study the following information carefully and answer the questions given below :

There are five statues - L, M, N, O and P - each of them having different height. Statue L is smaller than only statue M. Statue O is smaller than statue N. Statue O is longer than statue P. The height of the tallest statue is 20 feet. The height of the second smallest statue is 11 feet.
51. What Will be the height of statue P?
   (a) 13 feet   (b) 15 feet
   (c) 9 feet   (d) 12 feet
   (e) 14 feet

DIRECTIONS (Qs. 52-55) : Study the following information to answer the given questions:

In a certain code, 'ze lo ka gi' is a code for 'must save some money', 'fe ka so ni' is a code for 'he made good money', 'ni lo da so' is a code for 'he must be good' and 'we so ze da' is a code for 'be good save grace'.
52. Which of the following is the code of 'must'?
   (a) so   (b) da
   (c) lo   (d) ni
   (e) Cannot be determined
53. What does the code 'ze' stand for?
   (a) some   (b) most
   (c) be   (d) grace
   (e) save
54. Which of the following is the code of 'good'?
   (a) so   (b) we
   (c) ze   (d) lo
   (e) fe
55. 'grace of money' may be coded as
   (a) ka da fe   (b) we ka so
   (c) ja da we   (d) ka we yo
   (e) ja ka ze

DIRECTIONS (Qs.56-60): In the following questions, the symbols δ, ✶, %, # and @ are used with the following meaning as illustrated below.

   'P % Q' means 'P is neither greater than nor equal to Q'.
   'P δ Q' means 'P is neither smaller than nor equal to Q'.
   'P @ Q' means 'P is not greater than Q'.
   'P ✶ Q' means 'P is not smaller than Q'.
   'P # Q' means 'P is neither greater than nor smaller than Q'.
   Now, in each of the follwoing questions assuming the given statements to be true, find which of the four conclusions I, II, III and IV given below them is/are definitely true and give your answer.

56. **Statement:** R ✶ T, T δ M, M % K, K @ V
   Conclusions
   I. V δ M   **II.** V δ T
   III. M % R   **IV.** K δ R
   (a) I and II are true   (b) I and III are true
   (c) II and IV are true (d) I, III and IV are true
   (e) None of these

57. Statement: H δ J, J # N, N @ R, R δ W

Conclusions

  I. W % N   II.   W % H

  III. R # J   IV.   R δ J

  (a) Only I is true   (b) Only II is true

  (c) Only III is true   (d) Only IV is true

  (e) Either III or IV is true

58. Statement: B @ D, D δ F, F % M, M ✶ N.

Conclusions

  I. B % F   II.   M δ D

  III. N % F   IV.   N % F

  (a) None is true   (b) Only I is true

  (c) Only II is true   (d) Only III is true

  (e) Only IV is true

59. Statement: F # Z, Z @ H, H % N, N δ B

Conclusions

  I. F @ H   II.   N % Z

  III. B % H   IV.   B % Z

  (a) I and III are true   (b) II, III and IV are true

  (c) I and II are true   (d) I, II and III are true

  (e) None of the above

60. Statement : M % K, K ✶ W, W δ V, V @ N

Conclusions

  I. N ✶ K   II.   M % W

  III. K δ V   IV.   V % M

  (a) None is true   (b) Only I is true

  (c) Only II is true   (d) Only III is true

  (e) Only IV is true

DIRECTIONS (Qs. 61-65): Following questions are based on the five three-digit numbers given below.

519   328   746   495   837

61. If half of the second highest number is subtracted from the third highest number, what will be the value ?

  (a) 156   (b) 146

  (c) 213   (d) 314

  (e) None of these

62. If the positions of the first and the third digits in each of the numbers are interchanged, which of the following will be the second digit of the lowest number?

  (a) 1   (b) 2

  (c) 4   (d) 9

  (e) 3

63. If in each number the third digit becomes the first digit, the first digit becomes the second digit and the second digit becomes the third digit, which of the following will be the first digit of the second highest number?

  (a) 9   (b) 6

  (c) 5   (d) 7

  (e) 8

64. Which of the following represents the difference between the first and the second digits of the second highest number?

  (a) 4   (b) 1

  (c) 3   (d) 5

  (e) None of these

65. If '1' is subtracted from eh third digit of each number and '1' is added to the first digit of each number, which of the following will be the sum of the second and third digits of the second lowest number?

  (a) 13   (b) 9

  (c) 8   (d) 6

  (e) None of these

DIRECTIONS (Qs. 66-70): Study the following information to answer the given questions:

Twelve people are sitting in two parallel rows containing six people each such that they are equidistant from each other. In row 1: P, Q, R, S, T and V are seated and all of them are facing South. In row 2: A, B, C, D, E and F are seated 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.

    S sits third to the right of Q. Either S or Q sits at an extreme end of the line. The one who faces Q sits second to the right of E. Two people sit between Band F. Neither B nor F sits at an extreme end of the line. The immediate neighbour of B faces the person who sits third to the left of P. R and T are immediate neighbours. C sits second to the left of A. T does not face the immediate neighbour of D.

66. Who amongst the following sit at the extreme ends of the rows?

  (a) S, D   (b) Q, A

  (c) V, C   (d) P, D

  (e) Q, F

67. Who amongst the following faces S?

  (a) A   (b) B

  (c) C   (d) D

  (e) F

68. How many persons are seated between V and R?

  (a) One   (b) Two

  (c) Three   (d) Four

  (e) None of these

69. P is related to A in the same way as S is related to B based on the given arrangement. Which of the following is T related to, following the same pattern?

  (a) C   (b) D

  (c) E   (d) F

  (e) Cannot be determined

70. Which of the following is true regarding T?

  (a) F faces T.

  (b) V is an immediate neighbour of T.

  (c) F faces the one who is second to the right of T.

  (d) T sits at one of the extreme ends of the line.

  (e) Q sits second to the right of T.

DIRECTIONS (Qs. 71-72): Read the following information carefully and answwr the questions which follow.

If 'P ★ Q' means 'P is the mother of Q'.

If 'P × Q' means 'P is the father of Q'.

If 'P + Q' menas ' P is the sister of Q'.

If 'P − Q' menas 'P is the brother of Q'.

If 'P > Q' menas 'P is the son of Q'.

If 'P < Q' menas 'P is the daughter of Q'.

71. Which of the following means P is the father of S?
   (a) $P \times Q > R \bigstar S$ (b) $R \times P < Q - S$
   (c) $R + S > Q + P$ (d) $S + Q - R \bigstar P$
   (e) Cannot be determined

72. Which of the following means D is the aunt of C?
   (a) $D > B \bigstar A \bigstar C$ (b) $D + B - C \bigstar A$
   (c) $D - B - A \times C$ (d) $D + B \times A \times C$
   (e) None of these

DIRECTIONS (Qs. 73-75): Study the following information to anwer the given questions.

Point A is 5 m towards the West of point B. Point C is 2 m towards the North of point B. Point D is 3 m towards the East of point C. Point E is 2 m towards the South of point D.

73. If a person walks 2 m towards the north from point A, takes a right turn and continues to walk, which of the following points would he reach the first?
   (a) D   (b) B
   (c) E   (d) C
   (e) Cannot be determined

74. Which of the following points are in a straight line?
   (a) ABE   (b) DCA
   (c) CED   (d) BDA
   (e) ACE

75. In a row of twenty–five children facing South R is 16th 30 m. He then took a right turn and walked 20 m. He again took a right turn and walked 30 m. How far was he from the starting point ?
   (a) 70 m   (b) 60 m
   (c) 90 m   (d) Cannot be determined
   (e) None of these

DIRECTIONS (Qs. 76-80) : Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and give answer

(a) if the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.

(b) if the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.

(c) if the data either in statement I alone or in statement II alone are sufficient to answer the question.

(d) if the data in both statements I and II together are not sufficient to answer the question.

(e) if the data in both statements I and II together are necessary to answer the question.

76. What does 'Pa' stand for in the code language?
   I. 'Ra Hi Kok Pa' means 'I will tell you' and 'Hi Kok Pa Rt' means 'he will tell you' in the code language.
   II. 'Hi Pa Po Rt' means 'will he call you' and 'Pa Rok Pac Hi' means 'how will you go'.

77. Who amongst A, B, C, D, E and F is the shortest?
   I. A is shorter than C and E but not as short as F, who is shorter than B and D.
   II. C is the third in height in the ascending order and not as tall as F, A and E. B is shorter than C but not the shortest.

78. Who among A, B, C, D, E and F read the novel first?
   I. F, who gave the novel to B after reading, was the third to read the same.
   II. C, who read the novel before A, was the third to read the novel after E.

79. Who is paternal uncle of A?
   I. A is brother of M, who is daughter of H, who is sister of K, who is brother of S.
   II. Z is brother of B, who is husband of M, who is mother of G, who is sister of A.

80. What is Ellan's rank in a class of 52 students?
   I. Joseph, whose rank is 21st in the class, is ahead of Shyam by 4 ranks. Shyam is 9 ranks ahead of Ellan.
   II. Sanju is 29 ranks ahead of Ellan and Shyam is 9 ranks behind Ellan while Savitri stands exactly in the middle of Shyam and Sanju in ranks, her rank being 23.

HINTS & EXPLANATIONS

1. (c) $9^3 \times 81^2 \div 27^3 = (3)^?$
$3^{2\times3} \times 3^{4\times2} \div 3^{3\times3} = (3)^?$
$3^6 \times 3^8 \div 3^9 = (3)^?$
$(3)^{6+8-9} = (3)^?$
$(3)^5 = (3)^?$
$\therefore ? = 5$

2. (b) $572 \div 26 \times 12 - 200 = (2)^?$
$22 \times 12 - 200 = (2)^?$
$264 - 200 \, (2)^?$
$64 = (2)^?$
$(2)^6 = (2)^?$
$\therefore ? = 6$

3. (a)

4. (e) 36% of $245 - 40\% \, 210 = 10 - ?$
$88.2 - 84 = 10 - ?$
$4.2 = 10 - ?$
$? = 10 - 42 = 5.8$

5. (c) $? = 4 + 4.44 + 0.4 + 44.04 + 444$
$= 52.88 + 444 = 496.88$

6. (a) Let first part be ₹ x, then second part be ₹ $(200000 - x)$
According to question,
$$\frac{x \times 1 \times 15}{100} + \frac{(200000 - x) \times 1 \times 12}{100} = 27600$$
$\Rightarrow 15x - 12x + 2400000 = 2760000$
$\Rightarrow 3x = 2760000 - 2400000$
$\Rightarrow 3x = 360000$
$\therefore x = 120000$
Therefore he lented ₹ 120000 at 15%.

7. (a) $A's$ and $B's$ one day work $= \dfrac{1}{8}$

$B's$ and $C's$ one day work $= \dfrac{1}{12}$

$A's$, $B's$ and $C's$ one day work = $\dfrac{1}{6}$

$B's$ one day work = $\dfrac{1}{8} + \dfrac{1}{12} - \dfrac{1}{6} = \dfrac{1}{24}$

$A's$ and $C's$ one day work = $\dfrac{1}{6} - \dfrac{1}{24} = \dfrac{3}{24} = \dfrac{1}{8}$

A and C can do the work in 8 days.

8. (c) Relative speed of trains = $(20 + 30)$ km/h

$= 50$ km/h $= 50 \times \dfrac{5}{18}$ m/s

Total relative distance = $200 + 200 = 400$ m

$\therefore$ Required time = $\dfrac{400 \times 18}{50 \times 5} = 28.8$ s

9. (a): Mother's age when Ravi was born

$= 26$ years ... (i)

Father's age when his sister was born

$= 28$ years ... (ii)

Sister's age when his brother was born

$= 4$ years ... (iii)

Ravi's brother is 3 years elder to him ... (iv)

From (i) and (iv),

Mother's age when brother was born

$= 26 - 3 = 23$ years

From (ii) and (iii),

Father's age when brother was born

$= 28 + 4 = 32$ years

10. (a) Here $S = \{TTT, TTH, THT, HTT, THH, HTH, HHT, HHH\}$.

Let E = event of getting at least two heads

$= \{THH, HTH, HHT, HHH\}$.

$\therefore P(E) = \dfrac{n(E)}{n(S)} = \dfrac{4}{8} = \dfrac{1}{2}$.

11. (a) $50 = \dfrac{\text{Sum of all numbers}}{\text{number of observations}}$

$50 = \dfrac{450}{\text{Number of observations}}$

Number of observations = $\dfrac{450}{50} = 9$

New mean = $\dfrac{450 + 100}{10} = \dfrac{550}{10} = 55$

12. (c) Milk $= \dfrac{2}{3} \times 60 = 40l$

Water $= \dfrac{1}{3} \times 60 = 20l$

Let 'x' be the amount to be added to milk and water.

$\dfrac{40 + x}{20 + x} = \dfrac{1}{2}$

$80 + 2x = 20 + x$

$60 = x$

13. (d) Let total weight of 5 men be x kg and weight of new man y kg.

$\dfrac{x - 60y + y}{5} = \dfrac{x}{5} + 2$

$\Rightarrow \dfrac{x}{5} - 12 + \dfrac{y}{5} = \dfrac{x}{5} + 2$

$\Rightarrow y = 70$ kg

weight of new man = 70 kg

14. (c) Let value of consignment was ₹ x

$\left(\dfrac{2}{3}\right)^{rd}$ consignment costs $\dfrac{2x}{3}$

Selling price of $\left(\dfrac{2}{3}\right)^{rd}$ consignment

$= \dfrac{2x}{3} + \dfrac{5}{100} \times \dfrac{2x}{3} = \dfrac{7}{10}x$

S.P of $\left(\dfrac{1}{3}\right)^{rd}$ consignment $= \dfrac{x}{3} - \dfrac{2}{100} \times \dfrac{x}{3} = \dfrac{49}{150}x$

Total S.P $= \dfrac{49x}{150} + \dfrac{7x}{10} = \dfrac{49x + 105x}{150} = \dfrac{154x}{150}$

Profit = S.P − C.P

$400 = \dfrac{154x}{150} - x = \dfrac{4x}{150}$

$x = \dfrac{400 \times 150}{4} = 15000$

Value of consignment was ₹ 15,000

15. (c) If number of boys is x, then number of girls is $(150 - x)$

$(150 - x) = x$ % of 150

$150 - x = \dfrac{x}{100} \times 150 = \dfrac{3x}{2}$

$\Rightarrow \dfrac{5x}{2} = 150$

$\Rightarrow x = \dfrac{150 \times 2}{5} = 60$

Number of boys is 60

16. (e) $\dfrac{32}{100} \times 260 = 83.2 \approx 83$

17. (b) $\dfrac{1}{8} \times \dfrac{2}{3} \times \dfrac{3}{5} \times 1715 = 85.75 \approx 85$

18. (c) $25 \times 124 + 389 \times 15 = 3100 + 5835 = 8935$

19. (a) $\dfrac{561}{35} \times 20 = 320.5 \approx 320$

20. (d) $(15)^2 \times \sqrt{730} = 225 \times 27 = 6075$

21. (d)

| 3601 | 3602 | 1803 | 604 | **155** / **154** | 36 | 12 |

$\div 1 + 1 \quad \div 2 + 2 \quad \div 3 + 3 \quad \div 4 + 4 \quad \div 5 + 5 \quad \div 6 + 6$

154 is written in place of 155.

22. (a)

4   12   **45** / **42**   196   1005   6066   42511

$\times 2 + (2)^2 \quad \times 3 + (3)^2 \quad \times 4 + (4)^2 \quad \times 5 + (5)^2 \quad \times 6 + (6)^2 \quad \times 7 + (7)^2$

42 is written in place of 45.

23. (a)

2   **10** / **8**   12   20   30   42   56

$+ 4 \quad + 6 \quad + 8 \quad + 10 \quad + 12 \quad + 14$

8 is written in place of 6.

24. (e)

32   16   24   **60** / **65**   210   945   5197.5

$\times 0.5 \quad \times 1.5 \quad \times 2.5 \quad \times 3.5 \quad \times 4.5 \quad \times 5.5$

65 is written in place of 60.

25. (d)

7   13   25   49   97   **193** / **194**   385

$+ 6 \quad + 12 \quad + 24 \quad + 48 \quad + 96 \quad + 192$

194 is written in place of 193.

26. (a) I. $x^2 - 7x + 10 = 0$
$\Rightarrow x^2 - 5x - 2x + 10 = 0$
$\Rightarrow x(x - 5) - 2(x - 5) = 0$
$\Rightarrow (x - 2)(x - 5) = 0$
$\Rightarrow x = 2 \text{ or } 5$
II. $y^2 + 11y + 10 = 0$
$\Rightarrow y^2 + 10y + y + 10 = 0$
$\Rightarrow y(y + 10) + 1(y + 10) = 0$
$\Rightarrow (y + 1)(y + 10) = 0$
$\Rightarrow y = -1 \text{ or } -10$
Clearly, $x > y$

27. (d) I. $x^2 + 28x + 192 = 0$
$\Rightarrow x^2 + 16x + 12x + 192 = 0$
$\Rightarrow x(x + 16) + 12(x + 16) = 0$
$\Rightarrow (x + 12)(x + 16) = 0$
$\Rightarrow x = -12 \text{ or } -16$
II. $y^2 + 16y + 48 = 0$
$\Rightarrow y^2 + 12y + 4y + 48 = 0$
$\Rightarrow y(y + 12) + 4(y + 12) = 0$
$\Rightarrow (y + 12)(y + 4) = 0$
$\Rightarrow y = -12 \text{ or } -4$
Clearly, $x \leq y$

28. (c)

29. (b) I. $x^2 + 8x + 15 = 0$
$\Rightarrow x^2 + 5x + 3x + 15 = 0$
$\Rightarrow x(x + 5) + 3(x + 5) = 0$
$\Rightarrow (x + 5)(x + 3) = 0$
$\Rightarrow x = -5 \text{ or } -3$
II. $y^2 + 11y + 30 = 0$
$\Rightarrow y^2 + 6y + 5y + 30 = 0$
$\Rightarrow y(y + 6) + 5(y + 6) = 0$
$\Rightarrow (y + 5)(y + 6) = 0$
$\Rightarrow y = -5 \text{ or } -6$
Clearly, $x \geq y$

30. (e) $x = \sqrt{3136} = \pm 56$
$y^2 = 3136$
$\Rightarrow y = \sqrt{3136} = \pm 56$
Clearly, $x = y$

31. (c) Total number of obese men in 2013
$= 66000 \times 35\% = 23100$
Total number of obese women in 2013
$= 54000 \times 35\% = 13500$
Total number of obese children in 2013
$= 16000 \times 12.5\% = 2000$
Required average $= (32100 + 13500 + 2000) \div 3$
$= 38600 \div 3 = 12867$

32. (b) Required percentage
$\dfrac{78000 \times 37.5\%}{78000 \times 62.5\%} \times 100 = 60\%$

33. (d) Required ratio
$= \dfrac{60000 \times 20\%}{70000 \times 27.5\%} = 48 : 77$

34. (a) No, of obese women in 2012
$= 20\% \text{ of } 60000 = 12000$
Number of obese children in 2012
$= 25\% \text{ of } 12000 = 3000$
Number of obese men in 2006 = 32.5% of 63000 = 20475
Required difference $= 20475 - (12000 + 3000)$
$= 20475 - 15000 = 5475$

35. (d) Number of children not suffering from obesity in 2011 and 2010 = 90% of 21000 + 85% of 15000
$= 18900 + 12750$
Total of these two equals of 31650.

(36-40) :

	Eng	Hindi	Both	Total
Boys	24	18	108	150
Girls	55	78	117	250
Total	79	96	225	400

36. (b)   37. (d)   38. (a)
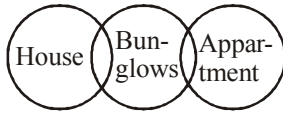39. (e)   40. (c)
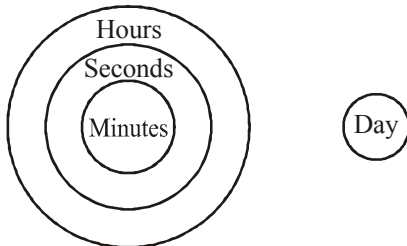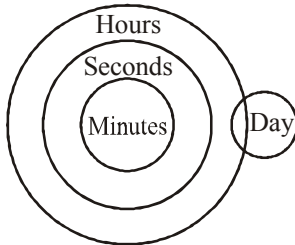
41. (d)

OR

Conclusion I : False
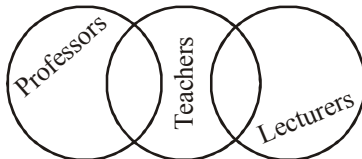Conclusion II : False

42. (a)

43. (b)

OR

Conclusion I : False
Conclusion II : True

(44-45) :

44. (a) Conclusion I : True
     Conclusion II : False
45. (b) Conclusion I : False
     Conclusion II : True.

(46-50) :
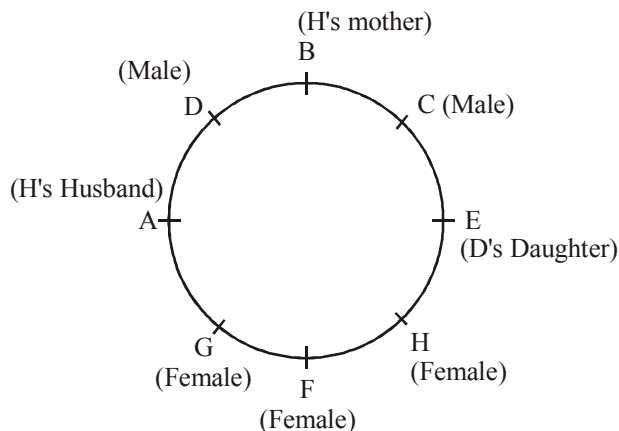
46. (d)   47. (c)   48. (b)
49. (a)   50. (b)   51. (e)

(52-55):

ze ko ka gi → must save some money   ... (i)
fe ka so ni → he made good money   ... (ii)
ni lo da so → he must be good   ...(iii)
we so ze da → he good save grace   ...(iv)

52. (c) From eqs. (i) and (ii), the code of must is 'lo'.
53. (e) From eqs. (i) and (iv), ze is 'save'.
54. (a) From eqs. (i) and (ii), the code of good is 'so'.
55. (d)

(56-60):

$P \% Q \Rightarrow P < Q$
$P \delta Q \Rightarrow P > Q$
$P @ Q \Rightarrow P \leq Q$
$P \bigstar Q \Rightarrow P \geq Q$
$P \# Q \Rightarrow P = Q$

56. (e) $R \bigstar T \Rightarrow R \geq T; T \delta M \Rightarrow T > M; M \% K \Rightarrow M < K; K @ V \Rightarrow K \leq V$
     So, $R \geq T > M < K \geq V$
     Conclusions
     I. $V \delta M \Rightarrow V > M$ (False)
     II. $V \delta T \Rightarrow V > T$ (False)
     III. $M \% R \Rightarrow M < R$ (True)
     IV. $K \delta R \Rightarrow K > R$ (False)

57. (e) $H \delta J \Rightarrow H > J; J \# N \Rightarrow J = N; N @ R \Rightarrow N \leq R; R \delta W \Rightarrow R > W$
     So, $H > J = N \leq R > W$
     Conclusions
     I. $W \% N \Rightarrow W < N$ (False)
     II. $W \% H \Rightarrow W < H$ (False)
     III. $R \# J \Rightarrow R = J$ (True)
     IV. $R \delta J \Rightarrow R > J$ (True)
     Only either III or IV is true.

58. (a) $B @ D \Rightarrow B \leq D; D \delta F \Rightarrow D > F; F \% M \Rightarrow F < M, M \bigstar N \Rightarrow M \geq N$
     So, $B \leq D > F < M \geq N$
     Conclusions
     I. $B \% F \Rightarrow B < F$ (False)
     II. $M \delta D \Rightarrow M > D$ (False)
     III. $N \% F \Rightarrow N < F$ (False)
     IV. $D \delta N \Rightarrow D > N$ (False)
     So, none of the given conclusions is correct.

59. (c) $F \# Z \Rightarrow F = Z; Z @ H \Rightarrow Z \leq H; H \% N \Rightarrow H < N; N \delta B \Rightarrow N > B$
     So, $F = Z \leq H < N > B$
     Conclusions
     I. $F @ H \Rightarrow F \leq H$ (True)
     II. $N \% Z \Rightarrow N > Z$ (True)
     III. $B \% H \Rightarrow B < H$ (False)
     IV. $B \% Z \Rightarrow B < Z$ (False)
     Only I and II are true.

60. (d) $M \% K \Rightarrow M < K; K \bigstar W \Rightarrow K \geq W; W \delta V \Rightarrow W > V, V @ N \Rightarrow V \leq N$
     So, $M < K \geq W > V \leq N$
     Conclusions
     I. $N \bigstar K \Rightarrow N \geq K$ (False)
     II. $M \% W \Rightarrow M < W$ (False)
     III. $K \delta V \Rightarrow K > V$ (True)
     IV. $V \% M \Rightarrow V < M$ (False)
     Only III is true.

61. (b) $519 - \dfrac{746}{2} = 146$

62. (d) 915 823 647 495 837

    Smallest number = 594 and 2nd digit = 9

63. (e) 951 832 674 549 783

    Second largest number = 832

    and their first digit = 8

64. (c) Second hightest number = 746

    $7 - 4 = 3$

65. (a)

    $$\begin{array}{ccc} 5\ 1\ 9 & 3\ 2\ 6 & 7\ 4\ 6 & 4\ 9\ 4 \\ {+1}\quad{-1} & {+1}\quad{-1} & {+1}\quad{-1} & {+1}\quad{-1} \\ \hline 6\ 1\ 8 & 4\ 2\ 7 & 8\ 4\ 5 & 5\ 9\ 4 \end{array}$$

    $$\begin{array}{c} 8\ 3\ 7 \\ {+1}\quad{-1} \\ \hline 9\ 3\ 6 \end{array}$$

    Second samllest number = 594 and 9 + 4 = 13

(66-70) :

Row 1.   ↓   P   V   S   T   R   Q
Row 2.   ↑   C   F   A   E   B   D

66. (d)   67. (a)   68. (b)
69. (b)   70. (c)

71. (d) Hence, P × Q < R★S shows that P is father of S.

father P ↑   R ↑ mother

daughter Q   S son

(P to Q, P crossing to S; R to S, R crossing to Q)

72. (a) None of these.

(73-75):

C —3 m→ D
↑2 m   ↓2 m
A ←5m— B ----- E

North / West ← → East / South

73. (c)
74. (a) ABE

75. (e)

← 25 children →
  (B)   (R)
  18th   16th
Right   Left

Seven children among R and B. All are facing Southward so left and right will be according.

76. (d) **From I :** *Ra Hi Kok Pa* ⟹

    I will tell you   ...(1)

    Hi Kok Pa Rt ⟹

    he will tell you   ...(2)

    From the above two clues,

    we get *Ra* means 'I' and *Rt* means 'he'.

    From II: *Hi Pa Po Rt* ⟹

will he call you   ...(3)

Pa Rok Pac Hi ⟹

how will you go   ...(4)

From the above two clues (3) and (4) we get *Hi Pa* means 'will you' and *Po Rl* means 'call he'.

From I and II: We are unable to get the meaning of 'Pa' in the given code language.

77. (c) **From I:** F is the shortest.

    |C, E| |B, D|
       A   F
       |
       F

    From II: D is the shortest.

    |F, A, E|
        C
        |
        B
        |
        D

78. (d) **From I:** Among them, F was the third person who read the novel.

    From II: Among them, C was at least the fourth person who read the novel.

    Hence, even statements I and II together are not sufficient to answer the question.

79. (b) **From I:** $H_{(-)} - K_{(+)} - S$
    |
    $A_{(+)} - M_{(-)}$

    The above family tree does not say anything about paternal uncle.

    From II: $Z_{(+)} - B_{(+)} \Leftrightarrow M_{(-)}$
    |
    $G_{(-)} - A$

    From the family tree given above, Z is the paternal uncle of A.

80. (c) **From I:** Joseph : 21st rank

    Shyam : 25th rank

    Ellan   :   34th rank

    From II:

    Savitri : 23rd rank

    Sanju : (x - 29)th rank

    Ellan   : xth rank

    Shyam : (x + 9)th rank

    Since, Savitri is exactly in the middle of Sanju and Shyam,

    therefore, $\dfrac{(x-29)+(x+9)}{2} = 23$

    $\Rightarrow x - 29 + x + 9 = 46$

    $\Rightarrow 2x = 46 + 20 \Rightarrow x = 33$

    You do not need these calculations because Ellan's rank is related with Savitri, whose rank is given. Hence, Ellan's rank can be obtained easily.