GENERAL INTELLIGENCE & REASONING

Directions (1 – 9) : In each of the following questions, select the related letters/word/number from the given alternatives.

1. 8 : 12 : : 6 : ?
   - (1) 8
   - (2) 11
   - (3) 5
   - (4) 7

2. 13 : 19 : : 21 : ?
   - (1) 41
   - (2) 81
   - (3) 141
   - (4) 14

3. Eagle : Swoops :: Duck : ?
   - (1) waddles
   - (2) floats
   - (3) swims
   - (4) flits

4. APPLE : 50 : : ORANGE : ?
   - (1) 60
   - (2) 69
   - (3) 61
   - (4) 63

5. Accommodation : Rent :: Journey : ?
   - (1) Freight
   - (2) Octroi
   - (3) Fare
   - (4) Expense

6. Fire : Smoke : : ?
   - (1) Children : School
   - (2) Cloud : Rain
   - (3) Moon : Sky
   - (4) Shoe : Polish

7. Grenade : Gun : : ?
   - (1) Sister : Brother
   - (2) Father : Mother
   - (3) Man : Woman
   - (4) Head : Brain

8. TSH : IRQ : : QPK : ?
   - (1) LNO
   - (2) LON
   - (3) PWK
   - (4) PON

9. AEZ : FPY : : BGX : ?
   - (1) HWW
   - (2) IYY
   - (3) HTX
   - (4) HYW

Directions (10 – 17) : In each of the following questions, find the odd number/letters/word/number pair from the given alternatives.

10. (1) SP
    (2) NL
    (3) ZW
    (4) TQ

11. (1) Major
    (2) Colonel
    (3) Brigadier
    (4) Admiral

12. (1) Life Insurance Corporation
    (2) New India Assurance Company Ltd.
    (3) United India Insurance Company Ltd.
    (4) National Insurance Company Ltd.

13. (1) Hurdle
    (2) Disease
    (3) Barrier
    (4) Obstacle

14. (1) Mar
    (2) Remedy
    (3) Maim
    (4) Mutilate

15. (1) Socrates
    (2) Beethoven
    (3) Mozart
    (4) Bach

16. (1) (132, 5)
    (2) (125, 8)
    (3) (124, 7)
    (4) (112, 4)

17. (1) 6246-6296
    (2) 7137-7267
    (3) 4344-4684
    (4) 5235-5465

Directions (18 – 22) : In each of the following questions, a series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.

18. YX, UTS, ONML, ?
    - (1) FEDCB
    - (2) CFEDC
    - (3) IHGFE
    - (4) HGFED

19. DA, HE, LI, ?, TN
    - (1) PJ
    - (2) PT
    - (3) PM
    - (4) PK

20. B E I N T ?
    - (1) X
    - (2) Y
    - (3) A
    - (4) Z

21. AZ, CX, EV, ?
    - (1) HT
    - (2) HU
    - (3) GS
    - (4) GT

22. D9Y, J27S, P81M, V243G, ?
    - (1) A324B
    - (2) C729B
    - (3) B729A
    - (4) A729B

23. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it ?
    _ c_bd_ _cbcda_a_db_a
    - (1) daabbc
    - (2) bdbcba
    - (3) adabcd
    - (4) cdbbca

Directions (24 – 27) : In each of the following questions, identify the wrong number in the series.

24. 9, 19, 40, 83, 170, 340
    - (1) 83
    - (2) 40
    - (3) 340
    - (4) 170

25. 21, 28, 33, 35, 37, 36
    - (1) 21
    - (2) 36
    - (3) 33
    - (4) 35

26. 5, 13, 29, 61, 120, 253
    - (1) 120
    - (2) 253
    - (3) 61
    - (4) 29

27. 0, 7, 28, 63, 124, 215
    - (1) 28
    - (2) 215
    - (3) 7
    - (4) 63

28. Some relationships have been expressed through symbols which are explained below :
    o = greater than
    Δ = not equal to
    x = not less than
    + = equal to
    ϕ = not greater than
    ∇ = less than

    $a \nabla b \nabla c$ implies
    - (1) $a \Delta b \phi c$
    - (2) $a \phi b + c$
    - (3) $a\ o\ b + c$
    - (4) $a\ o\ b \times c$

29.
2	3
4	5
    = ?
    - (1) 14400
    - (2) 15600
    - (3) 23040
    - (4) 17400

30. If PEAR is written a GFDN, how is REAP written in this code ?
    - (1) FDNG
    - (2) NFDG
    - (3) DNGF
    - (4) NDFG

31. If 54 + 43 = 2, 60 + 51 = 10, then 62 + 72 = ?
    - (1) 30
    - (2) 18
    - (3) 20
    - (4) 9

32. If L denotes x
    M denotes ÷
    P denotes +
    Q denotes –

then 16 P 24 M 8 Q 6 M 2 L 3 = ?

(1) 10   (2) 9
(3) 12   (4) 11

33. In this question, from the given alternatives select the word which **cannot** be formed by using the letters of the given word.
APPROPRIATE
(1) PIRATE   (2) APPROVE
(3) PROPER   (4) RAPPORT

34. If FLATTER is coded as 7238859 and MOTHER is coded as 468159, then how is MAMMOTH coded ?
(1) 4344681   (2) 4344651
(3) 4146481   (4) 4346481

35. If $16 - 2 = 2$, $9 - 3 = 0$, $81 - 1 = 8$, then what is $64 - 4 = ?$
(1) 4   (2) 2
(3) 6   (4) 8

Directions (36 – 37) : In each of the following questions, select the missing number from the given responses.

36.
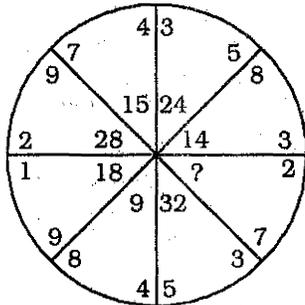
(1) 20   (2) 25
(3) 10   (4) 15

37.

10	11	15
12	12	8
4	12	10
10	5	13
18	20	?

(1) 21   (2) 20
(3) 23   (4) 22

38. Four aeroplanes of Airforce viz, A,B,C,D, started for a demonstration flight towards east. After flying 50 km planes A and D flew towards right, planes B and C flew towards left. After 50 km, planes B and C flew towards their left, planes A and D also towards their left. In which directions are the aeroplanes A, B, D, C respectively flying now ?
(1) North, South, East, West
(2) South, North, West, East
(3) East, West, West, East
(4) West, East, West, East

39. Satish start from A and walks 2 km east upto B and turns southwards and walks 1 km upto C. At C he turns to east and walks 2 km upto D. He then turns northwards and walks 4 km to E. How far is he from his starting point ?
(1) 5 km   (2) 6 km
(3) 3 km   (4) 4 km

Directions (40 – 41) : In each of the following questions, one/two statements are given, followed by two conclusions I and II. You have to consider the statements to be true, even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any follow from the given statement.

40. Statements :
Temple is a place of worship. Church is also a place of worship.
Conclusions :
I. Hindus and Christians use the same place for worship.
II. All churches are temples.
(1) Neither conclusion I nor II follows
(2) Both conclusions I and II follow
(3) Only conclusion I follows
(4) Only conclusion II follows

41. Statement :
The human organism grows and develops through stimulation and action.
Conclusions :
I. Inert human organism cannot grow and develop.
II. Human organisms do not react to stimulation and action.
(1) Neither conclusion I nor follows
(2) Both conclusions I and II follow
(3) Only conclusion I follows
(4) Only conclusion II follows

42. If the first four letters of a term HIPPNOWADIASM are written in reverse order, the next five letters are written without changing their order and then, the remaining letters are again written in reverse order, then which letter is in the middle of the word ?
(1) O   (2) W
(3) A   (4) I

**43.** In the following letter series how many times do PQR occur in such away that Q is in the middle of P and R.
Q M P N P Q R R O P Q N O P P Q R P M Q R O P Q R P P R R P Q R P
(1) 5   (2) 6
(3) 4   (4) 3

44. Volume of a sphere is equal to the volume of a hemisphere. If the radius of the hemisphere is $3\sqrt[3]{2}$ cm, then the radius of the sphere is equal to
(1) $9\sqrt[3]{2}$ cm   (2) $6\sqrt[3]{2}$ cm
(3) 27 cm   (4) 3 cm

45. A sheet of paper has been folded as shown by the question figures. You have to figure out from amongst the four answer figures how it will appear when opened ?

Question Figures
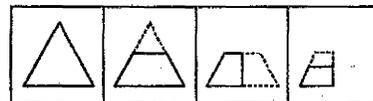
**Answer Figures**
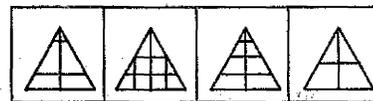
(1)   (2)   (3)   (4)

46. Which of the answer figure is exactly the mirror image of the question figure if a mirror is placed on the line MN?

Question Figure
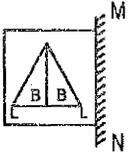
Answer Figures
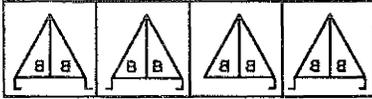
(1)　　(2)　　(3)　　(4)

47. If SEARCH is coded as TFBS-DI, how will PENCIL be coded ?

(1) RGPEN　　(2) LICNEP

(3) QFODJM　(4) QDMBHK

48. Which answer figure completes the form in question figure ?

Question Figure
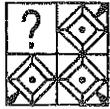
Answer Figures
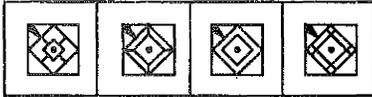
(1)　　(2)　　(3)　　(4)

49. From the answer figures, select the one in which the question figure is hidden/embedded.

Question Figure
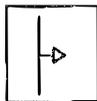
Answer Figures
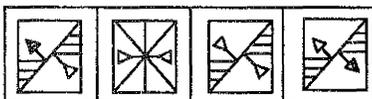
(1)　　(2)　　(3)　　(4)

50. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, e.g., 'A' can be represented by 10, 33, etc and 'H' can be represented by 59, 78, etc. Similarly, you have to identify the set for the word GUIDE.

Matrix I

	0	1	2	3	4
0	I	E	A	O	U
1	A	O	U	I	E
2	E	I	O	U	A
3	O	U	E	A	I
4	U	A	I	E	O

Matrix II

	5	6	7	8	9
5	F	D	B	G	H
6	B	G	H	F	D
7	D	F	G	H	B
8	G	H	D	B	F
9	H	B	F	G	D

(1) 85, 23, 21, 87, 32

(2) 58, 31, 12, 57, 41

(3) 77, 13, 42, 99, 32

(4) 66, 31, 43, 78, 14

GENERAL AWARENESS

51. The National Commission for Minorities was constituted in the year

(1) 1990　　(2) 1992

(3) 1980　　(4) 1989

52. The first Indian who was chosen as the Secretary General of Commonwealth is

(1) Rakesh Verma

(2) Gopalaswami

(3) Krishna Murthy

(4) Kamalesh Sharma

53. In which of the following systems of government is bi-cameralism an essential feature ?

(1) Federal system

(2) Unitary system

(3) Parliamentary system

(4) Presidential system

54. Kuldip Nayer, a journalist, was appointed as a High Commissioner in

(1) Sri Lanka

(2) Australia

(3) UK

(4) Pakistan

55. Which king is referred to as Devanampiya Piyadassi (Beloved of the Gods) in the inscriptions ?

(1) Asoka

(2) Harsha

(3) Bindusara

(4) Chandragupta Maurya

56. Socialism succeeds in achieving

(1) higher standard of living of the people

(2) equal distribution of income in the society

(3) higher individual welfare in the society

(4) maximum social welfare in the society

57. Monopolist resorts to price discrimination depending upon the

(1) Elasticity of supply

(2) Elasticity of demand

(3) Law of demand

(4) Law of supply

58. Economic planning is an essential feature of

(1) Socialist economy

(2) Capitalist economy

(3) Mixed economy

(4) Dual economy

59. The HYV programme in India is also called as

(1) Traditional Agriculture

(2) New Agricultural Strategy

(3) White Revolution

(4) Blue Revolution

60. The National Policy for Empowerment of Women was adopted in the year

(1) 2001　　(2) 2005

(3) 1991　　(4) 1995

61. Ballots were first used in

(1) Australia

(2) USA

(3) Ancient Greece

(4) England

62. The Rashtriya Barh Ayog (RBA) is related with
(1) Droughts and Floods
(2) Poverty Alleviation
(3) Floods
(4) Disaster Management

63. Which of the following criteria is not used for the classification of human races ?
(1) Nose
(2) Hair
(3) Eyes
(4) Ear

64. Railway coaches are manufactured at
(1) Jamshedpur
(2) Chittaranjan
(3) Perambur
(4) Varanasi

65. Fertilization occurs normally in the
(1) Cervix
(2) Vagina
(3) Fallopian tube
(4) Uterus

66. People consuming alcohol in heavy quantities generally die of
(1) liver or stomach cancer
(2) weakening of heart muscles leading to cardiac arrest
(3) blood cancer
(4) Cirrhosis

67. The organisms at the base of the grazing food-chain are
(1) Carnivores
(2) Decomposers
(3) Producers
(4) Herbivores

68. Who among the following was credited with the destruction of 'Chihalgani', a group of powerful nobles ?
(1) Balban
(2) Qutb-ud-din Aibak
(3) Iltutmish
(4) Razia Sultan

69. Bombay was given away as dowry to the English King Charles II for marrying the Princess of
(1) France
(2) Portugal
(3) Holland
(4) Denmark

70. The Grand Trunk Road built by Shershah connected Punjab with
(1) Agra
(2) East Bengal
(3) Lahore
(4) Multan

71. Nam the Maratha Saint who was a contemporary of Shivaji.
(1) Saint Eknath
(2) Saint Tukaram
(3) Saint Dhyaneshwar
(4) Namdev

72. The study of lake is called
(1) Topology
(2) Hydrology
(3) Limnology
(4) Potomology

73. A serie of lines connecting places having a quake at the same time are called
(1) Homoseismal lines
(2) Seismolines
(3) Coseismal lines
(4) Isoseismal lines

74. 'Lumen' is the unit of
(1) Illuminance
(2) Brightness
(3) Luminous flux
(4) Luminous intensity

75. The transfer of date from a CPU to peripheral devices of computer is achieved through
(1) interfaces
(2) buffer memory
(3) modems
(4) computer ports

76. Which of the following items is not used in Local Area Networks (LANs) ?
(1) Interface Card
(2) Cable
(3) Computer
(4) Modem

77. The mass of 10 moles of water is
(1) 90 g
(2) 45 g
(3) 18 g
(4) 180 g

78. Vitamin A is rich in
(1) Carrot
(2) Lime
(3) Beans
(4) Rice

79. The high boiling point of water compared to hydrogen sulphide or hydrogen chloride is due to
(1) Dipole insulation
(2) Van der Waal's attraction
(3) Polar covalent bonding
(4) Hydrogen bonding

80. Which of the following determines the chemical properties of an element ?
(1) Number of electrons
(2) Number of neutrons
(3) Number of protons
(4) All of the above

81. The Central Drug Reasearch Institute of India is located at
(1) Madras
(2) Lucknow
(3) Delhi
(4) Bangalore

82. Which of the following cereals was among the first to be used by man ?
(1) Rye
(2) Wheat
(3) Barley
(4) Oat

83. Which of the following wheat species are being cultivated in India ?
(1) Club wheat
(2) Durum wheat
(3) Emmer wheat
(4) Bread wheat

84. Which one of the following forces is a 'dissipative force' ?
(1) Electrostatic force
(2) Magnetic force
(3) Gravitational force
(4) Frictional force

85. If a resistive wire is elongated, its resistance
(1) decreases
(2) remains constant
(3) increases
(4) All of the above

86. If a magnet has a third pole, then the third pole is called
(1) defective pole
(2) consequent pole
(3) extra pole
(4) arbitrary pole

87. How many spokes are there in the Dharmachakra of the National Flag ?
(1) 14
(2) 18
(3) 22
(4) 24

88. The latest official language of the U.N. is
(1) Russian
(2) Arabic
(3) Chinese
(4) Spanish

89. Srikrishna Committee Report, which was made public in 2011, is related to

(1) rejuvenation of higher education
(2) demand for a separate Telangana State
(3) ragging in educational institutions
(4) impeachment of Justice Dinakaran

90. The latest book '*Kurukshetra to Kargil*' is written by
(1) Suryanath Singh
(2) Kunal Bhardwaj
(3) Karan Singh
(4) Kuldip Singh

91. The Educational Development Index (EDI) Report, released in 2011, is led by
(1) Tamil Nadu
(2) Puducherry
(3) Kerala
(4) Lakshadweep

92. Shunglu Committee, which submitted its report in 2011, is related to
(1) Commonwealth Games scandal
(2) reforms in the Insurance sector
(3) revamp of Defence management
(4) management of Co-operative Sector

93. The 65th National Football Championship (Santosh Trophy 2011) was won by
(1) Bangal
(2) Punjab
(3) Manipur
(4) Goa

94. The organisation involved primarily with environmental planning is
(1) CIFRI   (2) ICAR
(3) CSIR   (4) NEERI

95. What would be the impact of global warming on mangrove forests ?
(1) They will grow more luxurious
(2) Large areas of mangroves will be submerged
(3) Their role as carbon sinks will become more important
(4) Both (1) and (3) above

96. The sweet taste of fruits is due to
(1) Lactose
(2) Fructose
(3) Maltose
(4) Ribose

97. The most endangered Asiatic top predator on the edge of extinction is
(1) Black Bear
(2) Asiatic Lion
(3) Siberian Tiger
(4) Dhole

98. Analects is the sacred book of
(1) Confucianism
(2) Judaism
(3) Shintoism
(4) Taoism

99. The seat of Madhya Pradesh High Court is located at
(1) Gwalior   (2) Indore
(3) Bhopal   (4) Jabalpur

100. The brightest planet is
(1) Venus   (2) Mercury
(3) Jupiter   (4) Mars

QUANTITATIVE APTITUDE

101. P and Q are two points observed from the top of a building $10\sqrt{3}$ m high. If the angles of depression of the points are complementary and PQ = 20 m, then the distance of P from the building is
(1) 25 m   (2) 45 m
(3) 30 m   (4) 40 m

102. If A and B are complementary angles, then the value of
sin A cos B + cos A sin B − tan A tan B + sec^2 A − cot^2 B is
(1) 2   (2) 0
(3) 1   (4) −1

103. The least value of $2\sin^2\theta + 3\cos^2\theta$ is
(1) 3   (2) 5
(3) 1   (4) 2

104. A,O,B are three points on a line segment and C is a point not lying on AOB. If $\angle AOC = 40°$ and OX, OY are the internal and external bisectors of $\angle AOC$ respectively, then $\angle BOY$ is

(1) 70°   (2) 80°
(3) 72°   (4) 68°

105. If $4x = \sec\theta$ and $\dfrac{4}{x} = \tan\theta$ then $8\left(x^2 - \dfrac{1}{x^2}\right)$ is

(1) $\dfrac{1}{16}$ (2) $\dfrac{1}{8}$

(3) $\dfrac{1}{2}$ (4) $\dfrac{1}{4}$

106. If $2 - \cos^2\theta = 3\sin\theta\cos\theta$, $\sin\theta \neq \cos\theta$ then $\tan\theta$ is

(1) $\dfrac{1}{2}$ (2) 0

(3) $\dfrac{2}{3}$ (4) $\dfrac{1}{3}$

107. If $\sin\theta + \cos\theta = \sqrt{2}\,\cos(90 - \theta)$, then $\cot\theta$ is
(1) $\sqrt{2} + 1$ (2) 0
(3) $\sqrt{2}$ (4) $\sqrt{2} - 1$

108. If $x\sin^3\theta + y\cos^3\theta = \sin\theta\cos\theta$ and $x\sin\theta = y\cos\theta$, $\sin\theta \neq 0$, $\cos\theta \neq 0$, then $x^2 + y^2$ is

(1) $\dfrac{1}{\sqrt{2}}$ (2) $\dfrac{1}{2}$

(3) 1   (4) $\sqrt{2}$

109. In the following figure, O is the centre of the circle and XO is perpendicular to OY. If the area of the triangle XOY is 32, then the area of the circle is

(1) 64π (2) 256π
(3) 16π (4) 32π
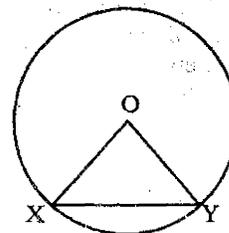
110. The side BC of $\triangle$ ABC is produced to D. If $\angle ACD = 108°$ and $\angle B = \dfrac{1}{2}\angle A$ then $\angle A$ is

(1) 36°   (2) 72°

(3) 108°   (4) 59°

111. Two circles of radii 4 cm and 9 cm respectively touch each other externally at a point and a common tangent touches them at the points P and Q respectively. Then the area of a square with one side PQ, is

(1) 97 sq.cm   (2) 194 sq.cm

(3) 72 sq.cm   (4) 144 sq.cm

112. Two tangents are drawn from a point P to a circle at A and B. O is the centre of the circle. If $\angle AOP = 60^0$, then $\angle APB$ is

(1) 120°   (2) 90°

(3) 60°   (4) 30°

113. If each interior angle is double of each exterior angle of a regular polygon with n sides, then the value of n is

(1) 8   (2) 10

(3) 5   (4) 6

114. If the length of the side PQ of the rhombus PQRS is 6 cm and $\angle PQR = 120^0$, then the length of QS, in cm, is

(1) 4   (2) 6

(3) 3   (4) 5

115. The angle formed by the hour-hand and the minute-hand of a clock at 2 : 15 p.m. is

(1) $27\frac{1}{2}^\circ$ (2) 45°

(3) $22\frac{1}{2}^\circ$ (4) 30°

116. Two sides of a triangle are of length 4 cm and 10 cm. If the length of the third side is 'a' cm, then

(1) $a > 5$ (2) $6 \leq a \leq 12$

(3) $a < 6$ (4) $6 < a < 14$

117. If $x = (0.08)^2$, $y = \frac{1}{(0.08)^2}$ and $z = (1 - 0.08)^2 - 1$, then out of the following, the true relation is

(1) $y < x$ and $x = z$

(2) $x < y$ and $x = z$

(3) $y < z < x$

(4) $z < x < y$

118. In xy-plane, P and Q are two points having co-ordinates (2, 0) and (5, 4) respectively. Then the numerical value of the area of the circle with radius PQ, is

(1) 16π (2) 32π

(3) 14π (4) 25π

119. If $x^4 + \frac{1}{x^4} = 23$, then the value of $\left(x - \frac{1}{x}\right)^2$ will be

(1) 7   (2) –7

(3) –3   (4) 3

120. The value of

$$\sqrt{(6 + \sqrt{(6 + \sqrt{(6 + ... \text{upto} \infty)})})}$$ is

equal to

(1) 3   (2) 10

(3) 8   (4) 2

121. If $x + \frac{1}{x} = 3$, the value of $x^6 + \frac{1}{x^5}$ is

(1) 123   (2) 126

(3) 113   (4) 129

122. $\sec^4\theta - \sec^2\theta$ is equal to

(1) $\tan^2\theta - \tan^4\theta$

(2) $\tan^2\theta + \tan^4\theta$

(3) $\cos^4\theta - \cos^2\theta$

(4) $\cos^2\theta - \cos^4\theta$

123. In $\triangle ABC$, AD is the median and AD $= \frac{1}{2}$ BC. If $\angle BAD = 30^\circ$, then measure of $\angle ACB$ is

(1) 90°   (2) 45°

(3) 30°   (4) 60°

124. If $\sqrt{6} \times \sqrt{15} = x\sqrt{10}$, then the value of x is

(1) 3   (2) ± 3

(3) $\sqrt{3}$ (4) $\sqrt{6}$

125. $3 - \frac{3 + \sqrt{5}}{4} - \frac{1}{3 + \sqrt{5}}$ is equal to

(1) 0   (2) $\frac{3}{2}$

(3) $\frac{\sqrt{5}}{2}$ (4) $\sqrt{5}$

126. If $a + b + 1 = 0$, then the value of $(a^3 + b^3 + 1 - 3ab)$ is

(1) 3   (2) 0

(3) –1   (4) 1

127. In the xy-coordinate system, if (a, b) and $(a + 3, b + k)$ are two points on the line defined by the equation $x = 3y - 7$, then $k = ?$

(1) $\frac{7}{3}$ (2) 1

(3) 9   (4) 3

128. The average age of four boys, five years ago was 9 years. On including a new boy, the present average age of all the five is 15 years. The present age of the new boy is

(1) 14 years   (2) 6 years

(3) 15 years   (4) 19 years

129. If the average of 39, 48, 51, 63, 75, 83, x and 69 is 60, then the value of x is

(1) 52   (2) 53

(3) 50   (4) 51

130. The cost of a piece of diamond varies with the square of its weight. A diamond of Rs. 5,184 value is cut into 3 pieces whose weights are in the ratio 1 : 2 : 3. Find the loss involved in the cutting.

(1) Rs. 3,068   (2) Rs. 3,088

(3) Rs. 3,175   (4) Rs. 3,168

131. A discount of 30% on the marked price of a toy reduces its selling price by Rs. 30. What is the new selling price (in Rs.) ?

(1) 70   (2) 21

(3) 130   (4) 100

132. The capacities of two hemispherical vessels are 6.4 litres and 21.6 litres. The ratio of their inner radii is

(1) 4 : 9   (2) 16 : 81

(3) $\sqrt{2} : \sqrt{3}$ (4) 2 : 3

133. Pipe A alone can fill a tank in 8 hours. Pipe B alone can fill it in 6 hours. If both the pipes are opened and after 2 hours pipe A is closed, then the other pipe will fill the tank in

(1) 6 hours   (2) $3\frac{1}{2}$ hours

(3) 4 hours   (4) $2\frac{1}{2}$ hours

134. If $(a - b) = 3$, $(b - c) = 5$ and $(c - a) = 1$, then the value of

$\dfrac{a^3 + b^3 + c^3 - 3abc}{a + b + c}$ is

(1) 17.5   (2) 20.5
(3) 10.5   (4) 15.5

135. The population of a town is 15000. If the number of males increases by 8% and that of females by 10%, then the population would increase to 16300. Find the number of females in the town.
(1) 4000   (2) 6000
(3) 3000   (4) 5000

136. If Rs. 5,000 becomes Rs. 5,700 in a year's time, what will Rs. 7,000 become at the end of 5 years at the same rate of simple interest ?
(1) Rs.10,500   (2) Rs.11,900
(3) Rs.12,700   (4) Rs. 7,700

137. A thief is noticed by a policeman from a distance of 200 m. The thief starts running and the policeman chases him. The thief and the policeman run at the rate of 10 km and 11 km per hour respectively. The distance (in metres) between them after 6 minutes is
(1) 190   (2) 200
(3) 100   (4) 150

138. 'A' sells an article to 'B' at a profit of 20% and 'B' sells it to 'C' at a profit of 25%. If 'C' pays Rs. 1,200, the cost price of the article originally (in Rs.) is
(1) 700   (2) 600
(3) 1,000   (4) 800

139. The number nearest to 75070 which is divisible by 65, is
(1) 75070   (2) 75075
(3) 75010   (4) 75065

140. The number 20% more than 80 is
(1) 36   (2) 30
(3) 90   (4) 96

141. A tree is broken by the wind. If the top of the tree struck the ground at an angle of 30° and at a distance of 30 m from the root, then the height of the tree is
(1) $25\sqrt{3}$ m   (2) $30\sqrt{3}$ m
(3) $15\sqrt{3}$ m   (4) $20\sqrt{3}$ m

142. If $\cos A + \cos^2 A = 1$, then $\sin^2 A + \sin^4 A$ is equal to

(1) 1   (2) $\dfrac{1}{2}$

(3) 0   (4) –1

143. A farmer divides his herd of n cows among his four sons, so that the first son gets one-half the herd, the second one-fourth, the third son $\dfrac{1}{5}$ and the fourth son 7 cows. Then the value of n is
(1) 240   (2) 100
(3) 180   (4) 140

144. By what least number should 675 be multiplied to obtain a number which is a perfect cube ?
(1) 7   (2) 8
(3) 5   (4) 6

145. The least number which when divided by 35, 45, 55 leaves the remainder 18, 28, 38 respectively is
(1) 3448   (2) 3482
(3) 2468   (4) 3265

Directions (146 – 150) : The graph shows Income and Expenditure of a company. Study the graph and answer the questions.

☐ Income   ▨ Expenditure

Years
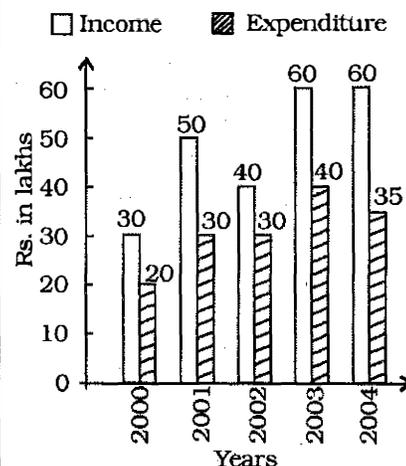
146. The expenditure from 2002 to 2003 increased by

(1) $33\dfrac{1}{3}$%   (2) 40%

(3) 10%   (4) 20%

147. The income in 2002 was equal to the expenditure in the year
(1) 2003   (2) 2004
(3) 2000   (5) 2001

148. The profit was maximum in the year
(1) 2003   (2) 2004
(3) 2001   (5) 2002

149. The difference in profit between 2001 and 2002 is
(1) Rs. 25 lakhs
(2) No difference
(3) Rs. 10 lakhs
(5) Rs. 20 lakhs

150. The number of years in which the income exceeds the average income is
(1) three   (2) four
(3) one   (4) two

ENGLISH COMPREHENSION

Directions (151-155) : In the following questions, some parts of the sentences have errors and some have none. Find out which part of a sentence has an error. If a sentence is free from error, then your answer is (4), i.e., No error.

151. You do not (1)/ look as (2)/ your brother. (3)/ No error (4)

152. My elder brother (1)/ is six (2)/ foot high.(3)/ No error (4)

153. Without no proof of your guilt (1)/ the only course open to me (2)/ is to dismiss the case. (3)/ No error (4)

154. As we see it, (1)/ she appears to be unreasonable (2)/ anxious about pleasing her husband. (3)/ No error (4)

155. The scissor is (1)/ lying on (2)/ the table. (3)/ No error (4)

Directions (156-160) : In the following questions, sentences are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four as your answer.

156. The Union Budget is likely to be presented on February 26, two days ahead of the _____ date.
(1) critical   (2) conventional
(3) suitable   (4) convenient

157. I am sorry ___ the mistake.
(1) from   (2) with
(3) for   (4) at

158. He _____ her that she would pass.
(1) insured   (2) ensured
(3) assumed   (4) assured

159. Your father ___ worry. I'm a very careful driver.
(1) needn't   (2) none
(3) can't   (4) doesn't

160. The ___ chosen for construction of the building is in the heart of the city.
(1) cite   (2) slight
(3) sight   (4) site

Directions (161-165) : In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word as your answer.

161. Nexus
(1) connection
(2) distance
(3) deficit   (4) difference

162. Mammoth
(1) straight   (2) huge
(3) wild   (4) greedy

163. Hyperbole
(1) expansion
(2) imitation
(3) decoration
(4) exaggeration

164. Eulogy
(1) apology   (2) address
(3) speech   (4) praise

165. Menacingly
(1) dangerously
(2) threateningly
(3) harmfully
(4) hideously

Directions (166-170) : In the following questions, choose the word opposite in meaning to the given word as your answer.

166. Impeccable
(1) faulty   (2) tedious
(3) flashy   (4) boring

167. Amalgamate
(1) separate   (2) combine
(3) assimilate   (4) integrate

168. Zenith
(1) climax   (2) crisis
(3) acme   (4) nadir

169. Influx
(1) reflex   (2) deflection
(3) effluent   (4) exodus

170. Orderly
(1) semitic   (2) colic
(3) democratic
(4) chaotic

Directions (171-175) : In the following questions, four alternatives are given for the idiom/ phrase printed in **bold** in the sentence. Choose the alternative which best expresses the meaning of the idiom/phrase as your answer.

171. Ram is very calculative and always **has an axe to grind**.
(1) has no result
(2) works for both sides
(3) has a private agenda
(4) fails to arouse interest

172. The police looked all over for him but **drew a blank**.
(1) did not find him
(2) put him in prison
(3) arrested him
(4) took him to court

173. On the issue of marriage, Sarita **put her foot down**.
(1) stood up
(2) was firm
(3) got down
(4) walked fast

174. His investments helped him **make a killing** in the stock market.
(1) lose money quickly
(2) plan a murder quickly
(3) murder someone quickly
(4) make money quickly

175. There is **no gainsaying** the fact that the country is in difficulties.
(1) ignoring   (2) hiding
(3) forgetting   (4) denying

Directions (176-180) : In the following questions, a part of the sentence is printed in **bold**. Below are given alternatives to the **bold** part at (1), (2) and (3) which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is (4).

176. Sordid and sensational books tend to **vitiate** the public taste.
(1) divide   (2) distract
(3) distort
(4) No improvement

177. **By studying** AIDS has engaged many researchers in the last decade.
(1) Important study
(2) Now that the study
(3) The study of
(4) No improvement

178. His Master's thesis **was highly estimated** and is now being prepared for publication.
(1) was highly discussed
(2) was highly commended
(3) is highly appraised
(4) No improvement

179. No sooner had she realized her blunder **than she began to take** corrective measures.
(1) then she began to take
(2) than she began taking
(3) when she began to take
(4) No improvement

180. A good scholar **must be precise and possess originality**.
(1) must be precise and original
(2) must be possess precision and original
(3) must be precision and possess originality
(4) No improvement

Directions (181-185) : In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/sentence.

181. One who loves books
(1) Bibliophile
(2) Bibliophagist
(3) Bibliophoebe
(4) Bibliographer

182. Speaking without preparation
(1) Deliberate
(2) Fluent
(3) Loquacious
(4) Extempore

183. Special trial of the Head of State by Parliament
(1) Impingement
(2) Infringement
(3) Impeachment
(4) Impediment

184. Someone able to use both hands with equal skill
(1) Ambivalent
(2) Amphibious
(3) Ambiguous
(4) Ambidextrous

185. Cure for all diseases
(1) Curable   (2) Panacea
(3) Incurable (4) Curative

Directions (186-190) : In the following questions, there are four different words out of which one is correctly spelt. Find the correctly spelt word.

186. (1) pleintive (2) sustein
(3) villain   (4) alleince

187. (1) comissioner
(2) commissionar
(3) commisioner
(4) commissioner

188. (1) aprentice (2) advertise
(3) treatice   (4) sencitive

189. (1) suprintendent
(2) supirentendent
(3) superintendent
(4) superentendent

190. (1) symetry   (2) symmitry
(3) symatry   (4) symmetry

Directions (191-200) : In the following questions, you have two brief passages with 5 questions following each passage. Read the passages carefully and choose the best answer to each question out of the four alternatives.

Passage I (191 - 195)

Two years later, in November 1895, he signed his final will. He left the bulk of his fortune, amounting to about £ 1,75,000 to a trust fund administered by Swedish and Norwegian trustees. The annual interest shall be awarded as prizes to those persons who during the previous year have rendered the greatest services to mankind. The interest shall be divided into five equal parts — now amounting to about £ 8,000 each — one of which shall be awarded to the person who has made the most important discovery or invention in the realm of physics, one to the person who has made the most important chemical discovery or improvement, one to the person who has made the most important physiological or medical discovery, one to the person who has produced the most outstanding work of literature, idealistic in character, and one to the person who has done the best work for the brotherhood of nations, the abolition or reduction of standing armies, as well as for the formation or popularization of peace congress.

191. The said prize is awarded
(1) once in 5 years
(2) every year
(3) once in 4 years
(4) once in 2 years

192. Which is the prize that is referred to in the passage ?
(1) Nobel Prize
(2) Magsaysay Award
(3) Pulitzer Prize
(4) Booker Prize

193. The number of prizes in the field of science are
(1) Four   (2) One
(3) Three   (4) Five

194. Total annual prize money amounts to
(1) £ 8,000   (2) £ 1,750,000
(3) £ 350,000 (4) £ 40,000

195. Prize is awarded for outstanding work in
(1) Chemistry
(2) Literature
(3) Physics
(4) All the above

Passage II (196-200)

If an opinion contrary to your own makes you angry, that is a sign that you are subconsciously aware of having no good reason for thinking, as you do. If someone maintains that two and two are five, or that Iceland is on the Equator, you feel pity rather than anger, unless you know so little of arithmetic or geography that his opinion shakes your own contrary conviction.

196. If someone else's opinion makes us angry, it means that
(1) we are subconsciously aware of having no good reason for becoming angry
(2) there may be good reasons for his opinion but we are not consciously aware of them
(3) our own opinion is not based on good reason and we know this subconsciously
(4) we are not consciously aware of any reason for our own opinion

197. "Your own contrary conviction" refers to
(1) the fact that you feel pity rather than anger
(2) the opinion that two and two are four and that Iceland is a long way from the Equator
(3) the opinion that two and two are five and that Iceland is on the Equator
(4) the fact that you know so little about arithmetic or geography

198. Conviction means
(1) persuasion
(2) disbelief
(3) strong belief
(4) ignorance

199. The writer says if someone maintains that two and two are five you feel pity because you
(1) have sympathy
(2) don't agree with him
(3) want to help the person
(4) feel sorry for his ignorance

200. The second sentence in the passage
(1) builds up the argument of the first sentence by restating it from the opposite point of view
(2) makes the main point which has only been introduced by the first sentence
(3) simply adds, a further point to the argument already stated in the first sentence
(4) illustrates the point made in the first sentence

ANSWERS

1. (1)	2. (1)	3. (1)	4. (1)
5. (3)	6. (2)	7. (4)	8. (2)
9. (1)	10. (2)	11. (4)	12. (1)
13. (2)	14. (2)	15. (1)	16. (4)
17. (1)	18. (2)	19. (1)	20. (3)
21. (4)	22. (3)	23. (3)	24. (3)
25. (4)	26. (1)	27. (2)	28. (1)
29. (1)	30. (2)	31. (4)	32. (1)
33. (2)	34. (1)	35. (1)	36. (4)
37. (3)	38. (3)	39. (1)	40. (1)
41. (1)	42. (2)	43. (3)	44. (4)
45. (2)	46. (4)	47. (3)	48. (2)
49. (4)	50. (1)	51. (2)	52. (4)
53. (1)	54. (3)	55. (1)	56. (2)
57. (2)	58. (1)	59. (2)	60. (1)
61. (1)	62. (3)	63. (4)	64. (3)
65. (3)	66. (4)	67. (3)	68. (1)
69. (2)	70. (1)	71. (2)	72. (3)
73. (1)	74. (3)	75. (1)	76. (3)
77. (4)	78. (1)	79. (4)	80. (1)
81. (2)	82. (2)	83. (2)	84. (4)
85. (3)	86. (2)	87. (4)	88. (2)
89. (2)	90. (4)	91. (3)	92. (1)
93. (1)	94. (4)	95. (4)	96. (2)
97. (4)	98. (1)	99. (4)	100. (1)
101. (3)	102. (3)	103. (4)	104. (1)
105. (3)	106. (1)	107. (4)	108. (3)
109. (1)	110. (2)	111. (4)	112. (3)
113. (4)	114. (2)	115. (3)	116. (4)
117. (4)	118. (4)	119. (4)	120. (1)
121. (1)	122. (2)	123. (4)	124. (1)
125. (2)	126. (2)	127. (2)	128. (4)
129. (1)	130. (4)	131. (1)	132. (4)
133. (4)	134. (1)	135. (4)	136. (2)
137. (3)	138. (4)	139. (2)	140. (4)
141. (3)	142. (1)	143. (4)	144. (3)
145. (1)	146. (1)	147. (1)	148. (2)
149. (3)	150. (1)	151. (2)	152. (3)
153. (1)	154. (2)	155. (1)	156. (2)
157. (3)	158. (4)	159. (1)	160. (4)
161. (1)	162. (2)	163. (4)	164. (4)
165. (2)	166. (1)	167. (1)	168. (4)
169. (4)	170. (4)	171. (3)	172. (1)
173. (2)	174. (4)	175. (4)	176. (2)
177. (3)	178. (2)	179. (4)	180. (1)
181. (1)	182. (4)	183. (3)	184. (4)
185. (2)	186. (3)	187. (4)	188. (2)
189. (3)	190. (4)	191. (2)	192. (1)
193. (3)	194. (1)	195. (4)	196. (3)
197. (1)	198. (3)	199. (4)	200. (4)

EXPLANATIONS

1. (1) The relationship is $x : (2x-4)$
$8 \times 2 - 4 = 16 - 4 = 12$
Similarly, $6 \times 2 - 4 = 12 - 4 = 8$

2. (1) $(1)^2 = 1$; $(3)^2 = 9 \Rightarrow 19$
Similarly, $(2)^2 = 4$; $(1)^2 = 1$
$\Rightarrow 41$

3. (1) Eagle swoops down on anything. The movement of eagle is like swooping. Similarly, the movement of duck is called waddle.

4. (1)
```
A     P     P     L     E
↓     ↓     ↓     ↓     ↓
1  + 16  + 16  + 12  + 5
                      = 50
```
Similarly,
```
O     R     A     N     G     E
↓     ↓     ↓     ↓     ↓     ↓
15 + 18  + 1  + 14  + 7  + 5
                           = 60
```

5. (3) We pay rent for accommodation. Similarly, we pay fare for journey.

6. (2) Fire causes smoke. Smoke comes out when something is burnt in fire. Similarly, cloud causes rain.

7. (4) Grenade and gun are fire-arms. Similarly, head and brain are sensitive organs.

8. (2)

Similarly,

9. (1)

Similarly,

10. (2) $S \xrightarrow{-3} P$
$N \xrightarrow{-2} L$
$Z \xrightarrow{-3} W$
$T \xrightarrow{-3} Q$

11. (4) Major, Colonel and Brigadier are different ranks in the Indian Army. Admiral is the topmost rank in the Indian Navy.

12. (1) Except Life Insurance Corporation, all others are insurance companies for general insurance, i.e., for vehicles, property etc.

13. (2) Except disease, all other terms denote obstruction, hindrance or interruption.

14. (2) Except remedy, all other terms denote loss of something.

15. (1) Socrates was a Greek philosopher. Ludwing Van Beethoven was a German Composer and Musician. Bach was also a German Composer. WA Mozart was a Austrian Composer.

16. (4) 112 is completely divisible by 4.
$$= \frac{112}{4} = 28$$
$$= \frac{132}{5} = 26.4; \quad \frac{125}{8} = 15.625;$$
$$\frac{124}{7} = 17.71$$

17. (1) The difference between the two numbers in the number pair 6246 – 6296 is least.
$6296 - 6246 = 50$
$7267 - 7137 = 130$
$4684 - 4344 = 340$
$5465 - 5235 = 230$

18. (2)

$$Y \xrightarrow{-1} X$$
$$\downarrow{-3}$$
$$U \xrightarrow{-1} T \xrightarrow{-1} S$$
$$\downarrow{-4}$$
$$O \xrightarrow{-1} N \xrightarrow{-1} M \xrightarrow{-1} L$$
$$\downarrow{-5}$$
$$G \xrightarrow{-1} F \xrightarrow{-1} E \xrightarrow{-1} D \xrightarrow{-1} C$$

19. (1)

$$D \xrightarrow{+4} H \xrightarrow{+4} L \xrightarrow{+4} \boxed{P} \xrightarrow{+4} T$$
$$A \xrightarrow{+4} E \xrightarrow{+4} I \xrightarrow{+1} \boxed{J} \xrightarrow{+4} N$$

20. (3)

$$B \xrightarrow{+3} E \xrightarrow{+4} I \xrightarrow{+5} N \xrightarrow{+6} T \xrightarrow{+7} \boxed{A}$$

21. (4)

$$A \xrightarrow{+2} C \xrightarrow{+2} E \xrightarrow{+2} \boxed{G}$$
$$Z \xrightarrow{-2} X \xrightarrow{-2} V \xrightarrow{-2} \boxed{T}$$

22. (3)

$$D \xrightarrow{+6} J \xrightarrow{+6} P \xrightarrow{+6} V \xrightarrow{+6} \boxed{B}$$
$$9 \xrightarrow{\times 3} 27 \xrightarrow{\times 3} 81 \xrightarrow{\times 3} 243 \xrightarrow{\times 3} 729$$
$$Y \xrightarrow{-6} S \xrightarrow{-6} M \xrightarrow{-6} G \xrightarrow{-6} \boxed{A}$$

23. (3)

$\boxed{a}c\boxed{d}b / d\boxed{a}c b / c d a\boxed{b}/ a\boxed{c}d b /\boxed{d}a$
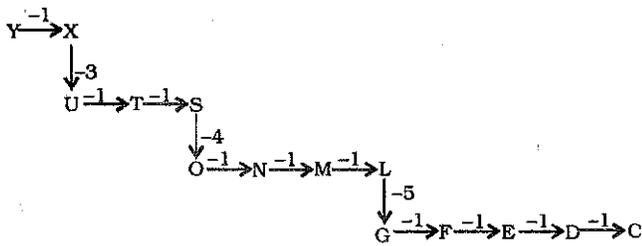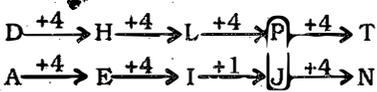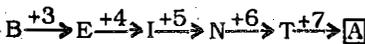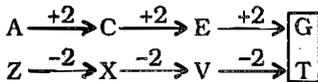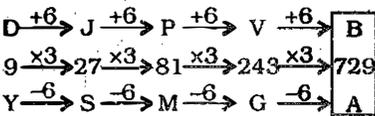
24. (3) $9 \times 2 + 1 = 18 + 1 = 19$

$19 \times 2 + 2 = 38 + 2 = 40$

$40 \times 2 + 3 = 80 + 3 = 83$

$83 \times 2 + 4 = 166 + 4 = 170$

$170 \times 2 + 5 = 340 + 5 = \boxed{345}$

Therefore, the number 340 is wrong in the series.

25. (4) $21 + 7 = 28$

$28 + 5 = 33$

$33 + 3 = \boxed{36}$

$36 + 1 = 37$

$37 - 1 = 36$

Therefore, the number 35 wrong in the series.

26. (1) $5 + 8 = 13$

$13 + 16 = 29$

$29 + 32 = 61$

$61 + 64 = \boxed{125}$

$125 + 128 = 253$

Therefore, the number 120 is wrong in the series.

27. (2) $0 + 7 = 7$

$7 + 21 = 28$

$28 + 35 = 63$

$63 + 61 = 124$

$124 + 87 = \boxed{211}$

Therefore, the number 215 is wrong in the series.

28. (1) $a \triangledown b \triangledown c$

$\Rightarrow a < b < c$

Option (1)

$a \Delta b \phi c \Rightarrow a > b \le c$ or,

$a < b \le c$

Option (2)

$a \phi b + c \Rightarrow a \le b = c$

Option (3)

$a 0 b + c \Rightarrow a > b = c$

Option (4)

$a 0 b \times c \Rightarrow a > b \ge c$

29. (1) $2 \times 3 \times 5 \times 4 = 120$

$120 \times 120 = 14400$

30. (2)
$$\begin{array}{cccc} P & E & A & R \\ \downarrow & \downarrow & \downarrow & \downarrow \\ G & F & D & N \end{array}$$

Therefore,
$$\begin{array}{cccc} R & E & A & P \\ \downarrow & \downarrow & \downarrow & \downarrow \\ N & F & D & G \end{array}$$

31. (4) $5 - 4 = 1; 4 - 3 = 1$

$1 + 1 = 2$

$6 - 0 = 6; 5 - 1 = 4$

$6 + 4 = 10$

$6 - 2 = 4; 7 - 2 = 5$

$4 + 5 = \boxed{9}$

32. (1)

$L \Rightarrow \times$	$M \Rightarrow +$
$P \Rightarrow +$	$Q \Rightarrow -$
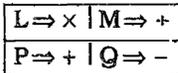
$16 P 24 M 8 Q 6 M 2 L 3 = ?$

$\Rightarrow ? = 16 + 24 \div 8 - 6 + 2 \times 3$

$\Rightarrow ? = 16 + 3 - 3 \times 3$

$\Rightarrow ? = 16 + 3 - 9 = \boxed{10}$

33. (2) There is no 'V' letter in the given word.

34. (1)
$$\begin{array}{ccccccc} F & L & A & T & T & E & R \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 7 & 2 & 3 & 8 & 8 & 5 & 9 \end{array}$$
$$\begin{array}{cccccc} M & O & T & H & E & R \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 4 & 6 & 8 & 1 & 5 & 9 \end{array}$$
Therefore,
$$\begin{array}{ccccccc} M & A & M & M & O & T & H \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 4 & 3 & 4 & 4 & 6 & 8 & 1 \end{array}$$

35. (1) $16 \Rightarrow (2 + 2)^2 = (4)^2$

$9 \Rightarrow (3 + 0)^2 = (3)^2$

$81 \Rightarrow (1 + 8)^2 = (9)^2$

Similarly, $64 \Rightarrow (4 + 4)^2 = (8)^2$

36. (4) The product of two numbers in a sector is equal to the central number in the previous sector.

$3 \times 5 = 15$

$8 \times 3 = 24$

$7 \times 2 = 14$

$5 \times 3 = \boxed{15}$

$8 \times 4 = 32$

$9 \times 1 = 9$

$9 \times 2 = 18$

$7 \times 4 = 28$

37. (3) First Column

$10 + 12 + 4 + 10 = 36$

$\dfrac{36}{2} = 18$

$= 18$ (Lowermost number)

Second Column

$11 + 12 + 12 + 5 = 40$

$\dfrac{40}{2} = 20$

Third Column

$15 + 8 + 10 + 13 = 46$

$\dfrac{46}{2} = \boxed{23}$

38. (3)
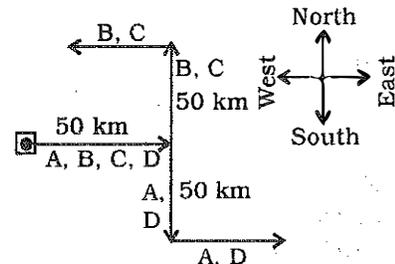
$A \Rightarrow$ East, $B \Rightarrow$ West,

$C \Rightarrow$ West, $D \Rightarrow$ East.

39. (1)
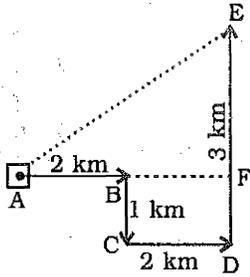
Required distance AE

$$= \sqrt{(AF)^2 + (EF)^2}$$

$$= \sqrt{(4)^2 + (3)^2}$$

$$= \sqrt{16 + 9} = \sqrt{25} = 5 \text{ km}$$

40. (1) Temple and Church are places of worship. It does not imply that Hindus and Christians use the same place for worship. Church is different temple. Therefore, neither Conclusion I nor II follows.

41. (1) Growth and development of human organism is a continuous process. Some changes take place in human body now and then. Therefore, neither Conclusion I nor II follows.

42. (2)

H I P P N O W A D I A S M
P P I H N O ☐W☐ A D M S A I

43. (3)

QMPN ☐PQR☐ ROPQNOP ☐PQR☐ MQRQ ☐PQR☐ PPRR ☐PQR☐ P

44. (4) Volume of sphere $= \dfrac{4}{3}\pi r^3$

Volume of hemisphere $= \dfrac{2}{3}\pi r^3$

Now,

$$\frac{4}{3}\pi r^3 = \frac{2}{3}\pi r^3$$

or, $\dfrac{4}{3}r^3 = \dfrac{2}{3}\left(3\sqrt[3]{2}\right)^3$

or, $r^3 = \dfrac{2}{3} \times \dfrac{3}{4} \times 27 \times 2$

∴ $r = 3$ cm

47. (3)
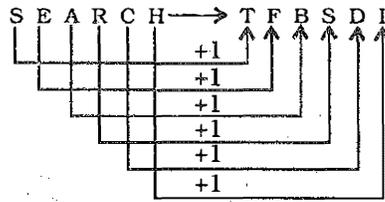
Similarly,
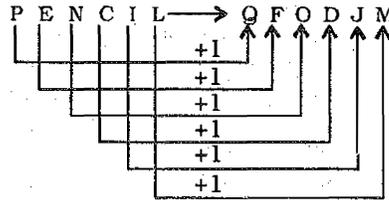
48. (2)
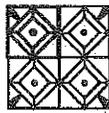
49. (4)
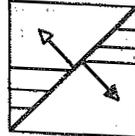
50. (1) G ⇒ 58, 66, 77, 85, 98
U ⇒ 04, 12, 23, 31, 40
I ⇒ 00, 13, 21, 34, 42
D ⇒ 56, 69, 75, 87, 99
E ⇒ 01, 14, 20, 32, 43

Option	G	U	I	D	E
(1)	85	23	21	87	32
(2)	58	31	12	57	41
(3)	77	13	42	99	32
(4)	66	31	43	78	14

51. (2) The Union Government set up the National Commission for Minorities (NCM) under the National Commission for Minorities Act, 1992.

52. (4) Mr. Kamalesh Sharma, an Indian diplomat, became Commonwealth Secretary-General on 1 April 2008. He was appointed to the post by Commonwealth Heads of Government at their meeting in Kampala, Uganda, in November 2007.

53. (1) Some countries, such as Argentina, Australia, Austria, Belgium, Brazil, Canada, Germany, India, Malaysia, Mexico, Pakistan, Russia, Switzerland, and the United States, link their bicameral systems to their federal political structure.

54. (3) He was appointed High Commissioner to Great Britain in 1990.

55. (1) King Ashoka assumed the title Devanampiya Piyadasi which means "Beloved-of-the-Gods, He Who Looks on with Affection."

56. (2) Socialism is an economic system characterised by social ownership and/or control of the means of production and cooperative management of the economy.

57. (2) The act of selling the same article, product under a single control, at different prices to different buyers is known as price discrimination. Information on the price elasticity of demand can be used by a business as part of a policy of price discrimination (also known as yield management).

58. (1) Economic planning is an essential feature of socialism. The most prominent example of a planned economy was the economic system of the Soviet Union.

59. (2) The New Agricultural Strategy is based on concentration of high-yielding varieties of seeds and complementary inputs on selected water-assured areas.

60. (1) The National Policy for Empowerment of Women 2001 has as its goal bringing about advancement, development and empowerment of women in all spheres of life through creation of a more responsive judicial and legal system sensitive to women and mainstreaming a gender perspective in the development process.

**61.** (1) First used in the Australian state of Victoria in 1857, the paper ballot listing all the

candidates was first known as "the Australian ballot." In 1889, New York became the first American state to use these ballots.

62. (3) The Government of India decided to set up the Rashtriya Barh Ayog (National Flood Commission) in 1976 to evolve a coordinated, integrated and scientific approach to the flood control problems in the country.

63. (4) Ear is not used as criteria for racial classification.

64. (3) Passenger coaches are manufactured at three principal places: Integral Coach Factory (ICF) at Perambur, Railway Coach Factory (RCF) at Kapurthala, and Bharat Earth Movers Ltd. (BEML) at Bangalore.

65. (3) This process usually occurs in the upper third of the fallopian tube of the woman.

66. (4) The patient has a considerably higher chance of developing hepatitis, and cirrhosis. Cirrhosis of the liver is an irreversible and progressive condition.

67. (3) The food webs we see are grazing food chains since at their base are producers which the herbivores then graze on.

68. (1) Chihalgani was the group of most important and powerful forty nobles or highly placed officers in the court of Iltutmish. Balban destroyed their clout.

69. (2) In 1661, Catherine of Braganza of Portugal brought islands of Bombay to Charles II of England as part of her marriage dowry.

70. (1) The road was initially built by Sher Shah to connect Agra, his capital, with Sasaram, his hometown.

71. (2) Shivaji, the great Maratha King and founder of a nationalist tradition was contemporary of Tukaram.

72. (3) The study of lakes and other freshwater basins is known as limnology.

73. (1) Homoseismal lines is the line on the Earth's surface connecting points where the seismic wave arrives, generated by an earthquake, at the same time.

74. (3) The lumen is the SI derived unit of luminous flux, a measure of the total "amount" of visible light emitted by a source.

75. (1) In the field of computer science, an interface is a tool and concept that refers to a point of interaction between components, and is applicable at the level of both hardware and software.

76. (3) Interface Card, Ethernet Cable and Routers are used in setting up a LAN. The router can be plugged directly into the modem via an Ethernet cable, and all other computers are eventually connected in some fashion to the route. In terms of LAN, a computer cannot be said to be an item which constitutes this network.

77. (4) A single mole is set to the number of particles found in 12.000 grams of carbon-12. A mole of water has 6.022×1023 water molecules. One mole of water weighs 18.0152 grams.

78. (1) Carrot is rich in Vitamin A and it improves eyesight.

79. (4) The reason for this is the hydrogen bonding between neighboring water molecules. Because hydrogen bonding is a relatively strong intermolecular force, high heat energy is required to break up the force.

80. (1) Valence electrons are important in determining how an element reacts chemically with other elements. since the valence electrons are the electrons in the highest energy level, they are the most exposed of all the electrons, so they are the electrons that get most involved in chemical reactions.

81. (2) Inaugurated in 1951 by the then Prime Minister of India, Jawahar Lal Nehru, CDRI is located at Lucknow.

82. (2) Wheat was the first cereal to be cultivated by man. In several places in the Middle East it was sowed, tended and reaped soon after 8000 BC. The people of Jericho are the first known to have lived mainly from the cultivation of crops.

83. (2) Durum wheat is the only tetraploid form of wheat widely used today, and the second most widely cultivated wheat. This hard wheat is cultivated in clayey soil and is highly sought after for its physical characteristics.

84. (4) A dissipative force counteracts motion. Its direction is opposite to the direction of the velocity vector. Dynamic friction is a dissipative (non-conservative) force: it dissipates energy (mainly through heat and sound), and energy lost by moving in one direction.

85. (3) Poisson strain is defined as the negative ratio of the strain in the traverse direction (caused by the contraction of the bar's diameter) to the strain in the longitudinal direction. As the length increases and the cross sectional area decreases, the electrical resistance of the wire also rises.

86. (2) Some of the magnets might be "bad". Sometimes during storage they end up too close to another magnet and they end up with a "third pole". Consequent Poles are magnetic poles that exist where the specimen has been successively magnetized in different sections to create more than two poles; e.g., two north poles with one south pole between them.

87. (4) The spokes in the Ashok Chakra represent 24 states as 24 were the number of states at that time.

88. (2) In 1980, the General Assembly made Arabic an official and working language of all its committees and subcommittees

89. (2) A five member, committee was constituted with Justice Srikrishna as the chairman of the committee in March 2010 on the separate Telangana issue.

90. (4) The author is Brigadier (Retired) Kuldip Singh.

91. (3) The Ministry of Human Resource Development, through the National University of Educational Planning & Administration, has developed an Education Development Index (EDI) to track progress of the States towards Universal Elementary Education (UEE). Kerala tops the composite EDI and Bihar is at 35th rank.

92. (1) The VK Shunglu Committee report inquired into the Commonwealth Games corruption cases.

93. (1) The 65th National Football Championship for Santosh Trophy 2010-11 was held in Assam. Bengal beat Manipur 2-1 to win the trophy.

94. (4) The National Environmental Engineering Research Institute (NEERI) is a research institute created and funded by Government of India. It was established in Nagpur in 1958.

95. (4) Global warming may promote expansion of mangrove forests to higher latitudes. Elevated CO2 concentration may increase mangrove growth by stimulating photosynthesis or improving water use efficiency. Mangrove wetlands are possible sinks/sources for carbon dioxide and other related greenhouse gases.

96. (2) Fructose, or fruit sugar, is a simple monosaccharide found in many plants. It is one of the three dietary monosaccharide, along with glucose and galactose, which is absorbed directly into the bloodstream during digestion.

97. (4) The most endangered Asiatic top predator, the Dhole is on the edge of extinction. Also called the Asiatic wild dog or Indian wild dog, it is a species of canid native to South and Southeast Asia.

98. (1) The Analects, also known as the Analects of Confucius, is the collection of sayings and ideas attributed to the Chinese philosopher Confucius and his contemporaries, traditionally believed to have been written by Confucius' followers.

99. (4) The Court was established in Nagpur, but after the reorganisation of states on 1 November 1956, it was moved to Jabalpur.

100. (1) Venus is very bright. That's partly because sunlight is easily reflected by acidic clouds that blanket the planet's atmosphere.

101. (3)
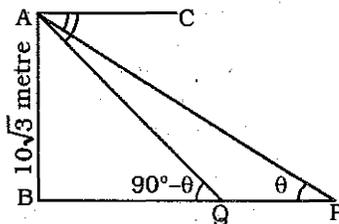
AB = Building = $10\sqrt{3}$ metre

PQ = 20 metre

BQ = x metre (let)

If $\angle APB = \theta$ then

$\angle AQB = 90° - \theta$

From $\triangle ABP$,

$$\tan \theta = \frac{AB}{BP}$$

$$= \frac{10\sqrt{3}}{x + 20} \quad \ldots\ldots(i)$$

From $\triangle ABQ$,

$$\tan (90° - \theta) = \frac{AB}{BQ}$$

$$\Rightarrow \cot \theta = \frac{10\sqrt{3}}{x} \quad \ldots\ldots(ii)$$

By multiplying both equations,

$$\tan\theta.\cot\theta = \frac{10\sqrt{3}}{x + 20} \times \frac{10\sqrt{3}}{x}$$

$$\Rightarrow x^2 + 20x = 10 \times 10 \times 3$$

$$\Rightarrow x^2 + 20x - 300 = 0$$

$$\Rightarrow x^2 + 30x - 10x - 300 = 0$$

$$\Rightarrow x (x + 30) - 10 (x + 30) = 0$$

$$\Rightarrow (x - 10) (x + 30) = 0$$

$$\Rightarrow x = 10 \qquad x \neq -30$$

$\therefore$ BP = 10 + 20 = 30 metre

102. (3) A + B = 90° $\Rightarrow$ A = 90° – B

$\Rightarrow$ sin A = sin (90° – B) = cos B

Similarly,

$\Rightarrow$ cos A = sin B, tan A = cot B

$\therefore$ sin A. cos B + cos A.sin B – tan A.tanB + sec² A – cot² B

= cos²B + sin²B – cotB. tanB + sec² A – tan²A

= 1 – 1 + 1 = 1

[$\because$ tanB.cotB = 1, sec²A – tan² A =1]

103. (4) 2 sin² θ + 3 cos² θ = 2 sin² θ + 2cos²θ + cos²θ

= 2 (sin²θ + cos²θ) + cos²θ

= 2 + cos²θ

$\therefore$ Least value = 2 + 0 = 2

[$\because$ cos² θ $\geq$ 0]

104. (1)

OY is the bisector of $\angle AOC$.

$\therefore \angle AOC = 2 \angle COX$

OX is the bisector of $\angle BOC$.

$\therefore \angle BOC = 2 \angle COY$

$\therefore \angle AOC + \angle BOC$

$= 2\angle COY + 2\angle COX = 180°$

$\Rightarrow 2 (\angle COX + \angle YOC) = 180°$

$\Rightarrow \angle XOY = 90°$

$\therefore \angle AOX + \angle XOY + \angle BOY = 180°$

$\therefore \angle BOY = 180° - 90° - 20° = 70°$

105. (3) $4x = \sec \theta$

$$\Rightarrow x = \frac{\sec\theta}{4}$$

Again, $\dfrac{4}{x} = \tan \theta \Rightarrow \dfrac{1}{x} = \dfrac{\tan \theta}{4}$

$$\therefore \ 8\left(x^2 - \frac{1}{x^2}\right)$$

$$= 8\left(\frac{\sec^2 \theta}{16} - \frac{\tan^2 \theta}{16}\right)$$

$$= \frac{8}{16}\left(\sec^2 \theta - \tan^2 \theta\right) = \frac{1}{2}$$

106. (1) $2 - \cos^2 \theta = 3 \sin\theta . \cos\theta$

Dividing by $\cos^2\theta$

$$\frac{2}{\cos^2 \theta} - 1 = \frac{3\sin\theta . \cos\theta}{\cos^2 \theta}$$

$\Rightarrow 2 \sec^2\theta - 1 = 3 \tan\theta$

$\Rightarrow 2 (1 + \tan^2\theta) - 1 = 3 \tan\theta$

$\Rightarrow 2 \tan^2\theta + 2 - 1 = 3 \tan\theta$

$\Rightarrow 2 \tan^2\theta - 3\tan\theta + 1 = 0$

$\Rightarrow 2 \tan^2\theta - 2 \tan\theta - \tan\theta + 1 = 0$

$\Rightarrow 2 \tan\theta (\tan\theta - 1) - 1(\tan\theta - 1) = 0$

$\Rightarrow (2 \tan\theta - 1) (\tan\theta - 1) = 0$

$\Rightarrow \tan\theta = \dfrac{1}{2}$ or 1

107. (4) $\sin\theta + \cos\theta$

$= \sqrt{2} \cos (90° - \theta)$

$\Rightarrow \sin\theta + \cos\theta = \sqrt{2} \sin\theta$

On squaring,

$\cos^2\theta + \sin^2\theta + 2 \cos\theta .\sin\theta$
$= 2 \sin^2\theta$

$\Rightarrow \cos^2\theta = \sin^2\theta - 2 \cos\theta . \sin\theta$

On dividing by $\sin^2\theta$,

$\cot^2\theta = 1 - 2 \cot\theta$

$\Rightarrow \cot^2\theta + 2 \cot\theta - 1 = 0$

$\therefore \cot\theta = \dfrac{-2 \pm \sqrt{4 + 4}}{2}$

$= \dfrac{-2 \pm 2\sqrt{2}}{2} = \sqrt{2} - 1$

or $- \left(\sqrt{2} + 1\right)$

108. (3) $x \sin^3\theta + y \cos^3 \theta = \sin\theta.\cos\theta$

$\Rightarrow (x \sin\theta) . \sin^2 \theta + (y \cos\theta) \cos^2 \theta = \sin\theta.\cos\theta$

$\Rightarrow x \sin\theta . \sin^2 \theta + x \sin\theta. \cos^2\theta = \sin\theta.\cos\theta$

$\Rightarrow x \sin\theta (\sin^2\theta + \cos^2\theta) = \sin\theta.\cos\theta$

$\Rightarrow x = \cos\theta$

$\therefore x \sin\theta = y \cos\theta$

$\Rightarrow \cos\theta . \sin\theta = y \cos\theta$

$\Rightarrow y = \sin\theta$

$\therefore x^2 + y^2 = \cos^2\theta + \sin^2\theta = 1$

109. (1)
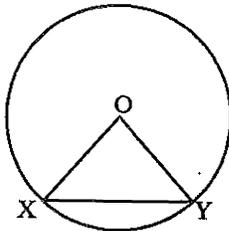
$\angle XOY = 90°; OX = OY = $ radius (r)

$\therefore \Delta XOY$ is a right angled triangle.

$\therefore \dfrac{1}{2} \times (OX) \times (OY) = 32$

$\Rightarrow r^2 = 2 \times 32 = 64$

$\therefore r = \sqrt{64} = 8$

$\therefore$ Area of circle $= \pi r^2$
$= 64 \pi$ sq.units

110. (2)
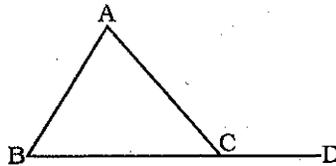


$\angle ACD = \angle ABC + \angle BAC$

$\Rightarrow 108° = \dfrac{\angle A}{2} + \angle A$

$\Rightarrow \dfrac{3\angle A}{2} = 108°$

$\Rightarrow \angle A = \dfrac{108 \times 2}{3} = 72°$

111. (4)
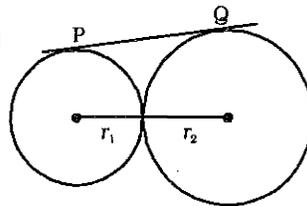

$r_1 + r_2 = 13$ cm

$r_2 - r_1 = 9 - 4 = 5$ cm

PQ

$= \sqrt{\left(\begin{array}{c}\text{distance between}\\\text{centres}\end{array}\right)^2 - (r_2 - r_1)^2}$

$= \sqrt{(13^2 - 5^2)} = 12$ cm

$\therefore$ Area of square $= 12 \times 12$
$= 144$ sq. cm.

112. (3)
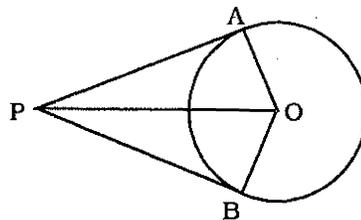
In right Δs OAP and OPB,

AP = PB , OA = OB

OP = OP

$\therefore \Delta OAP \cong \Delta OPB$

$\therefore \angle AOP = \angle POB$ and $\angle APO = \angle OPB$

From Δ AOP,

$\angle APO = 180° - 90° - 60° = 30°$

$\therefore \angle APB = 2 \times 30 = 60°$

113. (4) $\dfrac{(2n - 4) \times 90°}{n} = \dfrac{360°}{n} \times 2$

$\Rightarrow (2n - 4) \times 90° = 2 \times 360°$

$\Rightarrow 2n - 4 = 8 \Rightarrow 2n = 12 \Rightarrow n = 6$

114. (2)
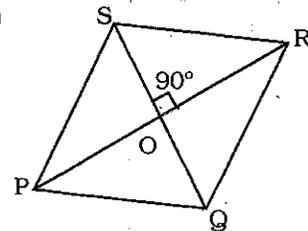
$\angle PQO = \dfrac{1}{2} PQR = 60°$

From ΔPOQ,

$\angle OPQ = 180° - 90° - 60° = 30°$

$\sin OPQ = \dfrac{OQ}{PQ}$

$\Rightarrow OQ = PQ \sin 30°$

$= 6 \times \dfrac{1}{2} = 3$

$\therefore QS = 2 \times 3 = 6$ cm

115. (3) Angle traced by hour hand in an hour $= 30°$

$\therefore$ Angle traced in $2\dfrac{1}{4}$ i.e. $\dfrac{9}{4}$ hours

$= \dfrac{9}{4} \times 30° = \dfrac{135°}{2}$

Angle traced by minute hand in 60 minutes $= 360°$

$\therefore$ Angle traced in 15 minutes $= \dfrac{360}{60} \times 15 = 90°$

$\therefore$ Required angle $= 90° - \dfrac{135°}{2}$

$= \dfrac{45}{2} = 22\dfrac{1}{2}°$

116. (4) The sum of any two sides of a triangle is greater than third side and their difference is less than third side.

$\therefore a + 4 > 10 \Rightarrow a > 10 - 4$

$\Rightarrow a > 6$

Again, $a - 4 < 10 \Rightarrow a < 14$

$\therefore 6 < a < 14$

117. (4) $x = (0.08)^2$,

$y = \dfrac{1}{(0.08)^2} = \dfrac{10000}{64} = 156.25$

$z = (1 - 0.08)^2 - 1$

$= 1 + (0.08)^2 - 2 \times 0.08 - 1$

$= (0.08)^2 - 2 \times 0.08$

Clearly, $z < x < y$

118. (4)
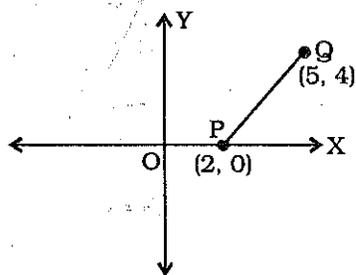
$PQ = \sqrt{(5-2)^2 + (4-0)^2}$

$= \sqrt{9 + 16} = 5$

$\therefore$ Area of circle $= \pi r^2$

$= 25\,\pi$ sq. units

119. (4) $x^4 + \dfrac{1}{x^4} = 23$

$\Rightarrow \left(x^2 + \dfrac{1}{x^2}\right)^2 - 2 = 23$

$\Rightarrow \left(x^2 + \dfrac{1}{x^2}\right)^2 = 23 + 2 = 25$

$\therefore x^2 + \dfrac{1}{x^2} = 5$

$\therefore \left(x - \dfrac{1}{x}\right)^2 = x^2 + \dfrac{1}{x^2} - 2$

$= 5 - 2 = 3$

120. (1) $x = \sqrt{6 + \sqrt{6 + \sqrt{6 + \ldots \ldots \infty}}}$

On squaring,

$x^2 = 6 + \sqrt{6 + \sqrt{6 + \ldots \ldots \infty}}$

$\Rightarrow x^2 = 6 + x$

$\Rightarrow x^2 - x - 6 = 0$

$\Rightarrow x^2 - 3x + 2x - 6 = 0$

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

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

$\Rightarrow x = 3$ because $x \neq -2$

121. (1) $x + \dfrac{1}{x} = 3$

On squaring,

$\left(x + \dfrac{1}{x}\right)^2 = 9$

$\Rightarrow x^2 + \dfrac{1}{x^2} = 9 - 2 = 7$

Again, $\left(x + \dfrac{1}{x}\right)^3 = 27$

$\Rightarrow x^3 + \dfrac{1}{x^3} + 3\left(x + \dfrac{1}{x}\right) = 27$

$\Rightarrow x^3 + \dfrac{1}{x^3} = 27 - 3 \times 3 = 18$

$\therefore \left(x^2 + \dfrac{1}{x^2}\right)\left(x^3 + \dfrac{1}{x^3}\right)$

$= 7 \times 18$

$\Rightarrow x^5 + \dfrac{1}{x^5} + \left(x + \dfrac{1}{x}\right) = 126$

$\Rightarrow x^5 + \dfrac{1}{x^5} = 126 - 3 = 123$

122. (2) $\sec^4 \theta - \sec^2 \theta$

$= \sec^2 \theta (\sec^2 \theta - 1)$

$= (1 + \tan^2\theta)(1 + \tan^2\theta - 1)$

$= \tan^2 \theta + \tan^4 \theta$

123. (4)
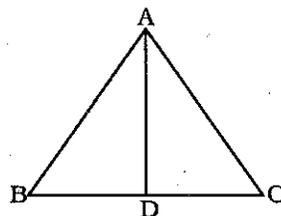
$BD = DC = AD$

$\angle BAD = 30°$

From $\triangle ABD$,

$\angle BAD = 30°$

$\therefore \angle ABD = \angle BAD = 30°$

$\therefore \angle ADB = 180° - 2 \times 30° = 120°$

$\therefore \angle ADC = 180° - 120° = 60°$

$\therefore AD = DC$

$\Rightarrow \angle DAC = \angle ACD = 60°$

124. (1) $\sqrt{6} \times \sqrt{15} = x\sqrt{10}$

$\Rightarrow \sqrt{2 \times 3} \times \sqrt{3 \times 5} = x\sqrt{10}$

$\Rightarrow \sqrt{2} \times \sqrt{5} \times 3 = x\sqrt{10}$

$\Rightarrow 3\sqrt{10} = x\sqrt{10}$

$\Rightarrow x = 3$

125. (2) $\dfrac{1}{3 + \sqrt{5}} = \dfrac{3 - \sqrt{5}}{(3 + \sqrt{5})(3 - \sqrt{5})}$

$= \dfrac{3 - \sqrt{5}}{9 - 5} = \dfrac{3 - \sqrt{5}}{4}$

$\therefore 3 - \dfrac{3 + \sqrt{5}}{4} - \dfrac{3 - \sqrt{5}}{4}$

$= \dfrac{12 - 3 - \sqrt{5} - 3 + \sqrt{5}}{4}$

$= \dfrac{6}{4} = \dfrac{3}{2}$

126. (2) If $a + b + c = 0$

then $a^3 + b^3 + c^3 - 3abc = 0$

127. (2) Points (a, b) and $[(a + 3), (b + k)]$ will satisfy the equation $x - 3y + 7 = 0$.

$\therefore a - 3b + 7 = 0$ ....(i)

and $a + 3 - 3(b + k) + 7 = 0$

$\Rightarrow a + 3 - 3b - 3k + 7 = 0$

$\Rightarrow a - 3b + 7 + 3 - 3k = 0$

$\Rightarrow 3 - 3k = 0 \Rightarrow 3k = 3$

$\Rightarrow k = \dfrac{3}{3} = 1$ $[\because a - 3b + 7 = 0]$

128. (4) Sum of the present ages of four boys

$= 9 \times 4 + 20 = 56$ years

Sum of the present ages of five boys

$= 15 \times 5 = 75$ years

$\therefore$ Present age of new boy

$= 75 - 56 = 19$ years

129. (1) $39 + 48 + 51 + 63 + 75 + 83 + x + 69 = 60 \times 8$

$\Rightarrow 428 + x = 480$

$\Rightarrow x = 480 - 428 = 52$

130. (4) If the weight of a piece of diamond be $6x$ units, then

Original price $\alpha(6x)^2 = 36kx^2$

$\therefore 36.kx^2 = 5184$ ......(i)

Again,

New price $= k(x^2 + 4x^2 + 9x^2)$

$= 14kx^2$

$= \dfrac{14 \times 5184}{36} = $ Rs. 2016

$\therefore$ Loss $= 5184 - 2016$

$= $ Rs. 3168

131. (1) $\because$ 30% $\equiv$ Rs. 30

$\therefore$ 100 % $\equiv$ Rs. 100

$\therefore$ New S.P. $= 100 - 30$

$= $ Rs.70

132. (4) $\dfrac{\frac{2}{3}\pi r_1^3}{\frac{2}{3}\pi r_2^3} = \dfrac{6.4}{21.6}$

$\Rightarrow \dfrac{r_1^3}{r_2^3} = \dfrac{64}{216} = \left(\dfrac{4}{6}\right)^3 = \left(\dfrac{2}{3}\right)^3$

$\Rightarrow \dfrac{r_1}{r_2} = \dfrac{2}{3}$

133. (4) Part of the tank filled by both pipes in two hours

$= 2\left(\dfrac{1}{8} + \dfrac{1}{6}\right)$

$= 2\left(\dfrac{3+4}{24}\right) = \dfrac{7}{12}$

Remaining part $= 1 - \dfrac{7}{12} = \dfrac{5}{12}$

Time taken by B in filling the remaining part

$= \dfrac{5}{12} \times 6 = \dfrac{5}{2} = 2\dfrac{1}{2}$ hours

134. (1) $a^3 + b^3 + c^3 - 3abc$

$= (a + b + c)$

$(a^2 + b^2 + c^2 - ab - bc - ac)$

$= \dfrac{1}{2}(a + b + c)(2a^2 + 2b^2 + 2c^2 - 2ab - 2bc - 2ac)$

$= \dfrac{1}{2}(a + b + c)[(a - b)^2 + (b - c)^2 + (c - a)^2]$

$\therefore \dfrac{a^3 + b^3 + c^3 - 3abc}{a + b + c}$

$= \dfrac{1}{2}\left[(a-b)^2 + (b-c)^2 + (c-a)^2\right]$

$= \dfrac{1}{2}(9 + 25 + 1)$

$= \dfrac{35}{2} = 17.5$

135. (4) If the number of females be x, then, number of males $= 15000 - x$

$\therefore x \times \dfrac{10}{100} + (15000 - x) \times \dfrac{8}{100}$

$= 16300 - 15000$

$\Rightarrow 10x + 120000 - 8x$

$= 1300 \times 100$

$\Rightarrow 2x = 130000 - 120000$

$= 10000$

$\Rightarrow x = 5000$

136. (2) Interest $= 5700 - 5000$

$= $ Rs. 700

$\therefore$ Rate $= \dfrac{700 \times 100}{5000 \times 1} = 14\%$

Case II,

Interest

$= \dfrac{\text{Principal} \times \text{Time} \times \text{Rate}}{100}$

$= \dfrac{7000 \times 5 \times 14}{100} = $ Rs. 4900

Amount $= 7000 + 4900$

$= $ Rs. 11900

137. (3) Relative speed $= 11 - 10$

$= 1$ kmph

Distance covered in 6 minutes

$= \dfrac{1000}{60} \times 6$ metre $= 100$ metre

$\therefore$ Remaining distance

$= 200 - 100 = 100$ metre

138. (4) Effective profit percent

$= \left(20 + 25 + \dfrac{20 \times 25}{100}\right)$

$= 50\%$

$\therefore$ Original cost price

$= \dfrac{100}{150} \times 1200 = $ Rs. 800

139. (2) 65)75070(1154

$\quad\underline{65}$

$\quad 100$

$\quad\underline{65}$

$\quad 357$

$\quad\underline{325}$

$\quad 320$

$\quad\underline{260}$

$\quad 60$

$\therefore$ Required number

$= 75070 + (65 - 60) = 75075$

140. (4) Required number

$= \dfrac{80 \times 120}{100} = 96$

141. (3)
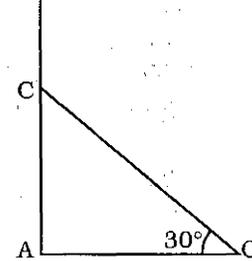
AB = tree

BC = broken part

$\therefore$ BC = CD

AD = 30 metre

From $\triangle ACD$,

$\tan 30° = \dfrac{AC}{AD}$

$\Rightarrow AC = AD \times \dfrac{1}{\sqrt{3}}$

$= \dfrac{30}{3} = 10\sqrt{3}$ metre

CD = AC sin 30°

$= 10\sqrt{3} \times \dfrac{1}{2} = 5\sqrt{3}$ = BC

$\therefore$ AB = AC + BC

$= 10\sqrt{3} + 5\sqrt{3} = 15\sqrt{3}$ metre

142. (1) cos A $= 1 - \cos^2 A = \sin^2 A$

$\therefore \sin^2 A + \sin^4 A = \sin^2 A + \cos^2 A$

$= 1$

143. (4) According to the question,

$\dfrac{n}{2} + \dfrac{n}{4} + \dfrac{n}{5} + 7 = n$

$$\Rightarrow \frac{10n + 5n + 4n}{20} + 7 = n$$

$$\Rightarrow \frac{19n}{20} + 7 = n \Rightarrow n - \frac{19n}{20} = 7$$

$$\Rightarrow \frac{n}{20} = 7 \Rightarrow n = 20 \times 7 = 140$$

144. (3) $675 = 5 \times 5 \times 3 \times 3 \times 3$
$= 3^3 \times 5^2$
∴ Required number = 5

145. (1) $35 - 18 = 17$
$45 - 28 = 17$
$55 - 38 = 17$
i.e., difference between the divisor and corresponding remainder is same.
LCM of 35, 45 and 55 = 3465
∴ Required number
$= 3465 - 17 = 3448$

146. (1) Required percentage increase

$$= \frac{40 - 30}{30} \times 100 = \frac{100}{3}$$

$$= 33\frac{1}{3}\%$$

147. (1) Income of company in 2002
= Rs. 40 lakhs
Expenditure of company in 2003 = Rs.40 lakhs

148. (2) Profit of company in 2004
= Rs. 25 lakhs

149. (3) Required difference
$= 20 - 10 = $ Rs. 10 lakhs

150. (1) Average income of company

$$= \frac{30 + 50 + 40 + 60 + 60}{5}$$

$$= \frac{240}{5} = $$ Rs. 48 lakhs

The incomes of company in years 2001, 2003 and 2004 were greater than Rs.48 lakhs.

151. (2) Here, look like .... should be used. Like is an Adjective which is used as Preposition.

152. (3) Here, foot tall .... should be used.

153. (1) Here, with no proof of your guilt/without any proof of your guilt .... should be used.

154. (2) Here, she appears to be unreasonably (Adverb) .... should be used because an Adverb modifies an Adjective.

155. (1) Here, The scissors are .... should be used.
Look at the sentences :
My scissors are sharp.
A pair of scissors has been purchased.
Look at some inseparables : scissors, shears, trousers.

161. (1) The word **Nexus (Noun)** means : a complicated series of connections between different things; connection.
Look at the sentence :
There is a strong nexus between a criminal and corrupt police.

162. (2) The word **Mammoth (Adjective)** means : extremely large; huge.
Look at the sentence :
Europe is facing a financial crisis of mammoth proportions.

163. (4) The word **Hyperbole (Noun)** means : a way of speaking or writing that makes something sound better, more exciting than it really is; exaggeration.

164. (4) The word **Eulogy (Noun)** means : speech or piece of writing praising somebody/something very much : praise.

165. (2) The word **Menacingly (Adverb)** means : threateningly; seeming likely to cause you harm or danger.
Look at the sentences :
The thunder growled menacingly.
He glared at her threateningly.

166. (1) The word **Impeccable (Adjective)** means : without mistakes or faults; perfect.
Look at the sentences :
Her written English is impeccable.
He was dressed in an impeccable white shirt.
Hence, its antonym should be **faulty.**

167. (1) The word **Amalgamate (Verb)** means : merge; to put two or more things together so that they form one; assimilate.
Look at the sentence :
The company has now amalgamated with another local firm.
Its antonym should be **separate** which means : to divide into different parts or groups; to move apart.

168. (4) The word **Zenith (Noun)** means : the highest point; peak; the time when something is strongest and most successful.
The word **Nadir (Noun)** means : the worst moment of a particular situation.
Look at the sentences :
The Sun is at the zenith at noon.
Company losses reached their nadir in 2000.

169. (4) The word **Influx (Noun)** means : the fact of a lot of people, money or things arriving somewhere.
The word **Exodus (Noun)** means : a situation in which many people leave a place at the same time.

170. (4) The word **Orderly (Adjective)** means : arranged or organised in a neat, careful and logical way; tidy; behaving well.
The word **Chaotic (Adjective)** means : in a state of complete confusion and lack of order.

171. (3) Idiom **have an axe to grind** means : to have private reasons for being involved in something or for arguing for a particular cause.

172. (1) Idiom **draw a blank** means: to get no response or result.

173. (2) Idiom **put your foot down** means : to be very strict in opposing what somebody wishes to do; to drive faster.

174. (4) Idiom **make a killing** means : to make a lot of money quickly.

175. (4) Idiom **Gainsay (verb)** means : to disagree; to deny.

❑❑❑