

ARITHMETIC

1. Ram went to a shop to buy 50 kg of rice. He bought two varieties of rice which cost him ₹ 4.50 per kg and ₹ 5 per kg. He spent a total of ₹ 240. What was the quantity of the cheaper rice purchased by him ?
 (a) 20 Kg (b) 25 Kg
 (c) 30 Kg (d) 40 kg
2. A man has ₹ 640 in the denominations of one rupee, five rupee and ten rupee notes. The number of each type of notes are equal. What is the total number of notes he has ?
 (a) 60 (b) 150
 (c) 90 (d) 120
3. Which of the following fractions are in ascending order ?
 (a) $\frac{2}{3}, \frac{3}{5}, \frac{7}{9}, \frac{9}{11}, \frac{8}{9}$
 (b) $\frac{3}{5}, \frac{2}{3}, \frac{9}{11}, \frac{7}{9}, \frac{8}{9}$
 (c) $\frac{3}{5}, \frac{2}{3}, \frac{7}{9}, \frac{9}{11}, \frac{8}{9}$
 (d) $\frac{8}{9}, \frac{9}{11}, \frac{7}{9}, \frac{2}{3}, \frac{3}{5}$
4. If $\frac{4}{5}$ th of an estate is worth ₹ 16,800, then the value of $\frac{3}{7}$ th of the estate is
 (a) ₹ 9000 (b) ₹ 21000
 (c) ₹ 72000 (d) ₹ 90000
5. Simplify: $\frac{69 \times 69 \times 69 - 65 \times 65 \times 65}{69 \times 69 + 69 \times 65 + 65 \times 65}$
 (a) 1 (b) 4
 (c) 0.216 (d) 0.164
6. How many digits will be there to the right of the decimal point in the product of 95.75 and 0.02554 ?
 (a) 5 (b) 6
 (c) 7 (d) Insufficient data
7. 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
8. 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
9. 19 persons went to a hotel for a combined dinner party. 13 of them spent ₹ 79 each on their dinner and the rest spent ₹ 4 more than the average expenditure of all the 19. What was the total money spent by them ?
 (a) 1878 (b) 1760
 (c) 1536 (d) 1492
10. 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
11. In an examination a candidate has to get 35% of total marks to pass. In one paper he gets 62 out of 150 and in the second 35 out of 150. How many marks should he get out of 200 marks in the third paper to pass ?
 (a) 61 (b) 68
 (c) 70 (d) 78
12. A mixture of 40 litres of milk and water contains 10% water. How much water should be added to this mixture so that the new mixture contains 20% water ?
 (a) 4 litres (b) 5 litres
 (c) 6.5 litres (d) 7.5 litres
13. 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/-
14. 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

15. A sell 2 TV sets, one at a loss of 15% and another at a profit of 15%. Find the loss/gain percentage in the overall transaction?
- (a) 2.25% (b) 3%
(c) 4% (d) No profit, no loss

Directions (Qs. 16-17): What will come in place of question mark (?) in the following questions?

16. 32.05% of 259.99 = ?
(a) 92 (b) 88
(c) 78 (d) 83
17. $\frac{1}{8}$ of $\frac{2}{3}$ of $\frac{3}{5}$ of 1715 ?
(a) 80 (b) 85
(c) 90 (d) 95

Directions (Qs. 18-19): In each of these questions, a number series is given. In each series, only one number is wrong. Find out the wrong number.

18. 32 16 24 65 210 945 5197.5
(a) 945 (b) 16
(c) 24 (d) 65
19. 7 13 25 49 97 194 385
(a) 13 (b) 49
(c) 97 (d) 194
20. Present age of Sudha and Neeta are in the ratio of 6 : 7 respectively. Five years ago their ages were in the ratio of 5 : 6 respectively. What is Sudha's present age?
(a) 30 years (b) 35 years
(c) 40 years (d) Cannot be determined
21. The capacity of a cylindrical tank is 246.4 litres. If the height is 4 metres, what is the diameter of the base?
(a) 1.4m (b) 2.8m
(c) 14m (d) None of these
22. If $\sqrt{x} - \sqrt{49} = 8.2$, then the value of x is equal to:
(a) 1.20 (b) 1.40
(c) 1.44 (d) 1.89
23. When $x^5 + 1$ is divided by $(x-2)$, the remainder is:
(a) 15 (b) 17
(c) 31 (d) 33
24. If $a = 3 + 2\sqrt{2}$, then the value of $\frac{a^6 - a^4 - a^2 - 1}{a^3}$ is
(a) 192 (b) 240
(c) 204 (d) 212

25. If $x - \frac{1}{x} = 4$ find the value of $x^3 - \frac{1}{x^3}$
(a) 75 (b) 76
(c) 67 (d) 57
26. The length of perpendicular from (4, 3) to the straight line which makes intercepts 4, 3 on the axes, is
(a) $\frac{7}{5}$ (b) $\frac{9}{5}$
(c) $\frac{12}{5}$ (d) $\frac{24}{5}$
27. If the sum of the series $54 + 51 + 48 + \dots$ is 513, then the number of terms are
(a) 18 (b) 20
(c) 17 (d) None of these
28. An arc of 60° in one circle is double the arc in a second circle whose radius is three times that of the first circle. What is the degree measure of the arc of the second circle?
(a) 30° (b) 20°
(c) 10° (d) 1°
29. In a circle of radius 10 cm, a chord is drawn 6 cm from its centre. If another chord, half the length of the original chord were drawn, its distance in centimetres from the centre would be :
(a) $\sqrt{84}$ (b) 9
(c) 8 (d) 3π
30. The traffic lights at three different road crossings change after every 48 sec., 72 sec., and 108 sec. respectively. If they all change simultaneously at 8:20:00 hrs, then at what time will they again change simultaneously?
(a) 10 (b) 12
(c) 14 (d) 16
31. Two trains are running at 40 km/h and 20 km/h respectively in the same direction. Fast train completely passes a man sitting in the slower train in 5 seconds. What is the length of the fast train?
(a) 23m (b) $23\frac{2}{9}$ m
(c) 27m (d) $27\frac{7}{9}$ m
32. The maximum value of $(\sin \theta + \cos \theta)$ is
(a) 1 (b) $\sqrt{2}$
(c) 2 (d) $2\sqrt{2}$

33. If $7 \sin^2 x + 3 \cos^2 x = 4$, $0 < x < 90^\circ$, then the value of $\tan x$ is
 (a) $\sqrt{3}$ (b) 1
 (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{\sqrt{3}}$
34. If $\tan A + \sin A = p$, $\tan A - \sin A = q$, then
 (a) $p^2 + q^2 = 4\sqrt{pq}$ (b) $p^2 - q^2 = 4\sqrt{pq}$
 (c) $p^2 - q^2 = \sqrt{pq}$ (d) $p^2 - q^2 = 2\sqrt{pq}$
35. If $x = \cot \theta + \operatorname{cosec} \theta$, what is the value of $\frac{1 + \cos \theta}{1 - \cos \theta}$?
 (a) x (b) x^2
 (c) $\frac{1}{x}$ (d) $\frac{1}{x^2}$
36. If $\tan 62^\circ = \frac{P}{Q}$, then $\tan 28^\circ$ is equal to
 (a) $\frac{P}{Q}$ (b) $\frac{Q}{P}$
 (c) $\frac{P^2 - Q^2}{P}$ (d) $\frac{Q}{P^2}$
37. The angles of elevation of an artificial satellite measured from two earth stations are 30° and 60° , respectively. If the distance between the earth stations is 4000 km, then the height of the satellite is :
 (a) 2000 km (b) 6000 km
 (c) 3464 km (d) 2828 km
38. What is the average percentage growth of sales of Assembled PCs for the given years?
 (a) 30 (b) 20
 (c) 40 (d) 35
39. If the Branded PCs sold in 1996 were 100000, how many Branded PCs were sold in 1999?
 (a) 202800 (b) 156000
 (c) 234000 (d) 300000
40. What is the difference between total Branded and total Assembled PCs sold for the given years?
 (a) 75000 (b) 750000
 (c) 175000 (d) Cannot be determined

GENERAL INTELLIGENCE & REASONING

Directions (41-42): Select the related word/letters/number from the given alternatives.

41. Book : Publisher : : Film : ?
 (a) Producer (b) Director
 (c) Editor (d) Writer
42. Radio : Listener : : Film : ?
 (a) Producer (b) Actor
 (c) Viewer (d) Director

Directions (43-44): In each of the following questions, four words have been given, out of which three are alike in some manner and the fourth one is different. Choose out the odd one.

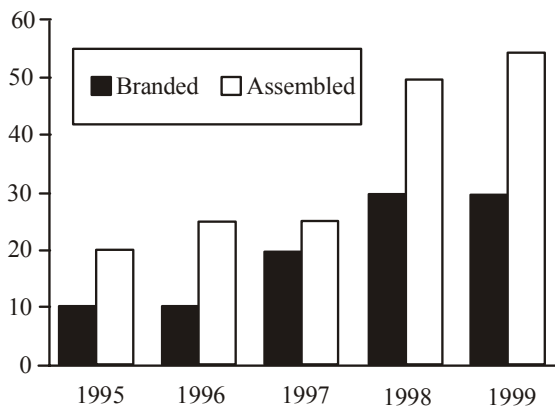
43. (a) Sailor (b) Tailor
 (c) Goldsmith (d) Blacksmith
44. (a) Broker (b) Salesman
 (c) Customer (d) Hawker
45. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
 ac _ cab _ baca _ aba _ aca _
 (a) acbcc (b) aacbc
 (c) babbb (d) bcbba

Directions (Q. 46): In the following question, a series is given, with one/two term(s) missing. Choose the correct alternative from the given ones that will complete the series.

46. ? DREQ, GUHT, JXKW
 (a) EFRS (b) TGSE
 (c) JWVI (d) AOBN

Directions (Qs. 38-40): Study the following graph carefully and answer the questions given below:

The following graph shows the percentage growth of Branded and Assembled PCs

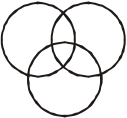


47. Find the wrong number in the series. 6, 12, 21, 32, 45, 60
 (a) 6 (b) 12
 (c) 21 (d) 32

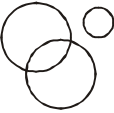
Direction (Qs. 48-50): In each of the following questions various terms of a series are given with one term missing as shown by (?). Choose the missing term.

48. 56, 90, 132, 184, 248, ?
 (a) 368 (b) 316
 (c) 362 (d) 326
49. C4X, F9U, I16R, ?
 (a) L25P (b) L25O
 (c) L27P (d) None of these
50. 2Z5, 7Y7, 14X9, 23W11, 34V13, (?)
 (a) 27U24 (b) 45U15
 (c) 47U15 (d) 47V14
51. If MEKLF is coded as 91782 and LLLJK as 88867, then how can IGHED be coded?
 (a) 97854 (b) 64521
 (c) 53410 (d) 75632
52. If in a certain code HYDROGEN is written as JCJZYSSD, then how can ANTIMONY be written in that code?
 (a) CPVKOOPA (b) CRZQWABO
 (c) ERXMQSRC (d) GTZOSUTE
53. What is the relation between the son of Rajkumar's sister's father in law and Raj Kumar.
 (a) Father, Son
 (b) Father-in-law, Son-in-law
 (c) Son-in-law, Father-in-law
 (d) Uncle, Nephew
54. A is father of C and D is son of B. E is brother of A. If C is sister of D how is B related to E?
 (a) Sister-in-law (b) Sister
 (c) Brother (d) Brother-in-law
55. Sandhya walks straight from point A to B which is 2 kms away. She turns left, at 90° and walks 8 kms to C, where she turns left again at 90° and walks 5 kms to D. At D she turns left at 90° and walks for 8 kms to E. How far is she from A to E?
 (a) 2 (b) 3
 (c) 5 (d) 8
56. A man starts from a point, walks 4 miles towards north and turns left and walks 6 miles, turns right and walks for 3 miles and again turns right and walks 4 miles and takes rest for 30 minutes. He gets up and walks straight 2 miles in the same direction and turns right and walks on mile. What is the direction he is facing?

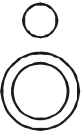
- (a) North (b) South
 (c) South-east (d) West
57. Among five children A, B, C, D and E. B is taller than E but shorter than A. A is shorter than C but taller than D who is taller than B. If all the children stand in a line according to their heights, who would be fourth if counted from the tallest one?
 (a) A (b) E
 (c) D (d) B
58. P, Q, R and T answered an Examination. In the result Q was immediately followed by 'P'. 'R' was ahead of 'Q' but could not score as much as 'T'. Who scored the second highest?
 (a) P (b) Q
 (c) R (d) T
59. From the given alternative words, select the word which can be formed using the letters of the given word:
 STRANGULATION
 (a) TRIANGLE (b) GARLAND
 (c) ROASTING (d) TRAUMA
60. From the given alternative words, select the word which **cannot** be formed using the letters of the given word:
 CONCENTRATION
 (a) CONCERN (b) NATION
 (c) TRAIN (d) CENTRE
61. Which one of the given responses would be a meaningful order of the following?
 1. Sentence 2. Word
 3. Chapter 4. Phrase
 5. Paragraph
 (a) 4, 3, 1, 2, 5 (b) 2, 3, 5, 4, 1
 (c) 3, 5, 1, 4, 2 (d) 1, 3, 2, 4, 5
62. Arrange the following words as per order in the dictionary:
 1. Inhabit 2. Ingenious
 3. Inherit 4. Influence
 5. Infatuation
 (a) 1, 2, 3, 4, 5 (b) 5, 4, 1, 2, 3
 (c) 4, 5, 2, 1, 3 (d) 5, 4, 2, 1, 3
63. If 3rd January is Sunday, what date will be three days after the fourth Wednesday in the month?
 (a) 30 (b) 27
 (c) 26 (d) 23
64. Mohit correctly remembers that his father's birthday is not after eighteenth of April. His sister correctly remembers that their father's birthday is before twentieth but after seventeenth of April. On which day in April was definitely their father's birthday?

- (a) Seventeenth
(b) Nineteenth
(c) Eighteenth
(d) Seventeenth or Eighteenth
65. Mrs. Susheela celebrated her wedding anniversary on Tuesday, 30th September 1997. When will she celebrate her next wedding anniversary on the same day?
(a) 30 September 2003
(b) 30 September 2004
(c) 30 September 2002
(d) 30 October 2003
66. A clock gains five minutes every hour. What will be the angle traversed by the second hand in one minute?
(a) 360° (b) 360.5°
(c) 390° (d) 380°
67. Which one of the following diagrams represent the correct relationship among 'Judge', 'Thief' and 'Criminal'?
- 

(a)



(b)



(c)



(d)
68. Out of 100 families in the neighbourhood, 50 have radios, 75 have TVs and 25 have VCRs. Only 10 families have all three and each VCR owner also has a TV. If some families have radio only, how many have only TV?
(a) 30 (b) 35
(c) 40 (d) 45

Direction (Qs. 69-70): In each of the following questions, one, two or more statements are given followed by conclusion I, II or more. you have to consider the statements to be true, even if they seem to be at variance from commonly known facts. You are to decide which of the given conclusions definitely follows from the given statements.

69. Statements:

1. Some food are sweet.
2. Some food are sour.

Conclusions:

- I. All food are either sweet or sour.
- II. Some sweets are sour.

- (a) Only Conclusion I follows.
(b) Only conclusion II follows.
(c) Both Conclusions I and II follows.
(d) Neither conclusion I nor II follows.

70. Statements:

1. Science teachers do not use plastic bags.
2. Plastic bags are not use by some engineers.

Conclusions:

- I. All Science teachers are engineers.
 - II. All Engineers do not use plastic bags.
- (a) Only conclusion I follows.
(b) Only conclusion II follows.
(c) Both conclusions I and II follow.
(d) Neither conclusion I nor II follows.

71. Some equations are solved on the basis of a certain system. Find the correct answer for the unsolved equation on that basis. If $324 \times 289 = 35$, $441 \times 484 = 43$, $625 \times 400 = 45$, find the value of 256×729 .

- (a) 33 (b) 35
(c) 43 (d) 34

72. If $-$ stands for division, $+$ for multiplication, $\div$ for subtraction and $\times$ for addition, then which one of the following equations is correct?

- (a) $19 + 5 - 4 \times 2 \div 4 = 11$
(b) $19 \times 5 - 4 \div 2 + 4 = 16$
(c) $19 \div 5 + 4 - 2 \times 4 = 13$
(d) $19 \div 5 + 4 + 2 \div 4 = 20$

73. Shan is 55 years old, Sathian is 5 years junior to Shan and 6 years senior of Balan. The youngest brother of Balan is Devan and he is 7 years junior to him. So what is the age difference between Devan and Shan?

- (a) 18 years (b) 15 years
(c) 13 years (d) 7 years

74. Ravi has spent a quarter $\left(\frac{1}{4}\right)$ of his life as a boy, one-fifth $\left(\frac{1}{5}\right)$ as a youth, one-third $\left(\frac{1}{3}\right)$ as man and thirteen (13) years in old age. What is his present age?

- (a) 70 years (b) 80 years
(c) 60 years (d) 65 years

75. 'F' can be represented by 02, 14, 33, etc. and 'K' can be represented by 56, 68, 87 etc. Identify the set for the word BUSH.

MATRIX-I

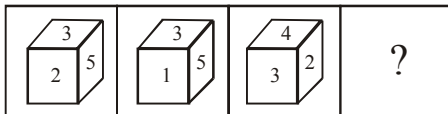
	0	1	2	3	4
0	M	L	F	H	B
1	H	B	M	L	F
2	L	F	H	B	M
3	B	M	L	F	H
4	F	H	B	M	L

MATRIX-II

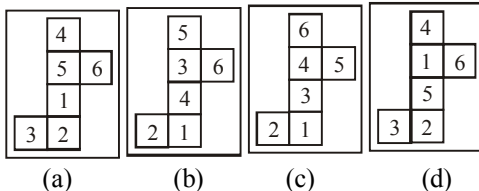
	5	6	7	8	9
5	L	K	S	U	N
6	U	N	I	K	S
7	K	S	U	N	I
8	N	I	K	S	U
9	S	U	N	I	K

- (a) 22, 77, 57, 23 (b) 23, 77, 57, 22
(c) 23, 77, 56, 22 (d) 23, 77, 57, 21
76. Three views from the same cube are given. All the faces of the cube are numbered from 1 to 6. Select one figure which will result when the cube is unfolded.

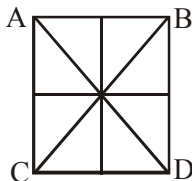
Question Figures:



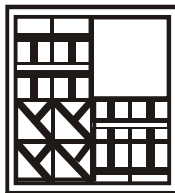
Answer Figure:



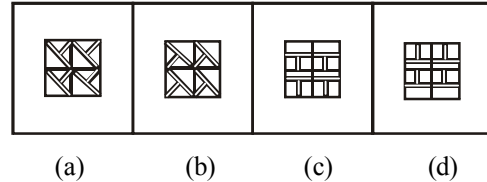
77. How many triangles are there in the given figure?



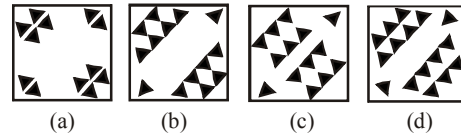
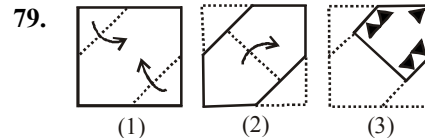
- (a) 16 (b) 14
(c) 8 (d) 12
78. Which answer figure will complete the pattern in the question figure?



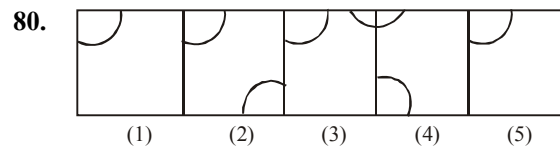
Answer Figure:



DIRECTION (Q.79) : In each of the following questions a set of three figures 1, 2 and 3 showing a sequence of folding of a piece of paper. Fig. (3) shows the manner in which the folded paper has been cut. These three figures are followed by four answer figures from which you have to choose a figure which would most closely resemble the unfolded form of fig. (3).



DIRECTIONS (Q. 80) : In each of the following questions there are given five figures. If two of these figures are interchanged in a question, the five figures are arranged in a certain order. You have to select from the four given alternatives the correct answer for each question.



- (a) 1,2 (b) 1,3
(c) 2,3 (d) 2,4

GENERAL AWARENESS

81. Meaningful filename helps in easy file
(a) Storing (b) Accessing
(c) Identification (d) Printing
82. To restart the computer key is used.
(a) Del + Ctrl (b) Backspace + Ctrl
(c) Ctrl + Alt + Del (d) Reset

83. Housing all hardware, software, storage, and processing in one site location is called
 (a) time-sharing
 (b) a distributed system
 (c) centralized processing
 (d) A host computer
84. A computer works on a number system.
 (a) binary (b) octal
 (c) decimal (d) hexadecimal
85. A record is related to a file, as a statement is related to a
 (a) procedure (b) file
 (c) program (d) data
86. What is GARNISHEE order?
 (a) An order issued by the court prohibiting withdrawal from the account of a depositor
 (b) An executive order prohibiting withdrawal from the account of a depositor
 (c) A Court order issued prohibiting transaction of a particular land
 (d) None of these
87. Identify the medical trio of Ancient India from the following names.
 (a) Charaka, Susruta and Vagbhata
 (b) Charaka, Vatsyayana and Vagbhata
 (c) Charaka, Susruta and Bharata
 (d) Charaka, Susruta and Patanjali
88. Highly polluted water could have a Biological Oxygen Demand (BOD) value of:
 (a) 17 ppm or more (b) Less than 5 ppm
 (c) Less than 4 ppm (d) Less than 3 ppm
89. Uber cup and Thomas cup are associated with:
 (a) Chess (b) Cricket
 (c) Badminton (d) Table Tennis
90. The headquarter of International Olympic Committee is situated at:
 (a) Lausanne, Switzerland
 (b) Geneva, Switzerland
 (c) Zurich, Switzerland
 (d) None of the above
91. Supersonic plane fly with the speed
 (a) less than the speed of sound
 (b) of sound
 (c) greater than the speed of sound
 (d) of light
92. Mach number is used in connection with the speed of
 (a) sound (b) aircraft
 (c) spacecraft (d) ships
93. On a stationary sail boat, air is blown from a fan attached to the boat. The boat
 (a) moves in opposite direction in which the air is blown
 (b) does not move
 (c) moves in the same direction in which air blows
 (d) spins around
94. Rainbow is due to
 (a) absorption of sunlight in minute water droplets
 (b) diffusion of sunlight through water droplets
 (c) ionisation of water deposits
 (d) refraction and reflection of sunlight by water droplets
95. Stars which appear single to the naked eye but are double when seen through a telescope are
 (a) novas & supernovas (b) binaries
 (c) asteroids (d) quasars
96. ML^2T^{-2} is the dimensional formula for
 (a) moment of inertia (b) pressure
 (c) elasticity
 (d) couple acting on a body
97. Radio telescopes are better than optical telescopes because
 (a) they can detect faint galaxies which no optical telescope can
 (b) they can work even in cloudy conditions
 (c) they can work during the day and night
 (d) All of the above
98. Light Emitting Diodes (LED) is used in fancy electronic devices such as toys emit
 (a) X-rays (b) ultraviolet light
 (c) visible light (d) radio waves
99. Out of the following pairs, which one does not have identical dimension?
 (a) Moment of inertia and moment of a force
 (b) Work and Torque
 (c) Angular momentum and Planck's constant
 (d) Impulse and Momentum
100. Mercury is commonly used as a thermometric fluid rather than water because
 (a) specific heat of mercury is less than water
 (b) specific heat of mercury is more than water
 (c) mercury has greater visibility than water
 (d) density of mercury is more than the water
101. Optical fibre works on the
 (a) principle of refraction
 (b) total internal reflection
 (c) Scattering
 (d) Interference

102. Which of the following is NOT a method of voting in the Lok Sabha?
 (a) Voice vote (b) Division
 (c) Casting vote (d) Tactial vote
103. Three of India's mountain peaks are arranged below in the descending order of height. Which is the correct order?
 (a) Kanchenjunga, Nanda Devi, Badrinath peak
 (b) Kanchenjunga, Badrinath peak, Nanda Devi
 (c) Badrinath peak, Kanchenjunga, Nanda Devi
 (d) Badrinath peak, Nanda Devi, Kanchenjunga
104. Which of the following Indian states shares a border with China?
 (a) Haryana (b) Himachal Pradesh
 (c) Mizoram (d) Punjab
105. What is the ratio of the width of India's National Flag to its length?
 (a) Two to three (b) One to two
 (c) Three to four (d) Two to five
106. Which of the following is NOT true of Indian Standard Time?
 (a) 5.5 hours ahead GMT
 (b) 4.5 hours behind Australian Eastern Standard Time
 (c) 10.5 hours ahead of American Eastern Standard Time
 (d) India has two Standard Times.
107. In which part of India is desert region located?
 (a) Eastern and north eastern
 (b) Western and northwestern
 (c) Western and southwestern
 (d) Eastern and southeastern
108. Which of the following is NOT true of water?
 (a) It makes up 70% of earth's surface
 (b) About 97% of water on earth's surface is too salty for drinking or irrigation
 (c) A molecule of water consists of two atoms of hydrogen and one atom of oxygen
 (d) Zero degree Fahrenheit is the temperature at which water freezes.
109. The first woman to conquer Mount Everest twice is
 (a) Surja Lata Devi
 (b) Jyoti Randhawa
 (c) Santosh Yadav (d) Suma Shirur
110. Which one of the following iron and steel works in India is *not* under public sector?
 (a) Bokaro (b) Jamshedpur
 (c) Bhilai (d) Durgapur
111. India's first scented postage stamp has the fragrance of
 (a) Rose (b) Sandalwood
 (c) Jasmine (d) Lemon
112. Which of the following is correct about the postal network of the world?
 (a) India has the largest number of post offices and the largest number or postal employees
 (b) India has the largest number of post offices, but does not employ the largest number of postal employees.
 (c) India employs the largest number of postal employees, but does not have the largest number of post offices.
 (d) There are many countries with more number of post offices than India has.
113. How many years of its existence did the Indian Railways celebrate in the year 2002-2003?
 (a) 50 (b) 150
 (c) 25 (d) 100
114. After Kolkata, which city in India started a metro railway?
 (a) New Delhi (b) Mumbai
 (c) Bengaluru (d) Hyderabad
115. Mumbai has the world's busiest suburban railway network. Name it.
 (a) Western Line (b) Harbour Line
 (c) Central Line (d) Eastern Line
116. Which Indian city will host India-China Joint Training Exercise "Hand-in-Hand 2016"?
 (a) Kochi (b) Pune
 (c) Bhubaneswar (d) Madurai
117. Prime Minister Narendra Modi flagged off a weekly 'Shabd Bhedi' Superfast Express train to run between which cities?
 (a) Ghazipur & Kolkata (b) Jaipur & Kolkata
 (c) Bathinda & Ghazipur (d) Ghazipur & Jaipur
118. The 14-Days India International Trade Fair (IITF) is organized in which state?
 (a) Ahmedabad (b) New Delhi
 (c) Pune (d) Mumbai
119. What is the new date for presenting the union Budget as decided by government of India?
 (a) February 20 (b) March 1
 (c) February 28 (d) February 1
120. Which country is going to host invictus games 2018?
 (a) New Zealand (b) Singapore
 (c) Australia (d) Japan

Hints & Explanations

1. (a) Let one variety of rice be x kg.
Another quantity = $(50 - x)$ kg
According to question $x \times 4.50 + (50 - x) 5 = 240$
 $4.5x + 250 - 5x = 240$
 $0.5x = 10$
 $x = 20$
Hence, the quantity of cheaper rice was 20 kg.
2. (d) Let the number of each type of notes be x .
According to question $1 \times x + 5 \times x + 10 \times x = 640$
 $16x = 640$
 $x = 40$
Total number of notes = $40 + 40 + 40 = 120$
3. (c) $\frac{2}{3}$ 0.67
 $\frac{3}{5}$ 0.6
 $\frac{7}{9}$ 0.7
 $\frac{9}{11}$ 0.81
 $\frac{8}{9}$ 0.88
Correct Ascending order
 $= \frac{3}{5} \frac{2}{3} \frac{7}{9} \frac{9}{11} \frac{8}{9}$
4. (a) Let the value of estate be x .
 $\frac{4}{5}x = 16800 \Rightarrow x = 16800 \times \frac{5}{4} = 21000$
Then, $\frac{3}{7} \times 21000 = 9000$
5. (b) $\frac{69 \times 69 \times 69 - 65 \times 65 \times 65}{69 \times 69 + 69 \times 65 + 65 \times 65}$
Using $\frac{a^3 - b^3}{a^2 + ab + b^2} = a - b$
 $\therefore 69 - 65 = 4$
6. (b) $95.75 \times 0.02554 = 2.445455$
There are 6 digits to the right of the decimal point in the product of 95.75 and 0.02554.
7. (a) $50 \frac{\text{Sum of all numbers}}{\text{number of observations}}$
 $50 \frac{450}{\text{Number of observations}}$
Number of observations = $\frac{450}{50} = 9$
New mean = $\frac{450}{10} - \frac{100}{10} = \frac{550}{10} = 55$
8. (c) Milk = $\frac{2}{3} \times 60 = 40$ l
Water = $\frac{1}{3} \times 60 = 20$ l
Let 'x' be the amount to be added to milk and water.
 $\frac{40}{20} = \frac{x}{x} = \frac{1}{2}$
 $80 + 2x = 20 + x$
 $60 = x$
9. (c) Let average of all persons = x
 $\therefore (13 \times 79) + 6(x + 4) = 19 \times x$
 $13 \times 79 + 6x + 24 = 19x$
 $13 \times 79 + 24 = 13x$
 $x = \frac{13 \times 79 + 24}{13} = 80.25$
Total money spent = 1536
10. (d) Let total weight of 5 men be x kg and weight of new man y kg.
 $\frac{x - 60y}{5} = \frac{y}{5} \times \frac{x}{5} = 2$
 $\Rightarrow \frac{x}{5} - 12 = \frac{y}{5} \times \frac{x}{5} = 2$
 $\Rightarrow y = 70$ kg
weight of new man = 70 kg
11. (d) Total marks = $150 + 150 + 200 = 500$
35% of 500 = 175
 $175 = 62 + 35 + x$
 $x = 78$

12. (b) Milk contains in mixture = 36 liters.
Water contains in mixture = 4 liters
Let 'x' be the water added to the mixture.

$$\frac{36}{4} = \frac{x}{20}$$

$$36 = 16 + 4x$$

$$20 = 4x$$

$$\therefore x = 5 \text{ litres}$$

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

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

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

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

$$\text{S.P. of } \left(\frac{1}{3}\right)^{\text{rd}} \text{ consignment} =$$

$$\frac{x}{3} - \frac{2}{100} \times \frac{x}{3} = \frac{49}{150}x$$

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

$$\text{Profit} = \text{S.P.} - \text{C.P.}$$

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

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

$$\text{Value of consignment was ₹ 15,000}$$

14. (c) If number of boys is x, then number of girls is (150-x)
(150-x) = x% of 150

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

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

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

$$\text{Number of boys is 60}$$

15. (d) Let x be the cost price of T.V.
loss = 15%
then, S.P.₁ = x - 15% of x = 0.85x
Profit = 15%

$$\text{then, S.P.}_2 = x + 15\% \text{ of } x = 1.15x$$

$$\text{total S.P.} = 0.85x + 1.15x = 2x$$

$$\text{Profit} = 2x - 2x = 0$$

$$\text{No profit, no loss}$$

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

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

18. (d)

$$\begin{array}{ccccccccc} 32 & 16 & 24 & 60 & 210 & 945 & 5197.5 \\ \times 0.5 & \times 1.5 & \times 2.5 & \times 3.5 & \times 4.5 & \times 5.5 \end{array}$$

$$65 \text{ is written in place of } 60.$$

19. (d)

$$\begin{array}{ccccccccc} 7 & 13 & 25 & 49 & 97 & 193 & 385 \\ + 6 & + 12 & + 24 & + 48 & + 96 & + 192 \end{array}$$

$$194 \text{ is written in place of } 193$$

20. (a) Let Sudh's and Neeta's present ages be 6x and 7x years respectively
According to the question.

$$\frac{6x-5}{7x-5} = \frac{5}{6}$$

$$\Rightarrow 36x - 30 = 35x - 25$$

$$\Rightarrow x = 5$$

$$\therefore \text{Sudha's present age} = 6 \times 5 = 30 \text{ years}$$

21. (d) Volume of the tank = 246.4 litres = 246400 cm³.

$$\text{Let the radius of the base be } r \text{ cm. Then,}$$

$$\left(\frac{22}{7} \times r^2 \times 400\right) = 246400$$

$$\Rightarrow r^2 = \left(\frac{246400 \times 7}{22 \times 400}\right) = 196 \Rightarrow r = 14$$

$$\therefore \text{Diameter of the base} = 2r = 28 \text{ cm} = .28 \text{ m}$$

22. (c) $\sqrt{x} = 8.2 - 7 = 1.2$

$$\Rightarrow x = (1.2)^2 = 1.44$$

23. (d) Let $f(x) = x^5 + 1$

$$\text{Since } (x-2) \text{ is the factor of } (x^5+1), \text{ hence from Remainder}$$

$$\text{Theorem, we have, } f(2) = (2)^5 + 1 = 33$$

$$\text{Hence, the remainder} = 33$$

24. (c) $a = 3 + 2\sqrt{2}$

$$\Rightarrow \frac{1}{a} = \frac{1}{3 + 2\sqrt{2}} = \frac{1}{3 + 2\sqrt{2}} \times \frac{3 - 2\sqrt{2}}{3 - 2\sqrt{2}}$$

$$= \frac{3-2\sqrt{2}}{9-8} = 3-2\sqrt{2}$$

$$\therefore a + \frac{1}{a} = 6$$

$$\text{Now, } \frac{a^6 - a^4 + a^2 - 1}{a^3}$$

$$= \frac{a^6}{a^3} - \frac{a^4}{a^3} + \frac{a^2}{a^3} - \frac{1}{a^3}$$

$$= \left(a^3 - \frac{1}{a^3} \right) \left(a + \frac{1}{a} \right)$$

$$= \left(a + \frac{1}{a} \right)^3 - 3a \times \frac{1}{a} \left(a + \frac{1}{a} \right) \left(a + \frac{1}{a} \right)$$

$$= (6)^3 - 3(6) + 6 = 216 - 18 + 6 = 204$$

25. (b) $\therefore x - \frac{1}{x} = 4$

Cubing both sides,

$$\left(x - \frac{1}{x} \right)^3 = (4)^3$$

$$\Rightarrow x^3 - \frac{1}{x^3} - 3 \times x \times \frac{1}{x} \left(x - \frac{1}{x} \right) = 64$$

$$\Rightarrow x^3 - \frac{1}{x^3} - 3 \left(x - \frac{1}{x} \right) = 64$$

$$\Rightarrow x^3 - \frac{1}{x^3} - 3 \times 4 = 64$$

$$\Rightarrow x^3 - \frac{1}{x^3} = 64 + 12 = 76$$

26. (c) The equation of given line is $\frac{x}{4} - \frac{y}{3} = 1$ or $3x + 4y = 12$.

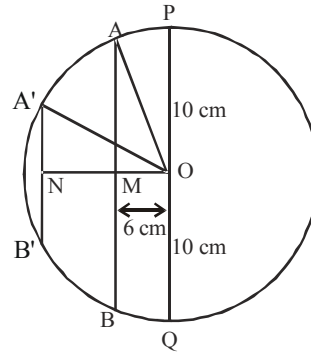
$$\therefore \text{Length} = \frac{3 \times 4 + 4 \times 3 - 12}{\sqrt{3^2 + 4^2}} = \frac{12}{5}$$

27. (a)

28. (c) $\theta_1 = \frac{l_1}{r_1}$ and $\theta_2 = \frac{l_2}{r_2}$

$$\frac{\theta_1}{\theta_2} = \frac{l_1 r_2}{l_2 r_1} = \frac{2l_2 \cdot 3r_1}{l_2 r_1} \Rightarrow \frac{60}{\theta_2} = 6 \Rightarrow \theta_2 = 10$$

29. (a) In a triangle ΔAMO ,



$$AM = \sqrt{10^2 - 6^2} = 8$$

Therefore, the length of the another chord $A'B' = 8$ cm.

Now, $A'N = 4$

In $\Delta OA'N$,

$$ON^2 = (OA')^2 - (A'N)^2 = 10^2 - 4^2$$

$$= 100 - 16 = 84$$

$$\Rightarrow ON = \sqrt{84}$$

30. (b) LCM of 48, 72, 108 = 432

the traffic lights will change simultaneously after 432 seconds or 7 min = in 12 secs.

$\therefore$ they will change simultaneously at 8 : 27 : 12 hrs.

31. (d) Relative speed = $(40 - 20)$ km/h

$$= \left(20 \times \frac{5}{18} \right) \text{ m/sec} = \left(\frac{50}{9} \right) \text{ m/sec.}$$

Length of faster train

$$= \left(\frac{50}{9} \times 5 \right) \text{ m} = \frac{250}{9} \text{ m} = 27 \frac{7}{9} \text{ m.}$$

32. (b)

33. (d) $7 \sin^2 x + 3 \cos^2 x = 4$
or $7 \sin^2 x + 3(1 - \sin^2 x) = 4$

$$\text{or } 4 \sin^2 x + 3 = 4 \text{ or } \sin^2 x = \frac{1}{4} \text{ or } \sin x = \frac{1}{2} =$$

$$\sin 30^\circ$$

$$\text{or } x = 30^\circ$$

$$\therefore \tan x = \tan 30^\circ = \frac{1}{\sqrt{3}}$$

34. (b) $\tan A + \sin A = p$
and $\tan A - \sin A = q$
 $p^2 - q^2 = 4 \tan A \sin A$

$$\text{and } pq = \tan^2 A - \sin^2 A$$

$$\Rightarrow pq = \frac{\sin^2 A(1 - \cos^2 A)}{\cos^2 A} = \tan^2 A \sin^2 A$$

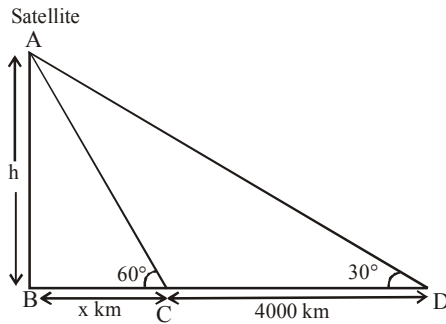
$$\Rightarrow \sqrt{pq} = \tan A \sin A$$

$$\therefore p^2 - q^2 = 4\sqrt{pq}$$

$$\begin{aligned} 35. \quad (b) \quad & \frac{1 + \cos \theta}{1 - \cos \theta} \cdot \frac{(1 + \cos \theta)(1 + \cos \theta)}{1 - \cos^2 \theta} \\ &= \frac{1 + \cos^2 \theta + 2 \cos \theta}{\sin^2 \theta} \\ &= \operatorname{cosec}^2 \theta + \cot^2 \theta + 2 \cot \theta \cdot \operatorname{cosec} \theta \\ &= (\cot \theta + \operatorname{cosec} \theta)^2 = x^2 \end{aligned}$$

$$\begin{aligned} 36. \quad (b) \quad & \tan 62^\circ = \frac{P}{Q} \\ \Rightarrow \tan (90^\circ - 28^\circ) &= \frac{P}{Q} \Rightarrow \cot 28^\circ = \frac{P}{Q} \\ \Rightarrow \frac{1}{\tan 28} \cdot \frac{P}{Q} &\Rightarrow \tan 28^\circ = \frac{Q}{P} \end{aligned}$$

37. (c) Let the height of the satellite be h .
Let the two earth stations are at C and D .



$$\text{In } \triangle ABC, \tan 60^\circ = \frac{h}{x}$$

$$\text{or } h = x \tan 60^\circ = x\sqrt{3} \quad \dots(i)$$

$$\text{In } \triangle ABD, \tan 30^\circ = \frac{h}{4000 + x}$$

$$\text{or } h = \frac{4000 + x}{\sqrt{3}} \quad \text{or } h\sqrt{3} = 4000 + x \dots(ii)$$

$$\text{From (i) and (ii), } 4000\sqrt{3} = h\sqrt{3}$$

$$\text{or } h \left(\sqrt{3} - \frac{1}{\sqrt{3}} \right) = 4000$$

$$\text{or } h = \frac{4000\sqrt{3}}{3-1} = 2000\sqrt{3} \approx 3464 \text{ km.}$$

38. (d) Average percentage growth of Assemble PCs

$$\frac{20}{5} \cdot \frac{25}{5} \cdot \frac{25}{5} \cdot \frac{50}{5} \cdot \frac{55}{5} = \frac{175}{5} = 35\%$$

39. (d) Number of Branded PCs sold in 1999

$$= 100000 \times \frac{30}{10} = 300000$$

40. (d)
41. (a) The production of first is done by the second.

42. (c) First is meant for the second.

43. (a): All except Sailor need raw material to work on.

44. (c): All others earn from the customer.

45. (b) ac $\boxed{a}$ c/ab $\boxed{a}$ b/a c a

$$\boxed{c} / aba \quad \boxed{b} / a c a \quad \boxed{c}$$

46. (d)

$$\begin{array}{ccccccccc} 5 & & 12 & & 21 & & 32 & & 45 & & 60 \\ \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow \\ +7 & & +9 & & +11 & & +13 & & +15 & & \\ \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow & & \\ +2 & & +2 & & +2 & & +2 & & & & \end{array}$$

48. (d)

49. (b) C is the 3rd letter, F sixth, I ninth so next letter will be 12th, i.e. L.

The middle numerics are the squares of 2, 3, 4 and so on. So next numeric would be 25. The last letter follow the order : U is 3rd letter after R, X is 3rd after U. So, R would be 3rd letter after 'O'.

$\therefore$ Missing term = L25O.

50. (c) First number is increasing by 5, 7, 9, 11, 13,....

Second letter is decreasing by 1 position.
Third number is increasing by 2.

51. (c) 52. (b)

53. (c) Raj Kumar's sister's father in law's son is Rajkumar's sister's husband. Therefore, Raj kumar's sister's husband is Raj Kumar's father's son-in-law.

68. (c) 25 have VCRs and each VCR owner also has a TV.
Therefore, the TV owners who have not VCRs $75 - 25 = 50$.
Now, 10 have all the three. Therefore, $50 - 10 = 40$ have only TV.
69. (d) Both the Premises are Particular Affirmative (I-type). No conclusion follows from the two particular Premises.
70. (d) From general statements, Universal Conclusion cannot be drawn.
71. (c) $\sqrt{324}$ 18; $\sqrt{289}$ 17
 $18 + 17 = 35$
 $\sqrt{441}$ 21; $\sqrt{484}$ 22
 $21 + 22 = 43$
 $\sqrt{625}$ 25; $\sqrt{400}$ 20
 $25 + 20 = 45$
 $\sqrt{256}$ 16; $\sqrt{729}$ 27
 $16 + 27 = 43$
72. (c)
73. (a) Age of Shan = 55 years
Age of Sathian = $55 - 5 = 50$ years
Age of Balan = $50 - 6 = 44$ years
Age of Devan = $44 - 7 = 37$ years
Difference between the ages of Shan and Devan.
 $= 55 - 37 = 18$ years
74. (c) Suppose his present age is x years.
According to question
 $\frac{x}{4} + \frac{x}{5} + \frac{x}{3} = x - 13$
 $\Rightarrow \frac{15x + 12x + 20x}{60} = x - 13$
 $\Rightarrow 47x = 60x - 780$
 $\Rightarrow 60x - 47x = 780$
 $\Rightarrow 13x = 780$
 $\therefore x = \frac{780}{13} = 60$ years
75. (b) B $\Rightarrow$ 04, 11, 23, 30, 42
U $\Rightarrow$ 58, 65, 77, 89, 96
S $\Rightarrow$ 57, 69, 76, 88, 95
H $\Rightarrow$ 03, 10, 22, 34, 41

Option	B	U	S	H
(a)	22	77	57	23
(b)	23	77	57	22
(c)	23	77	56	22
(d)	23	77	57	21

76. (d) If we fold the option (a) the number 2 will lie opposite 5.
If we fold the option (b) the number 1 will lie opposite 3.
If we fold the option (c) the number 2 will lie opposite 5.
Therefore, Answer Figure (d) is correct.
77. (a)
- The triangles are:
 $\triangle AIH$; $\triangle AIE$; $\triangle EIB$; $\triangle BFI$;
 $\triangle IHC$; $\triangle IGC$; $\triangle IGD$; $\triangle DFI$;
 $\triangle IAB$; $\triangle IBD$; $\triangle ICD$; $\triangle IAC$;
 $\triangle BAC$; $\triangle ACD$; $\triangle BDC$; $\triangle BDA$;
78. (b) 79. (b)
80. (c) 1 starts with one quadrant, has another one in fig. 3; this second quadrant moves clockwise equal to one side of the square to arrive at positions in fig. 2, then fig. 4 and then finally to overlap in fig 5
81. (b) 82. (c) 83. (c) 84. (a) 85. (c)
86. (a) 87. (d) 88. (a) 89. (c) 90. (a)
91. (c) 92. (b) 93. (b) 94. (d) 95. (b)
96. (d) 97. (d) 98. (c) 99. (a) 100. (c)
101. (b) 102. (d) 103. (a) 104. (c) 105. (a)
106. (d) 107. (b) 108. (d)
109. (c) Santosh Yadav is an Indian mountaineer. She is the first woman in the world to climb Mount Everest twice in less than a year. She first climbed the peak in May 1992 and then did it again in May 1993.
110. (b) At present all important steel plants except TISCO (Tata Iron and Steel co. Ltd) which is located in Jamshedpur are under public sector.
111. (b) 112. (a) 113. (b) 114. (a) 115. (c)
116. (b) 117. (a) 118. (b) 119. (d) 120. (a)