

PART - A

GENERAL INTELLIGENCE AND REASONING

Directions : In question nos. 1 to 9, select the related letter/word/number from the given alternatives.

1. 9 : 80 :: 100 : ?
 (A) 901 (B) 1009
 (C) 9889 (D) 9999
2. 25 : 125 :: 36 : ?
 (A) 180 (B) 206
 (C) 216 (D) 318
3. 335 : 216 :: 987 : ?
 (A) 868 (B) 867
 (C) 872 (D) 888
4. BEGK : ADFJ :: PSVY : ?
 (A) ROUX (B) ORUX
 (C) LQUT (D) LOQT
5. AZBY : CXDW :: EVFU : ?
 (A) GTHS (B) GHTS
 (C) GSTH (D) TGSH
6. BDFH : SUWY :: CEGI : ?
 (A) QTWZ (B) PTVX
 (C) JLNP (D) TVXZ
7. food : man :: fuel : ?
 (A) wood (B) fire
 (C) heat (D) smoke
8. Spiritual : Belief :: Orchestral : ?
 (A) Theatre (B) Situation
 (C) Music (D) Direction
9. Latter : Former :: Hazardous : ?
 (A) Risky (B) Comfortable
 (C) Safe (D) Harmful

Directions : In question nos. 10 to 18, find the odd word/number/letters/number pair from the given alternatives.

10. (A) VWY (B) QRT
 (C) LMO (D) JKL
11. (A) BE (B) GJ
 (C) NP (D) QR
12. (A) 400 (B) 484
 (C) 625 (D) 729
13. (A) 1000 (B) 1725
 (C) 2744 (D) 4096
14. (A) 12 - 16 (B) 60 - 80
 (C) 30 - 50 (D) 36 - 48
15. (A) CX (B) DW
 (C) JQ (D) LR
16. (A) Cyclotron (B) Basic
 (C) Pascal (D) Fortran
17. (A) Rooster (B) Buck
 (C) Gander (D) Peahen
18. (A) Booklet (B) Pamphlet
 (C) Voucher (D) Brochure
19. Which word will appear third in dictionary?
 (A) BALLIUM (B) BALLISTICS
 (C) BALLERINA (D) BALLISTITE
20. Which word will appear last in dictionary?
 (A) laugh (B) latch
 (C) laurels (D) latitude

1. Arrange the given words in a meaningful order :

1. INFANT 2. ADOLESCENT
3. CHILD 4. OLD 5. ADULT
(A) 3, 1, 2, 4, 5 (B) 1, 3, 2, 5, 4
(C) 3, 2, 4, 5, 1 (D) 5, 4, 3, 2, 1

Directions : In question nos. 22 and 23, which set of letters when sequentially placed at the positions in the given letter series shall complete it ?

2. c _ ab ca bc a
(A) b c a b (B) a b c b
(C) b a c b (D) c b a c

3. ba bab babb b
(A) b a a a (B) a b b b
(C) b a b b (D) a b a b

Directions : In question nos. 24 to 27, select the missing number from the given responses.

4. 500, 484, 459, ?, 374
(A) 384 (B) 432
(C) 418 (D) 423

5. MNOPWXYZRSTUBCD ?
(A) A (B) E
(C) I (D) F

6. 60, 69, 85, ?, 146
(A) 110 (B) 117
(C) 109 (D) 120

7. 46, 50, 47, 55, 49, 61, ?
(A) 54 (B) 52
(C) 57 (D) 51

8. The average age of 25 subordinates in an office is 30 years. If the age of Manager is added, the average increases to 31 years. What is the age of the Manager ?

- (A) 26 (B) 36
(C) 46 (D) 56

29. Class A has students twice that of class B. After adding 20 students to class A and 30 students to class B, the total number of students in both the classes is 140. What is the number of students in class A in the beginning ?

- (A) 30 (B) 60
(C) 80 (D) 140

30. Find the lowest number which when divided by 8, 12, 15 and 20 leaves the remainder 2.

- (A) 360 (B) 242
(C) 122 (D) 82

31. If B becomes A and P becomes O, what will K become in the English alphabet ?

- (A) L (B) J
(C) H (D) N

32. The given word is followed by 4 responses, one of which *cannot* be formed by using the letters of the word given 'CAMBRIDGE'. Find out the word.

- (A) BRIDGE (B) CAME
(C) BRIDE (D) CAMP

33. If SEASONAL is written as ESSANOLA, how can SEPARATE be written in that code ?

- (A) SEAPARET (B) ESPARATE
(C) ESPAARTE (D) ESAPARET

34. In certain code, RAGHAVAN is written as GARVAHNA. In that code which word will be written as MATHAVAN ?

- (A) TAMVAHNA (B) TAMVAHAN
(C) TAMHAVNA (D) MATVAHNA

5. If 'FRIEND' is coded as 'IULHQG', how will you code 'ENEMY' ?
 (A) HQHPB (B) HQHPA
 (C) HQEMY (D) HQHPG
6. In a coded language, if the word EQUATION is coded as GSWCVKQP, then how is the word DONKEY coded ? F
 (A) FQPMGA (B) YEKNOD
 (C) GWCVKJ (D) PQKUCW
7. If $38 + 15 = 66$ and $29 + 36 = 99$, then $82 + 44 = ?$
 (A) 77 (B) 88
 (C) 80 (D) 94
8. If $+$ means \div , $-$ means \times , \times means $+$, \div means $-$, give the value for $45 + 9 - 3 \times 15 \div 2$
 (A) 40 (B) 36
 (C) 56 (D) 28

Directions : In question nos. 39 and 40, select the missing number from the given responses.

- 39.
- | | | |
|----|----|----|
| 7 | 8 | 6 |
| 4 | 9 | 5 |
| 3 | 2 | ? |
| 25 | 70 | 29 |
- (A) 9 (B) 8
 (C) 1 (D) 5

3	4	5
6	7	8
9	1	2
57	11	?

- (A) 42 (B) 21
 (C) 11 (D) 18

41. From the given details, estimate number of people affected by Tuberculosis in particular locality in the year 1994.

1994	1995	1996	1997	1998
?	92	113	141	176

- (A) 99 (B) 85
 (C) 71 (D) 78

42. A man started from a place walked towards North for 5 km then turned 90° to his right and walked another 5 km. Then he turned 45° to his right and walked 2 km and finally turned 45° to his left. What is his direction now ?
 (A) South (B) South East
 (C) East (D) South West
43. A boy running towards South, turns to his right and runs. Then he turns to his right and finally turns to his left. Towards which direction is he running now ?
 (A) East (B) West
 (C) South (D) North

Directions : In question nos. 44 and 45, one statement is given, followed by two conclusions I and II. You have to consider the statements to be true even if they seem to be in variance from commonly known facts. You have to decide which of the given conclusions, if any, follow from the given statements.

44. Statement : To keep myself updated, I always listen to 9 o'clock news on radio.

Conclusions I : The person does not read newspaper.
 II : Recent news is available only on radio.

- (A) Only conclusion I is implicit
 (B) Only conclusion II is implicit
 (C) Neither conclusion I nor II is implicit
 (D) Both conclusions are implicit

45. Statement : All wealthy people are happy in life.

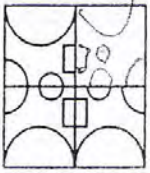
Conclusions I : Wealth and happiness are directly related.

II : Wealth leads to happiness in life.

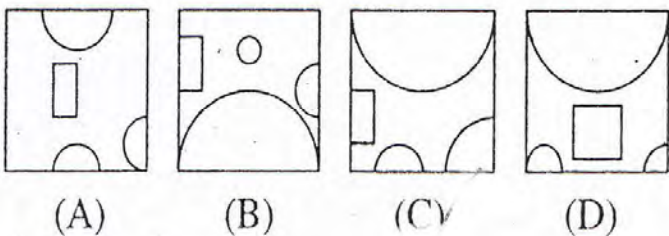
- (A) Only conclusion I follows
- (B) Only conclusion II follows
- (C) Both conclusion I and II follow
- (D) Neither conclusion I nor II follow

Directions : In question no. 46, which answer figure will complete the question figure ?

46. Question figure



Answer figures

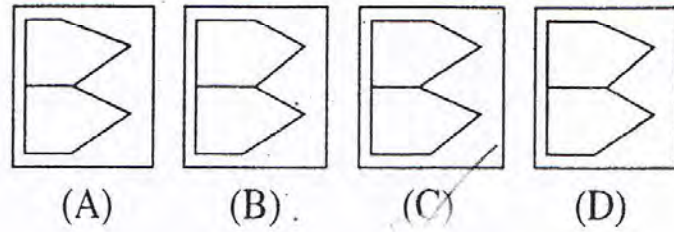


47. From the given answer figures, select the one in which the question figure is hidden embedded.

Question figure

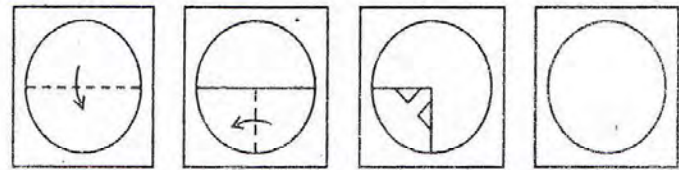


Answer figures

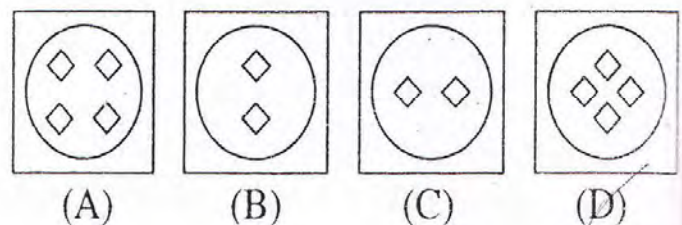


Directions : In question no. 48, a piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

48. Question figures



Answer figures



49. Select the correct option that will be the mirror reflection of the problem figure.

Question figure



Answer figures



(A)



(B)



(C)



(D)

Directions : In question no. 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., 'P' can be represented by 11, 32, etc. and 'K' can be represented by 55, 78, etc. Similarly, you have to identify the set for the word SALM.

50. MATRIX I

	0	1	2	3	4
0	P	A	I	V	R
1	I	P	R	A	V
2	A	R	V	P	I
3	V	I	P	R	A
4	R	V	A	I	P

MATRIX II

	5	6	7	8	9
5	S	L	K	M	E
6	K	M	S	E	L
7	M	E	L	K	S
8	L	K	E	S	M
9	E	S	M	L	K

- (A) 55, 20, 56, 59 (B) 79, 13, 69, 75
(C) 96, 34, 76, 89 (D) 67, 21, 85, 97

FOR VISUALLY HANDICAPPED CANDIDATES ONLY

46. Anand, David, Karim and Mano are fans of games. Each has a different favourite game among hockey, chess, cricket and football. David does not watch cricket and hockey matches. Anand does not like hockey, chess and cricket. Mano does not watch cricket. What is the favourite game of Karim ?

- (A) Chess (B) Cricket
(C) Football (D) Hockey

47. Choose the correct alternative that will continue the same pattern and fill in the blank spaces.

3, 7, 15, 31, 63, ?

- (A) 92 (B) 115
(C) 127 (D) 131

48. Which word *cannot* be formed by using the letters of FLOWERBED ?

- (A) WOLF (B) LOWER
(C) FOLLOWER (D) FREED

49. Select the related word from the given alternatives :

frequently : rarely :: always : ?

- (A) Normally (B) Usually
(C) Seldom (D) Ever

50. Which one of the following is different from the other three ?

- (A) Ear (B) Liver
(C) Kidney (D) Eye

PART - B

GENERAL AWARENESS

51. A movement along the demand curve of a commodity occurs due to change in
(A) income of the consumers
(B) its own price
(C) taste of the consumers
(D) expectations of the consumers
52. GNP calculation through Expenditure Method does *not* include
(A) Gross Domestic Private Investments
(B) Net Foreign Investments
(C) Depreciation Expenditures
(D) Private Consumption Expenditure
53. The Lobb-Douglas Production function $Q = AL^a k^{(1-a)}$ is based on
(A) increasing returns to scale
(B) decreasing returns to scale
(C) constant returns to scale
(D) fluctuating returns to scale
54. Find the odd one out of the following :
(A) Delhi Transport Corporation
(B) Indian Railways
(C) Kingfisher Airlines
(D) Reliance Industries Limited
55. Monetary Policy in India is laid down and executed by
(A) Union Government
(B) ASSOCHAM
(C) Reserve Bank of India
(D) FICCI
56. Which one of the following subjects is *not* available on the Union List ?
(A) Census (B) Banking
(C) Trade Union (D) Foreign Loans
57. The term "closure" in Parliamentary terminology implies
(A) the end of session of Parliament
(B) stoppage of debate on a motion
(C) end of a day's proceedings
(D) None of the above
58. Which of the following is *not* correctly matched ?
(A) Article 14 - Equality before law
(B) Article 16 - Equal opportunities
(C) Article 17 - Abolition of titles
(D) Article 18 - Permission of military titles
59. Which of the following Presidents held office for two consecutive terms ?
(A) Dr. S. Radhakrishnan
(B) Dr. Zakir Hussain
(C) Dr. Rajendra Prasad
(D) Both (A) and (C)
60. Which Amendment Act reduced the voting age from 21 to 18 ?
(A) 42nd (B) 44th
(C) 52nd (D) 61st
61. Match the following :
a. Vikrama Era : 1. A. D. 248
b. Saka Era : 2. A. D. 320
c. Kalachuri Era : 3. 58 B. C.
d. Gupta Era : 4. A. D. 78
(A) a1, b2, c3, d4 (B) a3, b4, c1, d2
(C) a4, b3, c2, d1 (D) a2, b1, c4, d3
62. Mahavira was the
(A) 21st Tirthankara
(B) 24th Tirthankara
(C) 23rd Tirthankara
(D) 22nd Tirthankara

63. Which one among the following woman scholars challenged the invincible Yajna-
valkya in debate ?

- (A) Ghosa (B) Apala
(C) Maitreyi (D) Gargi

64. Which one of the following event made the crown of England to take over the Indian Administration ?

- (A) Battle of Plassey
(B) Battle of Buxar
(C) The Carnatic Wars
(D) The Sepoy Mutiny

65. Who built the famous Dilwara temple at Mount Abu in Rajasthan in the 13th century ?

- (A) Mahendrapala (B) Mahipala
(C) Rajyapala (D) Tejapala

66. GIS stands for

- (A) Global Institute for Soils
(B) Geographical International Studies
(C) Geographical Information Systems
(D) Global Information Statistics

67. Which of the following is a Trans-Himalayan river ?

- (A) Ganga (B) Yamuna
(C) Sutlej (D) Ravi

68. Match the following using codes given below :

- | List I | | List II | |
|-----------------------|--|------------------|--|
| <i>(Forest Type)</i> | | <i>(Regions)</i> | |
| a. Tropical Evergreen | | 1. Siwaliks | |
| b. Monsoon | | 2. Shillong | |
| c. Temperate | | 3. West Bengal | |
| d. Mangrove | | 4. Nilgiris | |

- | | a | b | c | d |
|-----|---|---|---|---|
| (A) | 2 | 4 | 1 | 3 |
| (B) | 3 | 1 | 4 | 2 |
| (C) | 2 | 1 | 4 | 3 |
| (D) | 3 | 4 | 1 | 2 |

69. On which river is the Nagarjunasagar Project located ?

- (A) Krishna (B) Godavari
(C) Cauvery (D) Tapti

70. Suez canal joins

- (A) Persian Gulf and Arabian Sea
(B) Red Sea and Mediterranean Sea
(C) Mediterranean Sea and Black Sea
(D) Red Sea and Arabian Sea

71. Drug which helps to reduce anxiety and brings about calmness is

- (A) tranquiliser (B) diuretic
(C) analgesic (D) antihistamine

72. A keel is absent in

- (A) Chicken (B) Ostrich
(C) Duck (D) Peacock

73. Broad spectrum antibiotics are produced by

- (A) Streptomyces (B) Aspergillus
(C) Pencillium (D) Bacillus

74. The pigment that protect plants from harmful effect of ultraviolet rays is

- (A) Chlorophyll (B) Carotenoid
(C) Phycocyanin (D) Plastid

75. Glycogen, starch and cellulose are polymers of

- (A) Fructose (B) Glucose
(C) Lactose (D) Maltose

76. Black death is
- (A) Cancer (B) Plague
(C) AIDS (D) Gonorrhoea
77. Stars appear to move from east to west because the
- (A) whole universe is moving from east to west
(B) earth is revolving round the sun
(C) earth is rotating from east to west
(D) earth is rotating from west to east
78. On the moon, an astronaut cannot drink lemonade with the help of a straw because
- (A) acceleration due to gravity on the moon is less
(B) there is no atmosphere on the moon
(C) lemonade evaporates instantaneously on the moon
(D) None of the above
79. A particle moving with uniform speed
- (A) must have uniform velocity
(B) cannot have uniform velocity
(C) may have uniform velocity
(D) will have no velocity
80. Device which uses sound waves for detection and ranging is called
- (A) Radar (B) Sonar
(C) Pukar (D) None of the above
81. What is the name of the network topology in which there are bi-directional links between each possible node ?
- (A) Ring (B) Star
82. LAN stands for
- (A) Local Area Nodes
(B) Large Area Network
(C) Large Area Nodes
(D) Local Area Network
83. Dry Ice is nothing but
- (A) Gaseous carbon dioxide
(B) Washing soda
(C) Solid carbon dioxide
(D) Carbon monoxide
84. Which one of the following is obtained as slag in a blast furnace ?
- (A) Calcium Carbonate
(B) Calcium Sulphate
(C) Calcium Chloride
(D) Calcium Silicate
85. When H_2 gas is allowed to expand from a region of high pressure to a region of low pressure, the temperature of the gas
- (A) decreases to a small extent
(B) increases
(C) does not change
(D) decreases suddenly
86. In the industrial production of vegetable ghee, the process involved is
- (A) dissociation (B) reduction
(C) oxidation (D) ionisation
87. Which of the following weeds has been found useful to check water pollution caused by industrial effluents ?
- (A) Parthenium
(B) Elephant grass
(C) Water hyacinth

88. In which year the Chernobyl Nuclear Power Plant of the former USSR had accident that caused escape of radio nuclides into atmosphere ?
 (A) 1979 (B) 1980
 (C) 1984 (D) 1986
89. Certain desert lizards excrete their wastes in dry form. This serves as a means of
 (A) protective mechanism against their predators
 (B) limiting factor of the organism
 (C) adaptation of the organism to the environment
 (D) countering the problem of food scarcity
90. Which one is regarded as "World heritage forest" ?
 (A) Nandan Kanan in Odisha
 (B) Kaziranga in Assam
 (C) Sundarbans in West Bengal
 (D) Indian Botanical Garden, Shibpur in West Bengal
91. Kidney can be taken from a dying person who has the
 (A) cessation of neurological function only
 (B) cessation of cardiac function only
 (C) cessation of respiratory function only
 (D) cessation of kidney function only
92. There is no life on moon because it has no
 (A) Nitrogen (B) Sulphur
 (C) Oxygen (D) Water
93. Losoong is a festival celebrated in
 (A) Tibet
 (B) Arunachal Pradesh
 (C) Sikkim
 (D) Kerala
94. The commodity for which India spends the largest amount to import is
 (A) Foodgrains
 (B) Crude petroleum
 (C) Fertilisers
 (D) Iron and Steel
95. In which categories did Marie Curie win her two different Nobel Prizes ?
 (A) Physics and Chemistry
 (B) Chemistry and Medicine
 (C) Physics and Medicine
 (D) Chemistry and Peace
96. Michail Phelps won _____ gold medals in swimming events in the Beijing Olympics.
 (A) 6 (B) 7
 (C) 8 (D) 9
97. Spot the odd one from the following :
 (A) Tarapur (B) Trombay
 (C) Kalpakkam (D) Narora
98. Which one of the following players has the unique distinction of winning 50 Doubles Titles in ATP tour history ?
 (A) Leander Paes
 (B) Andy Roddick
 (C) Novak Djokovic
 (D) Roger Federer
99. As per the 2011 census, the state with the largest gap in male and female literacy is
 (A) Uttar Pradesh
 (B) Madhya Pradesh
 (C) Rajasthan
 (D) Kerala
100. Which among the following is termed 'Hot Money' ?
 (A) FII (B) FDI
 (C) ADR (D) GDR

PART - C

QUANTITATIVE APTITUDE

01. The next term of the series 1, 5, 12, 24, 43 is

- (A) 51 (B) 62
(C) 71 (D) 78

02. The least multiple of 13 which when divided by 4, 5, 6, 7 leaves remainder 3 in each case is

- (A) 3780 (B) 3783
(C) 2520 (D) 2522

03. The simplest value of

$$\frac{1}{\sqrt{2} + \sqrt{3}} + \frac{1}{\sqrt{3} + \sqrt{4}} + \frac{1}{\sqrt{4} + \sqrt{5}} + \frac{1}{\sqrt{5} + \sqrt{6}}$$

is

- (A) $\sqrt{3}(\sqrt{2} - 1)$ (B) $\sqrt{2}(\sqrt{3} - 1)$
(C) $\sqrt{3} - 1$ (D) $\sqrt{2} - 1$

04. A and B are partners in a business. A contributes $\frac{1}{4}$ of the capital for 15 months and B received $\frac{2}{3}$ of the profit. Find for how long B's money was used.

- (A) 6 months (B) 8 months
(C) 10 months (D) 12 months

05. If 21 is added to a number, it becomes 7 less than thrice of the number. Then the number is

- (A) 14 (B) 16
(C) 18 (D) 19

106. Two men A and B started a job in which A was thrice as good as B and therefore took 60 days less than B to finish the job. How many days will they take to finish the job, if they start working together?

- (A) 15 days (B) 20 days
(C) $22\frac{1}{2}$ days (D) 25 days

107. A rectangular garden is 100 m × 80 m. There is a path along the garden and just outside it. Width of the path is 10 m. The area of the path is

- (A) 1900 sq m (B) 2400 sq m
(C) 3660 sq m (D) 4000 sq m

108. A dealer offered a machine for sale for ₹ 27,500 but even if he had charged 10% less, he would have made a profit of 10%. The actual cost of the machine is

- (A) ₹ 22,000 (B) ₹ 24,250
(C) ₹ 22,500 (D) ₹ 22,275

109. An employer reduces the number of employees in the ratio 8 : 5 and increases their wages in the ratio 7 : 9. As a result, the overall wages bill is

- (A) Increased in the ratio 56 : 69
(B) Decreased in the ratio 56 : 45
(C) Increased in the ratio 13 : 17
(D) Decreased in the ratio 17 : 13

110. The average age of a jury of 5 is 40. If one member aged 35 resigns and a man aged 25 becomes a member, then the average age of the new jury is

- (A) 30 (B) 38
(C) 40 (D) 42

111. With average speed of 40 km/hour, a train reaches its destination in time. If it goes with an average speed of 35 km/hour, it is late by 15 minutes. The total journey is

- (A) 30 km (B) 40 km
(C) 70 km (D) 80 km

112. A man makes a profit of 20% on the sale by selling 20 articles for ₹ 1. The number of articles he bought by ₹ 1 is

- (A) 20 (B) 24
(C) 25 (D) 30

113. The number of seats in an auditorium is increased by 25%. The price of a ticket is also increased by 12%. Then the increase in revenue collection will be

- (A) 40% (B) 35%
(C) 45% (D) 48%

114. A ship is moving at a speed of 30 km/hr. To know the depth of the ocean beneath it, it sends a radiowave which travels at a speed 200 m/s. The ship receives the signal after it has moved 500 m. The depth of the ocean is

- (A) $\frac{\sqrt{143}}{2}$ km (B) 12 km
(C) $\sqrt{6}$ km (D) 8 km

115. A person takes a loan of ₹ 10,000 partly from a bank at 8% p.a. and remaining from another bank at 10% p.a. He pays a total interest of ₹ 950 per annum. Amount of loan taken from the first bank (in ₹) is

- (A) 2500 (B) 5200
(C) 2050 (D) 5020

116. If $a^2 + \frac{1}{a^2} = 98 (a > 0)$, then the value

$a^3 + \frac{1}{a^3}$ will be

- (A) 535 (B) 1030
(C) 790 (D) 970

117. If $x = 1 + \sqrt{2} + \sqrt{3}$, then the value of $(2x^4 - 8x^3 - 5x^2 + 26x - 28)$ is

- (A) $6\sqrt{6}$ (B) 0
(C) $3\sqrt{6}$ (D) $2\sqrt{6}$

118. If the distance between two points (0, — and (x, 0) is 13 unit, then x =

- (A) 10 (B) ± 10
(C) 12 (D) ± 12

119. If $4x = 18y$, then the value of $\left(\frac{x}{y} - 1\right)$ is

- (A) $\frac{1}{3}$ (B) $\frac{7}{2}$
(C) $\frac{2}{3}$ (D) $\frac{3}{2}$

120. If $x + \frac{1}{x} = 5$, then the value of $\frac{x^4 + \frac{1}{x^2}}{x^2 - 3x + 1}$ is

- (A) 70 (B) 50
(C) 110 (D) 55

121. If $x = 2 + \sqrt{3}$, $y = 2 - \sqrt{3}$, then the value

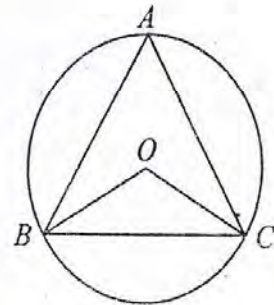
$\frac{x^2 + y^2}{x^3 + y^3}$ is

- (A) $\frac{7}{38}$ (B) $\frac{7}{40}$
(C) $\frac{7}{19}$ (D) $\frac{7}{26}$

122. If $a^2 + b^2 + c^2 = 2(a - b - c) - 3$, then the value of $2a - 3b + 4c$ is
 (A) 3 (B) 1
 (C) 2 (D) 4
123. If $2x - \frac{1}{2x} = 6$, then the value of $x^2 + \frac{1}{16x^2}$ is
 (A) $\frac{19}{2}$ (B) $\frac{17}{2}$
 (C) $\frac{18}{3}$ (D) $\frac{15}{2}$
124. If $5a + \frac{1}{3a} = 5$, the value of $9a^2 + \frac{1}{25a^2}$ is
 (A) $\frac{34}{5}$ (B) $\frac{39}{5}$
 (C) $\frac{42}{5}$ (D) $\frac{52}{5}$
125. The area of the triangle formed by the lines $5x + 7y = 35$, $4x + 3y = 12$ and x -axis is
 (A) $\frac{160}{13}$ sq. units (B) $\frac{150}{13}$ sq. units
 (C) $\frac{140}{13}$ sq. units (D) 10 sq. units
126. In an obtuse-angled triangle ABC , $\angle A$ is the obtuse angle and O is the orthocentre. If $\angle BOC = 54^\circ$, then $\angle BAC$ is
 (A) 108° (B) 126°
 (C) 136° (D) 116°
127. If the ratio of areas of two similar triangles is $9 : 16$, then the ratio of their corresponding sides is
 (A) $3 : 5$ (B) $3 : 4$
 (C) $4 : 5$ (D) $4 : 3$
128. Let BE and CF be the two medians of a $\triangle ABC$ and G be their intersection. Also let EF cut AG at O . Then $AO : OG$ is
 (A) $1 : 1$ (B) $1 : 2$
 (C) $2 : 1$ (D) $3 : 1$

129. If S is the circumcentre of $\triangle ABC$ and $\angle A = 50^\circ$, then the value of $\angle BCS$ is
 (A) 20° (B) 40°
 (C) 60° (D) 80°
130. AC and BC are two equal chords of a circle. BA is produced to any point P and CP , when joined cuts the circle at T . Then
 (A) $CT : TP = AB : CA$
 (B) $CT : TP = CA : AB$
 (C) $CT : CB = CA : CP$
 (D) $CT : CB = CP : CA$
131. PQ is a direct common tangent of two circles of radii r_1 and r_2 touching each other externally at A . Then the value of PQ^2 is
 (A) $r_1 r_2$ (B) $2r_1 r_2$
 (C) $3r_1 r_2$ (D) $4r_1 r_2$

132.



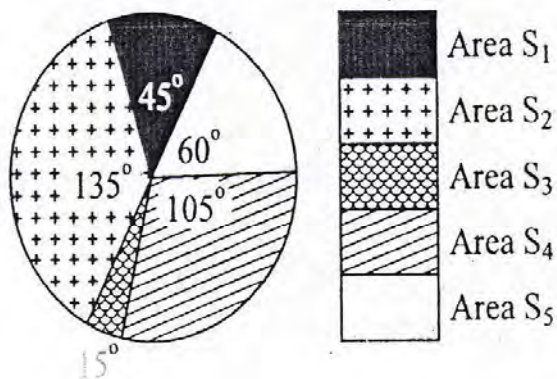
BC is the chord of a circle with centre O . A is a point on major arc BC as shown in the above figure. What is the value of $\angle BAC + \angle OBC = ?$

- (A) 120° (B) 60°
 (C) 90° (D) 180°

133. Two circles with radii 5 cm and 8 cm touch each other externally at a point A . If a straight line through the point A cuts the circles at points P and Q respectively, then $AP : AQ$ is
 (A) $8 : 5$ (B) $5 : 8$
 (C) $3 : 4$ (D) $4 : 5$

134. If I is the In-centre of $\triangle ABC$ and $\angle A = 60^\circ$, then the value of $\angle BIC$ is
 (A) 100° (B) 120°
 (C) 150° (D) 110°
135. The external bisectors of $\angle B$ and $\angle C$ of $\triangle ABC$ meet at point P . If $\angle BAC = 80^\circ$, then $\angle BPC$ is
 (A) 50° (B) 40°
 (C) 80° (D) 100°
136. When a pendulum of length 50 cm oscillates, it produces an arc of 16 cm. The angle so formed in degree measure is (approx)
 (A) $18^\circ 25'$ (B) $18^\circ 35'$
 (C) $18^\circ 20'$ (D) $18^\circ 08'$
137. If x, y are positive acute angles, $x + y < 90^\circ$ and $\sin(2x - 20^\circ) = \cos(2y + 20^\circ)$, then the value of $\sec(x + y)$ is
 (A) $\sqrt{2}$ (B) $\frac{1}{\sqrt{2}}$
 (C) 1 (D) 0
138. If $5 \tan \theta = 4$, then the value of $\left(\frac{5 \sin \theta - 3 \cos \theta}{5 \sin \theta + 3 \cos \theta}\right)$ is
 (A) $\frac{1}{7}$ (B) $\frac{2}{7}$
 (C) $\frac{5}{7}$ (D) $\frac{2}{5}$
139. The least value of $(4 \sec^2 \theta + 9 \operatorname{cosec}^2 \theta)$ is
 (A) 1 (B) 19
 (C) 25 (D) 7
140. If $\tan(x + y) \tan(x - y) = 1$, then the value of $\tan\left(\frac{2x}{3}\right)$ is
 (A) $\frac{1}{\sqrt{3}}$ (B) $\frac{2}{\sqrt{3}}$
 (C) $\sqrt{3}$ (D) 1
141. If $x = \operatorname{cosec} \theta - \sin \theta$ and $y = \sec \theta - \cos \theta$ then the value of $x^2 y^2 (x^2 + y^2 + 3)$ is
 (A) 0 (B) 1
 (C) 2 (D) 3
142. If $0 \leq \theta \leq \frac{\pi}{2}$, $2y \cos \theta = x \sin \theta$ and $2x \sec \theta - y \operatorname{cosec} \theta = 3$, then the value of $x^2 + 4y^2$ is
 (A) 1 (B) 2
 (C) 3 (D) 4
143. When the angle of elevation of the sun increases from 30° to 60° , the shadow of a post is diminished by 5 metres. Then the height of the post is
 (A) $\frac{5\sqrt{3}}{2}$ m (B) $\frac{2\sqrt{3}}{5}$ m
 (C) $\frac{2}{5\sqrt{3}}$ m (D) $\frac{4}{5\sqrt{3}}$ m
144. A rail road curve is to be laid out on a circle. What radius should be used if the track is to change direction by 25° in a distance of 40 metres?
 (A) 91.64 metres (B) 90.46 metres
 (C) 89.64 metres (D) 93.64 metres
145. If $\sin \theta + \sin^2 \theta = 1$, then the value of $\cos^{12} \theta + 3 \cos^{10} \theta + 3 \cos^8 \theta + \cos^6 \theta - 1$ is
 (A) 0 (B) 1
 (C) -1 (D) 2

Population of five adjacent areas of a town, in the year of 2010, are represented in the following Pie-chart. The ratio of the numbers of males to that of females in these areas are stated in the table below. The total of the population in all the five areas is 72 lakh. Study the Pie-chart and the table and then answer the question nos. 146 to 150.



Ratio of numbers of males (M) to females (F)

Areas	S ₁	S ₂	S ₃	S ₄	S ₅
Ratio M : F	3 : 2	4 : 1	7 : 3	2 : 3	13 : 7

146. 12 lakh is the population of the area

- (A) S₁ (B) S₃
(C) S₅ (D) S₄

147. The number of males in the areas S₁ and S₄ together is

- (A) 13.8 lakh (B) 8.2 lakh
(C) 16.2 lakh (D) 15.8 lakh

148. The ratio of number of females in the area S₂ to that in the area S₅ is

- (A) 7 : 9 (B) 36 : 13
(C) 9 : 7 (D) 13 : 36

149. If, in the year 2010, there was an increase of 5% population in the area S₁ and 8% increase in population of the area S₂ compared to the previous year, then the ratio of population in the areas S₁ and S₂ in the year 2009 was

- (A) 3 : 10 (B) 27 : 10
(C) 27 : 70 (D) 10 : 3

150. The average of female population in all the five areas is lower than the female population in each of the areas

- (A) S₁ and S₂ (B) S₂ and S₅
(C) S₂ and S₄ (D) S₄ and S₅

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146. $A : B = 2 : 4$, $B : C = 4 : 5$, $C : D = 6 : 7$
Find the ratio of $A : D$

- (A) 4 : 13 (B) 7 : 24
(C) 12 : 35 (D) 8 : 22

147. If a man runs at 3 metres per second, the number of kilometres that he runs in 1 hour 40 minutes is

- (A) 18 km (B) 9 km
(C) 12 km (D) 10 km

148. A sum when reckoned at simple interest at 8 paise per rupee per month amounts to ₹ 1680 after 5 years. Then the sum is

- (A) ₹ 1050 (B) ₹ 1000
(C) ₹ 1100 (D) ₹ 1200

149. Coffee costing ₹ 250/kg was mixed with chicory costing ₹ 75/kg in the ratio 5 : 1 for a certain blend. If the mixture was sold at ₹ 230/kg, find the gain or loss %.

- (A) 10% (B) 15%
(C) 12.1% (D) 12%

150. Perimeter of a semi-circular bow is 72 cm. Diameter of the bow (in cm) is

- (A) 7 (B) 14
(C) 28 (D) 21

PART - D

ENGLISH COMPREHENSION

Directions : In question nos. 151 to 155, some parts of the sentences have errors and some have none. Find out which part of a sentence has an error and blacken the rectangle [■] corresponding to the appropriate letter (A, B, C). If there is no error, blacken the rectangle [■] corresponding to (D) in the Answer-Sheet.

151. Instead of being (A) helpful he was (B)
being hindrance. (C) No error. (D)
152. Where (A) have I (B) to deposit fees ? (C)
No error. (D)
153. By the time she had finished her work (A)
I had nearly given up (B)
all hope of arriving at the party in time. (C)
No error. (D)
154. Some categorically suspected (A)
having seen the (B) guard and thief together. (C)
No error. (D)

155. He was (A) not in a position to state (B)
the speed the ship travelled. (C) No error. (D)

Directions : In question nos. 156 to 160, 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 and indicate it by blackening the appropriate rectangle [■] in the Answer-Sheet.

156. I _____ lunch one hour ago.
(A) have had (B) had had
(C) have (D) had
157. He thought that my car _____ for sale.
(A) is (B) was
(C) has been (D) will be
158. He tried to prevent me _____ doing my duty.
(A) against (B) at
(C) with (D) from
159. To the dismay of the student body, the class president was _____ berated by the principal at the school assembly.
(A) ignominiously (B) privately
(C) magnanimously (D) fortuitously

160. I would apologize if I _____ you.

- (A) am (B) was
(C) have been (D) were

Directions : In question nos. 161 to 165, out of the four alternatives, choose the one which best expresses the meaning of the given word and mark it in the Answer-Sheet.

161. Gaol

- (A) destination (B) garden
(C) jail (D) bird

162. Loathing

- (A) warmth (B) affectation
(C) hatred (D) affection

163. Pragmatic

- (A) intelligent (B) wise
(C) religious (D) practical

164. Notion

- (A) thought (B) fact
(C) truth (D) hypothesis

165. Vivacious

- (A) poisonous (B) energetic
(C) tricky (D) slow

Directions : In question nos. 166 to 170, choose the word opposite in meaning to the given word and mark it in the Answer-Sheet.

166. Hasten

- (A) Dash (B) Dawdle
(C) Hurry (D) Scurry

167. Spirited

- (A) Animated (B) Excited
(C) Lively (D) Dull

168. Forthright

- (A) Blunt (B) Tricky
(C) Candid (D) Plainspoken

169. Antagonism

- (A) Cordiality (B) Animosity
(C) Hostility (D) Enmity

170. Vanity

- (A) Humanity (B) Humility
(C) Pretension (D) Arrogance

Directions : In question nos. 171 to 175, four alternatives are given for the idiom/phrase underlined in the sentence. Choose the alternative which best expresses the meaning of the idiom/phrase and mark it in the Answer-Sheet.

171. The project is carried over to this year, and we need to keep the ball rolling.

- (A) to continue the work
(B) more information
(C) to do better
(D) new strategies

172. The host team bore the palm in the league matches.

- (A) played quite well
(B) was victorious
(C) was defeated
(D) ...

173. Just keep your wig on. Everything will be alright.

- (A) Hold on to your wig, so it won't fall off
- (B) Get another hair cut
- (C) Calm down
- (D) Take off your wig

174. Parents pay through their nose for their children's education.

- (A) by taking loans
- (B) an extremely high price
- (C) grudgingly
- (D) willingly

175. Monica's habit of picking holes in every relationship is very irksome.

- (A) admiring people
- (B) finding fault
- (C) criticizing people
- (D) arguing with people

Directions : In question nos. 176 to 180, a part of the sentence is underlined. Below are given alternatives to the underlined part at (A), (B), (C) which may improve the sentence. Choose the correct alternative. In case no improvement is needed your answer is (D). Mark your answer in the Answer-Sheet.

176. His life is hanging with a thread.

- (A) from
- (B) by
- (C) to
- (D) No improvement

177. After twenty years of exile, the prisoner was in the end of his tether.

- (A) on
- (B) though
- (C) at
- (D) No improvement

178. Grandfather is often so tired that he drops of in his armchair.

- (A) slides away
- (B) falls out
- (C) slips in
- (D) No improvement

179. The court was forced to respect the profundity of the learned judge's knowledge.

- (A) probity
- (B) proximity
- (C) prodigality
- (D) No improvement

180. He has lost his nearly all many pets.

- (A) all his nearly many pets
- (B) his many pets nearly all of them
- (C) nearly all his many pets
- (D) No improvement

Directions : In question nos. 181 to 185, out of the four alternatives choose the one which can be substituted for the given words/sentence.

181. A group of three books, films etc. that have the same subject or characters

- (A) trinity
- (B) trilogy
- (C) trio
- (D) tripod

182. A study of the human race
 (A) anthropology (B) archaeology
 (C) ethnology (D) etymology
183. An expert in an area of the fine or other arts
 (A) neophyte (B) amateur
 (C) connoisseur (D) enthusiast
184. The art of preserving skin of animals, birds, fishes
 (A) Topology (B) Taxonomy
 (C) Seismology (D) Taxidermy
185. Chanting of magic spells
 (A) Narration (B) Recitation
 (C) Incartation (D) Utterance

Directions : In question nos. 186 to 190, four words are given in each question, out of which only one word is correctly spelt. Find the correctly spelt word and indicate it in the Answer-Sheet by blackening the appropriate rectangle [■].

186. (A) abracadebra (B) abracadebri
 (C) abracadabra (D) abrakadabra
187. (A) apparrel (B) aparell
 (C) aparel (D) apparel
188. (A) refferee (B) refere
 (C) referre (D) referee
189. (A) commissioner (B) comissioner
 (C) commissionar (D) comissionor
190. (A) etiquette (B) etiquette
 (C) ettiquette (D) ettiquete

Directions : In question nos. 191 to 200, you have two brief passages with 5 questions in each passage. Read the passages carefully and choose the best answer to each question out of the four alternatives and mark it by blackening the appropriate rectangle [■] in the Answer-Sheet.

PASSAGE I (Question Nos. 191 to 195)

“Nobody knows my name” is the title of one of James Baldwin’s celebrated books. Who knows the name of the old man sitting amidst ruins pondering over his hubble-bubble ? We do not. It does not matter. He is there like the North Pole, the Everest and the Alps but with one difference. The North Pole, the Everest and the Alps will be there when he is not there any more. Can we really say this ? “Dust thou act to dust returneth” was not spoken of the soul. We do not know whether the old man’s soul will go marching on like John Brown’s. While his body lies mouldering in the grave or becomes ash driven by the wind or is immersed in water, such speculation is hazardous. A soul’s trip can take one to the treacherous shoals of metaphysics where there is no “yes” or “no”. “Who am I ?” asked Tagore of the rising sun in the first dawn of his life, he received no answer. “Who am I ?” he asked the setting sun in the last twilight of his life. He received no answer.

We are no more on solid ground with dust which we can feel in our hands, scatter to the wind and wet with water to turn it into mud. For this much is sure, that in the end, when life’s ceaseless labour grinds to a halt and man meets death, the brother of sleep, his body buried or burnt, becomes dust. In the form of dust he lives, inanimate yet in contact with the animate. He settles on files in endless government almirahs, on manuscripts written and not published on all shelves, on faces and hands. He becomes ubiquitous all pervasive, sometimes sneaking even into hermetically sealed chambers.

191. What is the difference between the old man and the North Pole, the Everest and the Alps ?

- (A) he ponders over his hubble-bubble while they don't
- (B) they are known to all while he is known to none
- (C) they remain while he will soon become dust
- (D) they are not as old as he

192. What, according to the passage, happens to a person's soul after death ?

- (A) the soul also dies with the body
- (B) the soul continues to live after the body is dead
- (C) the soul certainly becomes dust after death
- (D) it is dangerous to guess

193. Which of the following statement is true ?

- (A) The rising sun told Tagore who he was
- (B) The rising sun did not tell Tagore who he was
- (C) The rising sun advised Tagore to ask no questions
- (D) The rising sun told Tagore that he would become dust

194. What happens to man after he becomes dust ?

- (A) he disappears from the world for ever
- (B) he appears in the form of man again
- (C) he becomes all pervasive as dust
- (D) he often sneaks into hermetically sealed chambers

195. What figure of speech is used in the expression 'the brother of sleep' ?

- (A) Simile
- (B) Metaphor
- (C) Oxymoron
- (D) Irony

PASSAGE II (Question Nos. 196 to 200)

To write well you have to be able to write clearly and logically, and you cannot do this unless you can think clearly and logically. If you cannot do this yet you should train yourself to do it by taking particular problems and following them through, point by point, to a solution, without leaving anything out and without avoiding any difficulties that you meet.

At first you find clear, step-by-step thought very difficult. You may find that your mind is not able to concentrate. Several unconnected ideas may occur together. But practice will improve your ability to concentrate on a single idea and think about it clearly and logically. In order to increase your vocabulary and to improve your style, you should read widely and use a good dictionary to help you find the exact meanings and correct usages of words.

Always remember that regular and frequent practice is necessary if you want to learn to write well. It is no good waiting until you have an inspiration before you write. Even with the most famous writers, inspiration is rare. Someone said that writing is ninety-nine per cent hard work and one per cent inspiration, so the sooner you get into the habit of disciplining yourself to write, the better.

196. To write well, a person must train himself in

- (A) dealing with a difficult problem
- (B) not leaving anything out
- (C) thinking clearly and logically
- (D) following a step-by-step approach

(A) a good dictionary is not used

(B) ideas occur without any sequence

(C) aids to correct writing are not known

(D) exact usages of words are not known

198. According to the passage, writing style can be improved by

(A) thinking logically

(B) writing clearly

(C) undergoing training

(D) reading widely

(A) using their linguistic resources properly

(B) disciplining their skill

(C) following only one idea

(D) waiting for inspiration

200. All the following words mean 'exact' except

(A) precise

(B) accurate

(C) very

(D) erect