

SSC

Held on 16-08-2015

Combined Graduate Level (Tier-I) Exam-2015

Time : 2 Hours

Max. Marks : 200

PART-A : GENERAL INTELLIGENCE & REASONING

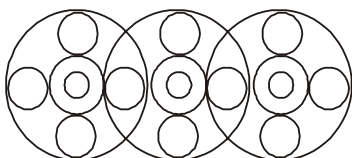
1. Introducing a man, a woman said "His mother is the only daughter of my father". How is the man related to the woman?
 (a) Son (b) Father
 (c) Brother (d) Uncle

DIRECTIONS (Qs. 2-7) : In questions, select the related word/letters number from the given alternatives.

2. BLOCKED : YOLXPVW :: ? : OZFMMXS
 (a) LABOURS (b) LAUNNCH
 (c) DEBATES (d) RESULTS
3. 12 : 72 :: 8 : ?
 (a) 36 (b) 32
 (c) 38 (d) 40
4. FIG : EGHJFH :: BIN : ?
 (a) ACJHMO (b) CAHJMOC
 (c) CAJHOM (d) ACHJMO
5. 6 : 42 :: 7 : ?
 (a) 48 (b) 40
 (c) 56 (d) 52
6. Garbage : House :: Gangue : ?
 (a) Factory (b) Drugs
 (c) Office (d) Ore
7. DBU : EEZ :: CJH : ?
 (a) DMN (b) DNM
 (c) DNN (d) DMM

DIRECTIONS (Qs. 8-13) : In questions, find the odd word/letters/numbers from the given alternatives.

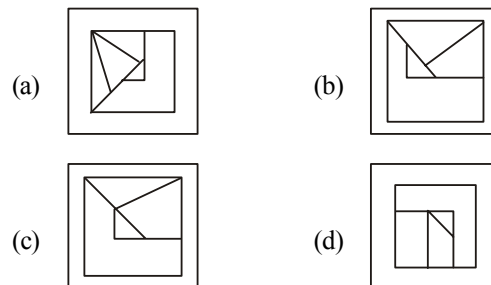
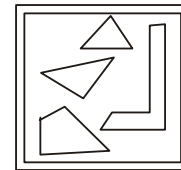
8. (a) Lawyer (b) Legislator
 (c) Mayor (d) Governor
9. (a) Acute (b) Parallel
 (c) Right (d) Obtuse
10. (a) 50 (b) 120
 (c) 37 (d) 145
11. (a) BS (b) EV
 (c) DX (d) IZ
12. (a) OKHA (b) PERU
 (c) ERKU (d) ANDI
13. (a) 200 (b) 191
 (c) 808 (d) 1331
14. Find out the number of circles in the figure.



- (a) 18 (b) 20
 (c) 16 (d) 19

DIRECTIONS (Qs. 15-17) : In questions, which one set of letters/numbers when sequentially placed at the gaps in the given letter series shall complete it ?

15. SH _ ELAS _ EELA _ HEELASHEE _ A
 (a) HHSS (b) EEHS (c) ELHA (d) EHSL
16. 12 _ 41 _ 4123 _ 234
 (a) 3212 (b) 2134 (c) 3241 (d) 1432
17. _ _ aba _ _ ba _ ab
 (a) abbbb (b) baabb
 (c) bbaba (d) abbab
18. From the given answer figures, select the one in which the question figure is hidden / embedded.



19. 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 01, 14 etc. and 'M' can be represented by 56, 68 etc. Similarly, you have to identify the set for the word 'EAGLE'.

Matrix – I

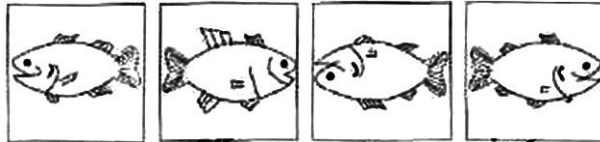
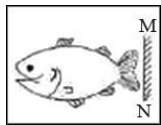
	0	1	2	3	4
0	P	A	G	R	Z
1	G	R	Z	P	A
2	Z	P	A	G	R
3	A	G	R	Z	P
4	R	Z	P	A	G

Matrix – II

	5	6	7	8	9
5	E	M	L	N	O
6	L	E	O	M	N
7	O	N	E	L	M
8	N	O	M	E	L
9	M	L	N	O	E

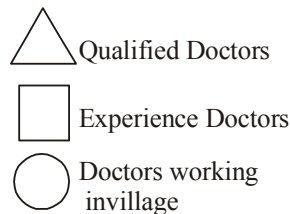
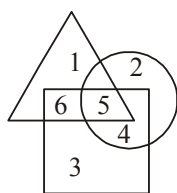
- (a) 88, 22, 31, 89, 76 (b) 66, 43, 44, 79, 88
 (c) 99, 01, 44, 96, 77 (d) 55, 14, 11, 78, 66

20. In a certain code, FRACTION is written as FNAITCOR. How is QUANTITATIVE written in that code ?
 (a) QTNVIAITETU (b) QIATAETUTNVI
 (c) QTEATUIAVITN (d) QEAITATITNVU
21. If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure ?



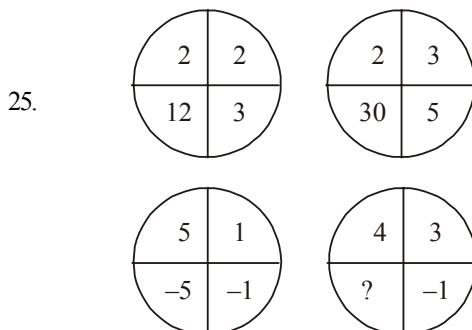
(a) (b) (c) (d)

22. Find the number that is common for all of the clue's given below :
 (A) Virgo
 (B) Volleyball
 (C) Highest scoring shot of a particular sport
 (D) Extra sensory perceptions.
 (a) 8 (b) 4
 (c) 2 (d) 6
23. **Directions :** Study the diagram given below and answer question.
 The Qualified and experienced doctors working in villages are represented by :



- (a) 4 (b) 5
 (c) 2 (d) 6
24. In a certain coding system APPLE stands for ETTPI. What is the code for 'DELHI' ?
 (a) CQMND (b) ZAHDE
 (c) HIPLM (d) CQPLM

DIRECTIONS (Qs. 25-29): In questions, select the missing number from the given responses.

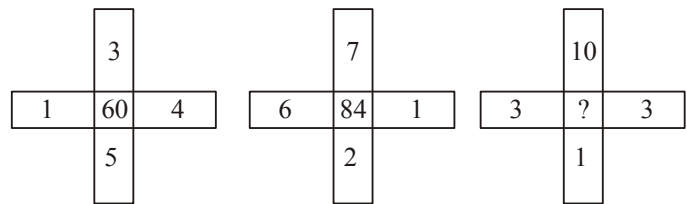


- (a) 12 (b) 7
 (c) -12 (d) 9

26. I 40 32 72 12
 II 30 24 54 9
 III 54 ? 90 15

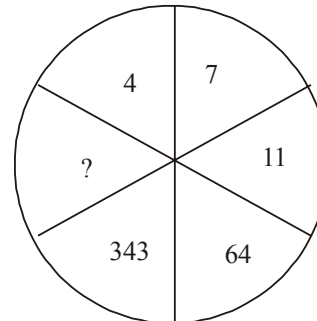
- (a) 49 (b) 36
 (c) 46 (d) 48

27.



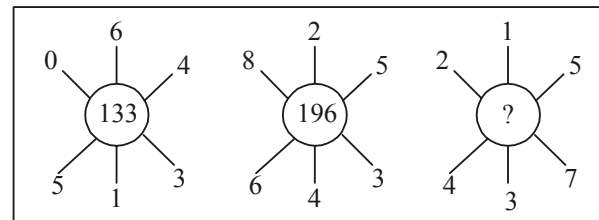
- (a) 16 (b) 12
 (c) 90 (d) 48

28.



- (a) 1332 (b) 1321
 (c) 1231 (d) 1331

29.



- (a) 535 (b) 451
 (c) 702 (d) 154

30. Name a single letter, which can be deleted from the body of the following words to form entirely new words ?
 HOST POST COST LOST STOP
 (a) T (b) P
 (c) S (d) O

DIRECTIONS (Qs. 31-32): Questions, one or two statements is given followed by two conclusions/assumptions, I and II. You have to consider the statement to be true, even if it seems to be at variance from commonly known facts. You are decide which of he given conclusions/assumptions can definitely be drawn from the given statement.

31. **Statement :** No rod is pod, No pod is flexible.

Inferences :

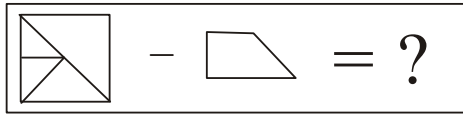
- I. No rod is flexible.
 II. Some pods are flexible
 (a) Both of them follows
 (b) Only inference I follows
 (c) Only inference II follows
 (d) Neither of them follows.

32. **Statement :** A good book even if costly is sold out in no time.

Assumptions:

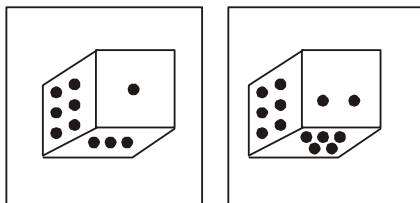
- I. Some books are better than others
 II. All good books are costly

- (a) Only I follows (b) Both I and II follows
(c) Neither I nor II follows (d) Only II follows
33. If CUSTOM is written as UCTSMO then how PARENT will be written in the same code ?
(a) TNERAP (b) RAPTNE
(c) ERAPTN (d) APERTN
34. In the question one part of the problem figure is subtracted. Select the option that shows the correct shape by the subtraction.

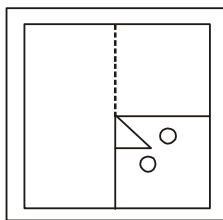


- (a)
- (b)
- (c)
- (d)

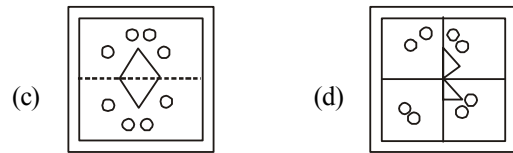
35. Two position of dice are shown below. When three is at the top what number will be at the bottom.



- (a) 5 (b) 1
(c) 4 (d) 2
36. If 'air' is called 'green', green is called 'blue', 'blue' is called 'sky', 'sky' is called 'yellow', 'yellow' is called 'water' and water is called 'Pink' then what is the colour of clear sky ?
(a) Yellow (b) Water
(c) Sky (d) Blue
37. 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.

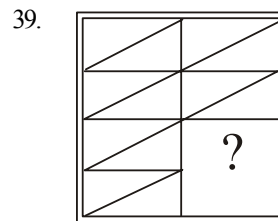


- (a)
- (b)

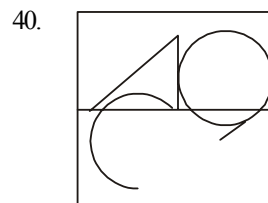


38. If the words are organised in reverse order of what they appear in dictionary, which word will come in the third place.
(a) Occulist (b) Odium
(c) Odious (d) Ordeum

DIRECTIONS (Qs. 39-45): Which answer figure will complete the pattern in the question figure ?



- (a)
- (b)
- (c)
- (d)

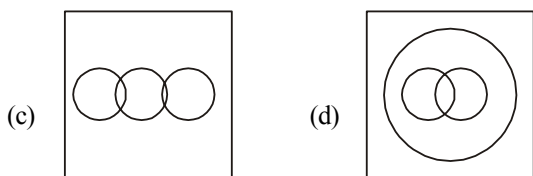


- (a)
- (b)
- (c)
- (d)

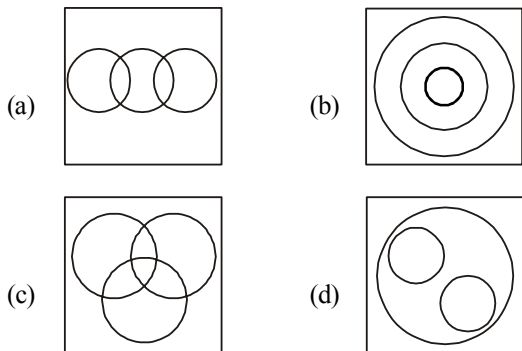
DIRECTIONS: Questions nos 41 to 42 identify the diagram that best represents the relationship among classes given below :

41. Vegetables, Potatoes, Eatables

- (a)
- (b)



42. Christians, Catholics, Pope



43. Veena and Veeru both start from a point towards North, Veena turns to left after walking 10 Km. Veeru turns to right after walking the same distance. Veena waits for some time and then walks another 5 Km. Whereas Veeru walks only 3 Km. They both then return towards south and walk 15 Km. forward. How far is Veena from Veeru ?
 (a) 12km. (b) 10km.
 (c) 8km. (d) 15km.
44. Find the missing number ?
 2, 5, 10, 17, 26, ?
 (a) 36 (b) 49
 (c) 37 (d) 47
45. To identify the correct response from the given premises stated according to following symbols.
 'A' stands for not less than (\geq)
 'B' stands for not equal to (\neq)
 'C' stands for not greater than (\leq)
 'D' stands for greater than ($>$)
 'E' stands for less than ($<$)
 'F' stands for equal to ($=$)
 Premises $YF3x$ and $3xF6Z$
 (a) $2YF3Z$ (b) $4YB5Z$
 (c) $2YD3Z$ (d) $2YE3Z$
46. Ravi is walking in the East direction. After covering a distance of one kilometer, he turns 45° left and then 90° right. In which direction is he now ?
 (a) North (b) West
 (c) North West (d) North East
47. Which of the following jumbled words is not a animal ?
 (a) LATHPEEN (b) TICRECK
 (c) FEFOEC (d) TAR
48. Arrange the following words as per order in the dictionary
 (1) Hale (2) Hake
 (3) Halt (4) Hamlet
 (5) Ham
 (a) 1, 3, 5, 2, 4 (b) 2, 1, 3, 5, 4
 (c) 2, 1, 4, 3, 5 (d) 2, 3, 5, 4, 1
49. If '+' means 'x', '-' means ' \div ', ' \times ' means '-' and ' \div ' means '+', then what will be the value of $16 \div 64 - 8 \times 4 + 2$?
 (a) 12 (b) 24
 (c) 16 (d) 18

50. From the given alternative words, select the word which cannot be formed using the letters of the given word. 'BOOKBINDING'
 (a) DONDING (b) DOING
 (c) DIGGING (d) DINING

PART-B : GENERAL AWARENESS

51. A computer executes programs in the sequence of :
 (a) Decode, Fetch, Execute
 (b) Execute, Fetch, Decode
 (c) Fetch, Decode, Execute
 (d) Store, Fetch, Execute
52. What is 'Reformation'?
 (a) Revival of classical learning
 (b) The revolt against authority of pope
 (c) Rise of absolute monarchy
 (d) Change in attitude of man
53. Which of the following particles has the dual nature of particle-wave ?
 (a) Neutron (b) Electron
 (c) Meson (d) Proton
54. SIDBI stands for :
 (a) Small Industries Developmental Banker Institute
 (b) Small Industrial Designed Bank of India
 (c) Small Innovations Development Banker's Institute
 (d) Small Industries Development Bank of India
55. The metal ion present in vitamin B_{12} is :
 (a) nickel (b) cobalt
 (c) iron (d) zinc
56. Swaraj is my Birth Right and I shall have it. This was advocated by :
 (a) Mahatma Gandhi (b) Lala Lajpat Rai
 (c) Sardar Patel (d) Lokmanya Tilak
57. Which of the following is called the Light house of the Mediterranean ?
 (a) Stromboli of sicily
 (b) Mount Pelee of West Indies
 (c) Paracutin of Mexico
 (d) Vesuvius of Italy
58. Who of the following has given the term rhizosphere :
 (a) Alexopolus
 (b) Garret
 (c) Hiltner
 (d) None of the given options
59. Which one among the following industries in the maximum consumer of water in India ?
 (a) Textile (b) Engineering
 (c) Paper and Pulp (d) Thermal Power
60. First Nobel Prize to India was given for :
 (a) Physics (b) Literature
 (c) Medicine (d) Chemistry
61. Gandhiji's Famous Quit India Movement call to the British was given in :
 (a) 1940 (b) 1942
 (c) 1941 (d) 1943
62. Choose the correct option which represents the arrangement of atmospheric layers.
 (a) Troposphere, Stratosphere, Mesosphere, Ionosphere, Exosphere
 (b) Mesosphere, Ionosphere, Exosphere, Troposphere, Stratosphere

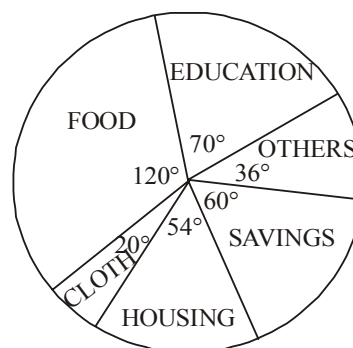
- (c) Ionosphere, Exosphere, Mesosphere, Troposphere, Stratosphere
(d) Exosphere, Troposphere, Ionosphere, Mesosphere, Stratosphere
63. Which of the following options correctly explains the term 'heat budget'?
- (a) It is the amount of heat which the surface of earth receives from the sun.
(b) It is the radiation from the earth in the form of long waves
(c) It is a mode of transfer of heat through matter by molecular activity.
(d) It is the balance between incoming and outgoing radiation.
64. Reverse transcription was discovered by :
- (a) Beadle and Tatum
(b) Watson and Crick
(c) Temin and Baltimore
(d) Har Govind Khorana
65. Burns caused by steam are much more severe than those caused by boiling water because:
- (a) Steam pierces through the pores of body quickly
(b) Temperature of steam is higher
(c) Steam is gas and engulfs the body quickly
(d) Steam has latent heat
66. Which among the following is the sweetest sugar ?
- (a) lactose (b) maltose
(c) glucose (d) fructose
67. Ultra purification of a metal is done by :
- (a) smelting (b) leaching
(c) zone melting (d) slagging
68. The layer of atmosphere close to the earth's surface is called:
- (a) Exosphere (b) Ionosphere
(c) Stratosphere (d) Troposphere
69. Microbial degradation of nitrates into atmospheric nitrogen is known as :
- (a) Ammonification (b) Denitrification
(c) Putrefaction (d) Nitrification
70. Which of the following is in the ascending order of Data hierarchy ?
- (a) Bit–Byte – Record – Field – Database – File
(b) Byte – Bit – File – Record – Database – Field
(c) Bit– Byte – Field – Record – File – Database
(d) Field – Byte – Bit – Record – File– Database
71. The best milch breed in the world is :
- (a) Deoni (b) Holstein – Friesian
(c) Sindhi (d) Chittagong
72. In which year was the Indian National Congress formed :
- (a) 1901 (b) 1835
(c) 1875 (d) 1885
73. Bangladesh was created in :
- (a) 1973 (b) 1970
(c) 1972 (d) 1971
74. Raja Ram Mohan Roy was the founder of :
- (a) Brahmo Samaj (b) Prathna Samaj
(c) Ram Krishna Mission (d) Arya Samaj
75. Pulses are obtained from the family :
- (a) Liliaceae (b) Fungi
(c) Cycadaceae (d) Leguminosae
76. Who was the Indian women president of the United Nations General Assembly ?
- (a) Margret Thatcher (b) Golda Mayer
(c) Sarojini Naidu (d) Vijya Lakshmi Pandit
77. The one rupee note bears the signature of :
- (a) Governor, Reserve Bank of India
(b) Finance Minister
(c) Secretary, Ministry of Finance
(d) None of these
78. What is the currency of Saudi Arabia ?
- (a) Riyal (b) Pound
(c) Lira (d) Dinar
79. Reserve Bank of India was nationalised in :
- (a) 1951 (b) 1947
(c) 1935 (d) 1949
80. Which among the following is a folk dance of India.
- (a) Kathakali (b) Mohiniattam
(c) Manipuri (d) Garba
81. NABARD stands for
- (a) National business for Accounting and Reviewing
(b) National Bank for Agriculture and Rural Development
(c) National Bank for Aeronautics and Radar Development
(d) National Bureau for Air and Road Transport
82. Surplus budget is recommended during :
- (a) Depression (b) Boom
(c) War (d) Famines
83. Who was the first Speaker of the Lok Sabha :
- (a) B.R. Ambedkar (b) G.V. Mavalankar
(c) N. Sanjeev Reddy (d) Dr S.P. Mukherjee
84. What is the plural voting system?
- (a) All the citizens cast three votes each
(b) Eligible voter exercises one vote and some voters with specific qualifications cast more than one vote.
(c) Only the higher officials cast more than one votes
(d) Candidates themselves cast more than one vote.
85. Which of the following plant shows chloroplast dimorphism?
- (a) Sugarcane (b) Sugar beet
(c) Rice (d) Wheat
86. Day and Night are equal at the :
- (a) Prime Meridian (b) Poles
(c) Equator (d) Antarctic
87. Economic profit or normal profit is the same as :
- (a) accounting profit (b) optimum profit
(c) net profit (d) maximum profit
88. Evergreen type forests are found in :
- (a) Mediterranean region
(b) Monsoon climatic area
(c) Desert region
(d) Equatorial region
89. The gene which exhibits multiple effects is known as :
- (a) Pleiotropic (b) Pseudogene
(c) Polygene (d) Complementary
90. The ash–grey soils of high latitude coniferous forests are known as :
- (a) Grey–Brown soils (b) Red and Yellow soils
(c) Tundra soils (d) Podzols
91. Radio activity was discovered by :
- (a) Curie (b) Becquerel
(c) Soddy (d) Rutherford
92. Muddy water is treated with alum in purification process, it is termed as :
- (a) absorption (b) adsorption
(c) coagulation (d) emulsification

93. An enzyme produced by HIV that allows the integration of HIV DNA into the host cell's DNA is :
 (a) DNA gyrase (b) Ligase
 (c) Integrase (d) Helicase
94. Voting is :
 (a) The unit of area who constitute a unit for electing representative
 (b) The process by which voters exercise their right to vote
 (c) The process of selecting representatives
 (d) Universal adult franchise.
95. The two specific heats of gases are related by :
 (a) $C_p / C_v = R$ (b) $C_p - C_v = RJ$
 (c) $C_p - C_v = R/J$ (d) $C_p + C_v = RJ$
96. Who initiated the movement to form the Indian National Congress :
 (a) Annie Besant (b) A.O. Hume
 (c) W.C. Banerjee (d) Gandhi ji
97. Best way to conserve our water resources :
 (a) All of the options mentioned here.
 (b) Encouragement of natural regeneration of vegetation
 (c) Sustainable water utilization
 (d) Rain water harvesting
98. Constitutional Monarchy means :
 (a) The King is elected by the people
 (b) The King interprets the constitution
 (c) The King writes the constitution
 (d) The King exercises power as granted by constitution
99. What is popular sovereignty ?
 (a) Sovereignty of the legal head
 (b) Sovereignty of the head of state
 (c) Sovereignty of the people
 (d) Sovereignty of peoples representative
100. Granite, quartzite areas have upstanding look because
 (a) not easily worn
 (b) these rocks are resistant to all kinds of erosion
 (c) these rocks are not easily eroded
 (d) mechanically weathered faster

PART-C : QUANTITATIVE APTITUDE

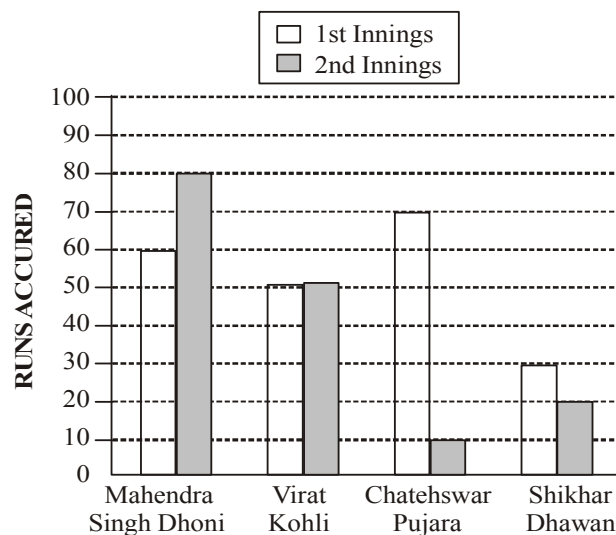
101. Let C_1 and C_2 be the inscribed and circumscribed circles of a triangle with sides 3 cm, 4 cm and 5 cm then area of C_1 is area of C_2
 (a) $\frac{9}{16}$ (b) $\frac{9}{25}$
 (c) $\frac{4}{25}$ (d) $\frac{16}{25}$
102. If $x = \frac{1}{\sqrt{2}+1}$
 then $(x+1)$ equals to
 (a) 2 (b) $\sqrt{2}-1$
 (c) $\sqrt{2}+1$ (d) $\sqrt{2}$

DIRECTIONS : Questions nos. 103 to 105, The pie-chart given here shows expenditure incurred by a family on various items and their savings. Study the chart and answer the questions based on the pie-chart



103. If the monthly income is ₹ 36000 then the yearly savings is:
 (a) ₹ 72000 (b) ₹ 60000
 (c) ₹ 74000 (d) ₹ 70000
104. If the expenditure on education is ₹ 1600 more than that of housing then the expenditure on food is :
 (a) ₹ 6000 (b) ₹ 12000
 (c) ₹ 7000 (d) ₹ 3333
105. The ratio of expenditure on food to savings is :
 (a) 2 : 1 (b) 3 : 1
 (c) 3 : 2 (d) 10 : 9
106. The average marks obtained by a student in 6 subjects in 88. On subsequent verification it was found that the marks obtained by him in a subject was wrongly copied as 86 instead of 68. The correct average of the marks obtained by him is—
 (a) 85 (b) 87
 (c) 84 (d) 86

DIRECTIONS : Questions nos. 107 to 110, Given here a multiple bar diagram of the scores of four players in two innings. Study the diagram and answer the questions.



107. The average run of two innings of the player who scored highest in average is :
 (a) 75 (b) 85
 (c) 80 (d) 70
108. The average run in two innings of the player who has scored minimum at the second innings is :
 (a) 50 (b) 60
 (c) 40 (d) 30

109. The average score in second innings contributed by the four players is :
 (a) 30 (b) 60
 (c) 40 (d) 50
110. The total scores in the first innings contributed by the four players is :
 (a) 220 (b) 200
 (c) 210 (d) 190
111. If the volume of a sphere is numerically equal to its surface area then its diameter is :
 (a) 4 cm (b) 2 cm
 (c) 3 cm (d) 6 cm
112. A train runs at an average speed of 75 km/hr. If the distance to be covered is 1050 Kms. How long will the train take to cover it ?
 (a) 13 hrs (b) 12 hrs
 (c) 14 hrs (d) 15 hrs
113. G is the centroid of $\triangle ABC$. The medians AD and BE intersect at right angles. If the lengths of AD and BE are 9 cm and 12 cm respectively, then the length of AB (in cm) is ?
 (a) 10 (b) 10.5
 (c) 9.5 (d) 11
114. The minimum value of $2 \sin^2 \Theta + 3 \cos^2 \Theta$ is
 (a) 1 (b) 3
 (c) 2 (d) 4
115. If the three angles of a triangle are :
 $(x + 15^\circ)$, $\left(\frac{6x}{5} + 6^\circ\right)$ and $\left(\frac{2x}{3} + 30^\circ\right)$ then the triangle is :
 (a) scalene (b) isosceles
 (c) right angled (d) equilateral
116. If the number of vertices, edges and faces of a rectangular parallelopiped are denoted by v, e and f respectively, the value of $(v - e + f)$ is
 (a) 4 (b) 2
 (c) 1 (d) 0
117. 5 persons will live in a tent. If each person requires 16 m^2 of floor area and 100 m^3 space for air then the height of the cone of smallest size to accomodate these persons would be ?
 (a) 18.75 m (b) 16 m
 (c) 10.25 m (d) 20 m
118. If the altitude of an equilateral triangle is $12\sqrt{3}$ cm, then its area would be :
 (a) 12 cm^2 (b) 72 cm^2
 (c) $36\sqrt{3} \text{ cm}^2$ (d) $144\sqrt{3} \text{ cm}^2$
119. The difference between successive discounts of 40% followed by 30% and 45% followed by 20% on the marked price of an article is ₹ 12. The marked price of the article is:
 (a) ₹400 (b) ₹200
 (c) ₹800 (d) ₹600
120. The area of the triangle formed by the graphs of the equations $x = 0$, $2x + 3y = 6$ and $x + y = 3$ is
 (a) 3 sq. unit (b) $1\frac{1}{2}$ sq. unit
 (c) 1 sq. unit (d) $4\frac{1}{2}$ sq. unit
121. Among the equations $x + 2y + 9 = 0$; $5x - 4 = 0$; $2y - 13 = 0$; $2x - 3y = 0$, the equation of the straight line passing through origin is—
 (a) $2x - 3y = 0$ (b) $5x - 4 = 0$
 (c) $x + 2y + 9 = 0$ (d) $2y - 13 = 0$
122. The HCF of $x^8 - 1$ and $x^4 + 2x^3 - 2x - 1$ is:
 (a) $x^2 + 1$ (b) $x + 1$
 (c) $x^2 - 1$ (d) $x - 1$
123. The least number which when divided by 6, 9, 12, 15, 18 leaves the same remainder 2 in each case is :
 (a) 178 (b) 182
 (c) 176 (d) 180
124. Internal bisectors of $\angle Q$ and $\angle R$ of $\triangle PQR$ intersect at O. If $\angle ROQ = 96^\circ$ then the value of $\angle RPQ$ is :
 (a) 12° (b) 6°
 (c) 36° (d) 24°
125. A certain sum will amount of ₹12,100 in 2 years at 10% per annum off compound interest, interest being compounded annually. The sum is:
 (a) ₹12000 (b) ₹6000
 (c) ₹8000 (d) ₹10000
126. A's 2 days work is equal to B's 3 days work. If A can complete the work in 8 days then to complete the work B will take :
 (a) 14 days (b) 15 days
 (c) 16 days (d) 12 days
127. If the measure of three angles of a triangle are in the ratio 2 : 3 : 5, then the triangle is :
 (a) equilateral (b) isosceles
 (c) Obtuse angled (d) right angled
128. What must be added to each term of the ratio 2 : 5 so that it may equal to 5 : 6 ?
 (a) 12 (b) 78
 (c) 65 (d) 13
129. If the sum and difference of two angles are $\frac{22}{9}$ radian and 36° respectively, then the value of smaller angle in degree taking the value of Π as $\frac{22}{7}$ is :
 (a) 60° (b) 48°
 (c) 52° (d) 56°
130. 4 men and 6 women complete a work in 8 days, 2 men and 9 women also complete it in 8 days. The number of days 18 women complete the work is :
 (a) $4\frac{2}{3}$ days (b) $5\frac{2}{3}$ days
 (c) $4\frac{1}{3}$ days (d) $5\frac{1}{3}$ days
131. If $x = \frac{x^{24} + 1}{x^{12}} = 7$ then the value of $\frac{x^{72} + 1}{x^{36}}$
 (a) 432 (b) 433
 (c) 343 (d) 322
132. If $5x + 9y = 5$ and $125x^3 + 729y^3 = 120$ then the value of the product of x and y is
 (a) 135 (b) $\frac{1}{135}$
 (c) $\frac{1}{9}$ (d) 45
133. If 4 men or 8 women can do a piece of work in 15 days, in how many days can 6 men and 12 women do the same piece of work ?
 (a) 45 days (b) 20 days
 (c) 15 days (d) 30 days

134. The value of $\sin^2 22^\circ + \sin^2 68^\circ + \cot^2 30^\circ$ is
 (a) $\frac{3}{4}$ (b) 4
 (c) $\frac{5}{4}$ (d) 3
135. Find a simple discount equivalent to a discount series of 10%, 20% and 25%
 (a) 45% (b) 55%
 (c) 52% (d) 46%
136. If θ be acute angle and $\tan(4\theta - 50^\circ) = \cot(50^\circ - \theta)$, then the value of θ in degrees is :
 (a) 30 (b) 40
 (c) 20 (d) 50
137. Cost price of 100 books is equal to the selling price of 60 books. The gain or loss percentage will be :
 (a) $66\frac{2}{3}\%$ (b) $66\frac{1}{4}\%$
 (c) 66% (d) $66\frac{3}{4}\%$
138. If $5\sin\theta = 3$, the numerical value of $\frac{\sec\theta - \tan\theta}{\sec\theta + \tan\theta}$

$$\frac{\sec\theta - \tan\theta}{\sec\theta + \tan\theta}$$

 (a) $\frac{1}{3}$ (b) $\frac{1}{2}$
 (c) $\frac{1}{4}$ (d) $\frac{1}{5}$
139. If $\frac{3}{4}$ of a number is 7 more than $\frac{1}{6}$ of the number, then $\frac{5}{3}$ of the number is :
 (a) 15 (b) 18
 (c) 12 (d) 20
140. What is the arithmetic mean of first 20 odd natural numbers?
 (a) 17 (b) 19
 (c) 22 (d) 20
141. A kite is flying at the height of 75 m from the ground. The string makes an angle θ (where $\cot\theta = \frac{8}{15}$) with the level ground. Assuming that there is no slack in the string, the length of the string is equal to :
 (a) 75m (b) 85m
 (c) 40m (d) 65m
142. If a person travels from a point L towards east for 12 km and then travels 5 km towards north and reaches a point M, then shortest distance from L to M is :
 (a) 14 (b) 12
 (c) 17 (d) 13
143. In an examination, a student must get 36% marks to pass. A student who gets 190 marks failed by 35 marks. The total marks in that examination is :
 (a) 500 (b) 625
 (c) 810 (d) 450
144. A train 180 mts long is running at a speed of 90 km/hr. How long will it take to pass a post ?
 (a) 8.2 secs (b) 7.8 secs
 (c) 8 secs (d) 7.2 secs
145. An article which is marked at ₹ 975 is sold for ₹ 897. The % discount is ?
 (a) 6% (b) 10%
 (c) 12% (d) 8%
146. If $\sec\theta + \tan\theta = p$, ($p \neq 0$) then $\sec\theta$ is equal to
 (a) $\left(p + \frac{1}{p}\right)$, $p \neq 0$ (b) $\frac{1}{2}\left(p + \frac{1}{p}\right)$, $p \neq 0$
 (c) $2\left(p - \frac{1}{p}\right)$, $p \neq 0$ (d) $\left(p - \frac{1}{p}\right)$, $p \neq 0$
147. If $p = 99$ then the value of $p(p^2 + 3p + 3)$
 (a) 999999 (b) 988899
 (c) 989898 (d) 998889
148. If $x = 2$ then the value of $x^3 + 27x^2 + 243x + 631$
 (a) 1233 (b) 1231
 (c) 1321 (d) 1211
149. If D, E and F are the mid points of BC, CA and AB respectively of the $\triangle ABC$ then the ratio of area of the parallelogram DEFB and area of the trapezium CAFD is :
 (a) 1 : 3 (b) 1 : 2
 (c) 3 : 4 (d) 2 : 3
150. If A and B are in the ratio 4 : 5 and the difference of their squares is 81, what is the value of A?
 (a) 36 (b) 15
 (c) 45 (d) 12

PART-D : ENGLISH COMPREHENSION

DIRECTIONS (Qs. 151-155): In Question given below sentences 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 circle in the Answer Sheet.

151. When the morning _____ the murder was discovered.
 (a) came (b) happened
 (c) arrived (d) occurred
152. The smell of the Sea called _____ memories of her childhood.
 (a) on (b) black
 (c) up (d) for
153. He has the full facts _____ but is deliberately hiding them.
 (a) under his sleeves (b) upon his sleeves
 (c) up his sleeve (d) in his sleeves
154. The appearance of the city _____ day by day.
 (a) could change (b) changed
 (c) had changed (d) is changing
155. The police fired on the mob when they _____.
 (a) turned noisy (b) turned violent
 (c) became abusive (d) fizzled out

DIRECTIONS (Qs. 156-158): In questions, out of the four alternatives, choose the one which best expresses the meaning of the given word and mark it in the Answer Sheet.

156. BOARD
 (a) Frame (b) Lodging
 (c) Food (d) Furniture
157. PERUSE
 (a) Follow (b) Argue
 (c) Reduce (d) Read

158. SPUME
 (a) foam (b) Lava
 (c) poison (d) spit

DIRECTIONS (Qs. 159-163): In question, you have a passage with 5 questions following. Read the passages carefully and choose the best answer to each question out of the four alternatives and mark it by blackening the appropriate circle in the Answer Sheet.

PASSAGE

True, it is the function of the army to maintain law and order in abnormal times. But in normal times there is another force that compels citizens to obey laws and to act with due regard to the rights of others. The force also protects the lives and properties of law abiding men. Laws are made to secure the personal safety of its subjects and to prevent murder and crimes of violence. They are made to secure the property of the citizens against theft and damage and to protect the rights of communities and castes to carry out their customs and ceremonies, so long as they do not conflict with the rights of others. Now the good citizen, of his own free will obeys these laws and he takes care that everything he does is done with due regard to the rights and well being of others.

But the bad citizen is only restrained from breaking these laws by fear of the consequence of his actions. And the necessary steps to compel the bad citizen to act as a good citizen are taken by this force. The supreme control of law and order in a State is in the hands of a Minister, who is responsible to the State Assembly and acts through the Inspector General of Police.

159. The expression "customs and ceremonies" means :
 (a) habits and traditions
 (b) fairs and festivals
 (c) superstitions and formalities
 (d) usual practices and religious rites
160. "They are made to secure the property of citizens against theft and damage" means that the law :
 (a) Safeguards people's possessions against being stolen or lost
 (b) Initiates process against offenders of law
 (c) helps in recovering the stolen property of the citizens
 (d) Assists the citizens whose property has been stolen or destroyed.
161. Which one of the following statement is implied in the passage ?
 (a) The police hardly succeed in converting bad citizens into good ones.
 (b) Criminals, who flout the law, are seldom brought to book
 (c) Peaceful citizens seldom violate the law
 (d) The police check the citizens, whether they are good or bad, from violating the law.
162. According to the writer, which one of the following is not the responsibility of the police ?
 (a) To check violent activities of citizens.
 (b) To maintain peace during extraordinary circumstances.
 (c) To protect the privileges of all citizens
 (d) To ensure peace among citizens by safeguarding individual rights
163. Which of the following statements is not implied in the passage ?
 (a) Law protects those who respect it
 (b) A criminal is deterred from committing crimes only for fear of the law
 (c) The forces of law help to transform irresponsible citizens into responsible ones
 (d) Law ensures people's religious and social rights absolutely and unconditionally.

DIRECTIONS (Qs. 164-173): In Question, a sentence/ a part of the sentence is underlined. Below are given alternatives to the underlined part which may improve the sentence. Choose the correct alternative. In case no improvement is needed choose "No Improvement". Mark your answer in the answer sheet.

164. He does not laugh, nor he smiles.
 (a) nor he does smile (b) No improvement
 (c) neither he does smile (d) nor does he, smile
165. If I will get an opportunity, I shall attend the seminar.
 (a) get (b) No improvement
 (c) shall get (d) got
166. The others shook their heads and made vague noises of approval.
 (a) nodded (b) No improvement
 (c) turned around (d) hung
167. The world is being faced with a crisis
 (a) No improvement (b) facing
 (c) confronted (d) in front of
168. She insisted on she was innocent.
 (a) No improvement (b) insisted on that
 (c) insisted that (d) insisted with
169. She could not help but laugh
 (a) but laughing (b) No improvement
 (c) laughter (d) laughing
170. I took my mother some grapes when she was in hospital.
 (a) I took some grapes for my mother
 (b) No improvement
 (c) I took for my mother some grapes
 (d) I brought my mother some grapes
171. We met yesterday, haven't we ?
 (a) isn't it ? (b) No improvement
 (c) didn't we ? (d) hadn't we ?
172. Both the teams played the game fairly.
 (a) played fairly the game (b) No improvement
 (c) fairly played the game (d) played a fair game
173. You must endure what you cannot cure.
 (a) suffer (b) No improvement
 (c) prevail (d) accept

DIRECTIONS(Qs. 174-176): In Question, choose the word opposite in meaning to the given word and mark it in the Answer sheet.

174. VACILLATION
 (a) inoculation (b) relief
 (c) steadfastness (d) remorse
175. Placid
 (a) dull (b) stormy
 (c) urgent (d) moving
176. Effeminacy
 (a) manliness (b) boorishness
 (c) aggressiveness (d) attractiveness

DIRECTIONS (Qs. 177-181): In Question, some parts of the sentences have errors and some are correct. Find out which part of a sentence has an error and blacken the circle corresponding to the appropriate correct option. If a sentence is free from error; blacken the circle corresponding to "No error" option in the Answer sheet.

177. A bird in the tree is worth two in the bush.
 (a) No error (b) two in the bush
 (c) is worth (d) A bird in the tree

178. It is not advisable to take heavy luggages while on a journey.
 (a) while on a journey (b) to take heavy luggages
 (c) It is not advisable (d) No error
179. Just outside my house are a playground for school boys and girls
 (a) for school boys and girls
 (b) are a playground
 (c) No error
 (d) Just outside my house
180. He can be a basketball player since he is tall like a mule.
 (a) No error
 (b) He can be
 (c) He is tall like a mule
 (d) A basketball player since
181. Who do you think I met?
 (a) Who (b) I met ?
 (c) No error (d) Do you think

DIRECTIONS (Qs. 182-188): In Question, out of the four alternatives, choose the one which can be substituted for the given words / sentences and indicate it by blackening the appropriate circle in the Answer sheet.

182. Of one's own free will
 (a) obligatory (b) mandatory
 (c) voluntary (d) compulsory
183. One who runs away from justice or the law.
 (a) Fugitive (b) Thief
 (c) Criminal (d) Smuggler
184. One who is skillful.
 (a) disciplined (b) different
 (c) diligent (d) dexterous
185. One who is too careless to plan for the future.
 (a) impotent (b) improvident
 (c) impractical (d) imprudent
186. A person who deserves all praise
 (a) despicable (b) detestable
 (c) laudable (d) lovable
187. One who has long experience
 (a) expert (b) novice
 (c) practitioner (d) veteran
188. A study of ancient things.
 (a) Physiology (b) Archaeology
 (c) Ethnology (d) Zoology

DIRECTIONS (Qs. 189-190): In question, four words are given in each question, out of which only one word is correctly spelt. Find the correctly spelt word and mark your answer in the Answer Sheet

189. (a) DIFFUSSION (b) DEFFUSION
 (c) DIFFUSION (d) DEFUSION
190. (a) Circumlocation (b) Circumlucution
 (c) Circmlucution (d) Circumlucutien

DIRECTIONS (Qs. 191-195): In question, 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.

191. Unless you make amends for the loss, nobody is prepared to excuse you.
 (a) improve (b) pay debt
 (c) confess (d) compensate
192. Instead of keeping his promise of helping me with office work, he just left me high and dry.
 (a) left me feeling like a fool
 (b) left me in a state of anger
 (c) left me without a drop of water
 (d) left me alone to do the work

193. Amit said to Rekha, "Don't make a mountain out of a molehill".
 (a) attempt an impossible task
 (b) start looking for molehills in mountains.
 (c) create problems
 (d) exaggerate a minor problem
194. Before the report reached the authority, the media spilled the beans.
 (a) dropped the charges
 (b) hinted at the consequences
 (c) revealed the secret information
 (d) spilled the content of the package
195. His friend turned out to be snake in the grass.
 (a) cowardly and brutal
 (b) low and mean
 (c) a hidden enemy
 (d) an unreliable and deceitful person.

Directions (Qs. 196-200): In question, you have a passage with 5 questions following. Read the passages carefully and choose the best answer to each question out of the four alternatives and mark it by blackening the appropriate circle in the Answer sheet.

Journalists argue over functions of a newspaper. I feel that a provincial paper's purpose is not only to present and project the news objectively and imaginatively, but to help its readers to express themselves more effectively, canalizing their aspirations, making more articulate their demands. A newspaper should reflect the community it serves—warts and all. When the mirror is held to society it reveals neglect, injustice, ignorance or complacency. It should help to eradicate them. It would be pretentious to think that a newspaper can change the course of world affairs but at the local limit it can exert influence, it can probe, it can help get things done. The individual's voice must not be stifled. Instead, the readers should be encouraged to express their opinions, fears, hopes, and or their grievances on this platform.

196. How can the readers air their grievances ?
 (a) By being complacent.
 (b) By supporting the local newspaper
 (c) By writing to journalists
 (d) By writing to their local newspaper
197. What is the main purpose of a newspaper?
 (a) Project news objectively and imaginatively
 (b) To present facts in a blunt way
 (c) Exert influence on the individuals
 (d) Encourage the readers to be pretentious
198. The expression "wants and all" in the passage means :
 (a) hopes and fears
 (b) the reader's grievances
 (c) with no attempt to conceal blemishes and inadequacies
 (d) the community's problems
199. How can a newspaper influence local affairs ?
 (a) By probing in the ills of society and rallying support for change
 (b) By encouraging the readers to accept their grievances
 (c) By focusing on world affairs
 (d) By influencing public opinion through half truths.
200. In this passage the writer highlights the fact that :
 (a) A newspaper should reflect the community it serves
 (b) A newspaper should only concentrate on local affairs
 (c) Journalists differ in their opinion on the function of a newspaper
 (d) Newspaper can eradicate injustice

ANSWER KEY

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

Hints & Explanations

PART-A : GENERAL INTELLIGENCE & REASONING

1. (a) Father

↓
My (Woman)/woman

↓
Man

Hence, man is son of the woman.

2. (b) B L O C K E D
-
- ↓ ↓ ↓ ↓ ↓ ↓
-
- Y O L X P V W

Above word follows reverse order of alphabets.

Similarly,

L A U N N C H
↓ ↓ ↓ ↓ ↓ ↓
O Z F M M X S

4. (d) F I G
-
- 1 +1 -1 +1 -1 +1
-
- E G H J F H

Similarly,

B I N
-1 +1 -1 +1 -1 +1
A C H J M O

5. (c)
- $6 \times 6 + 6 = 42$
-
- $7 \times 7 + 7 = 56$

6. (d) The waste of the house is called garbage. Similarly, the impurities in the ore are called gangue.

7. (d) D B U C J H
-
- ↓+1 ↓+3 ↓+5 Similarly, ↓+1 ↓+3 ↓+5
-
- E E Z D M M

8. (a) All others except (a) have official rankings

9. (b) All other except (b) are forms of angles

10. (c) All others except (c) are the multiples of 5.

11. (b) Only in option (b) first letter is 4th from the left end and second letter is 4th from the right end. Others have no sequence

13. (d) 1331 is the cube of 11

14. (d) There are 19 circles in the figure.

15. (d) SHEELA/SHEELA/SHEELA/SHEELA

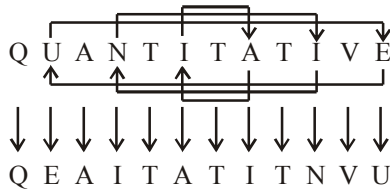
16. (c) 1 2 3 4 / 1 2 3 4 / 1 2 3 4 / 1 2 3 4

17. (d) a b a b a b a b a b

19. (c) E A G L E
-
- ↓ ↓ ↓ ↓ ↓
-
- 99 01 44 96 77

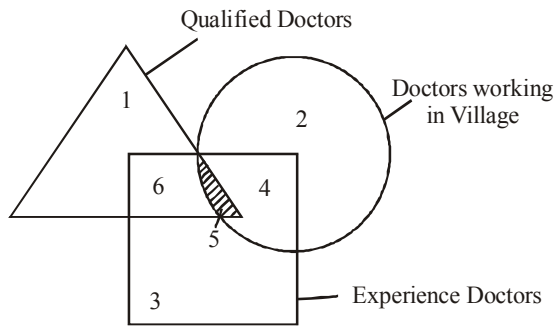
20. (d) F R A C T I O N
-
- ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
-
- F N A I T C O R

Similarly



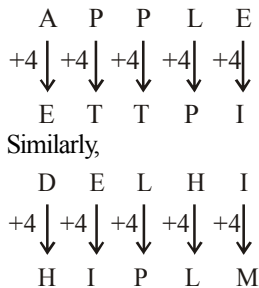
22. (d) (A) Virgo is the sixth sign of zodiac.
 (B) Volleyball is a team sport in which each team has six players
 (C) A highest scoring short of a particular sport is six.

23. (b)



Hence, shaded portion in above diagram represents. Qualified Experienced Doctors working in village i.e. 5.

24. (c)



25. (c) $2 \times 2 \times 3 = 12$
 $2 \times 3 \times 5 = 30$
 $5 \times 1 \times -1 = -5$
 $\therefore 4 \times 3 \times -1 = -12$

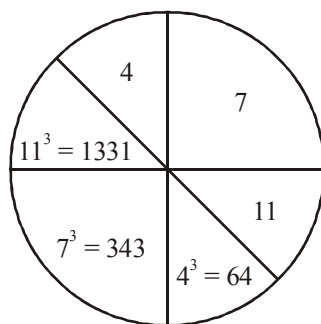
26. (b) $40 + 32 = \frac{72}{6} = 12$

$$30 + 24 = \frac{54}{6} = 9$$

$$54 + 36 = \frac{90}{6} = 15$$

27. (c) $1 \times 3 \times 4 \times 5 = 60$
 $6 \times 7 \times 1 \times 2 = 84$
 therefore, $3 \times 10 \times 3 \times 1 = 90$.

28. (d)



30. (c) 'S' can be deleted from the body of the following words to form entirely new words.

New words are :

HOT, POT, COT, LOT, TOP

31. (d)



Inferences :

I : (False)

II : (False)

Both statements are False, so no conclusion follows.

32. (c) Neither I nor II assumption follows the given statement.

33. (d) C U S T O M \longleftrightarrow U C T S M O

Every two letters get interchanged their position.

Therefore,

P A R E N T \longleftrightarrow A P E R T N

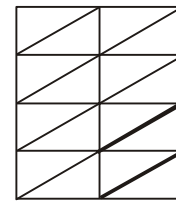
36. (c) The color of sky is blue. But blue is called sky. Hence, option (c) is correct choice.

38. (c) Words in reverse order :

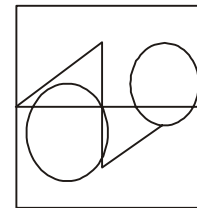
Ordeum \rightarrow Odium \rightarrow Odious \rightarrow Occulist

(1) (2) (3) (4)

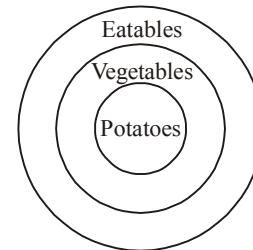
39. (a)



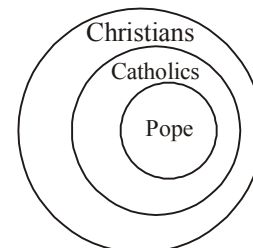
40. (a)



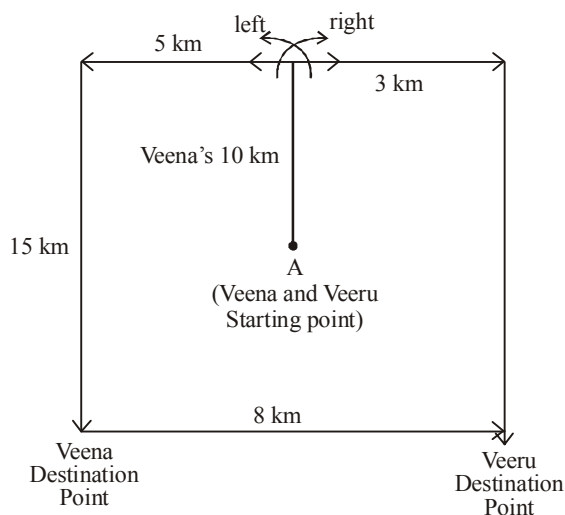
41. (a)



42. (b)



43. (c)



By looking at the above diagram, it is clear that Veena is 8 km far away from Veeru's position.

44. (c) $\begin{array}{ccccccccc} & 2 & & 5 & & 10 & & 17 & & 26 & & 37 \\ & \downarrow & & \uparrow & & \downarrow & & \uparrow & & \downarrow & & \uparrow \\ & & +3 & & +5 & & +7 & & +9 & & +11 & \end{array}$

45. (a)

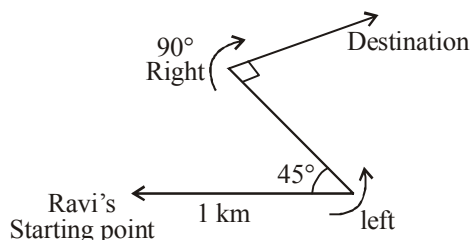
$A \Rightarrow \nless$	$B \Rightarrow \neq$	$C \Rightarrow \nless$
$D \Rightarrow \gg$	$E \Rightarrow \nless$	$F \Rightarrow =$

Premises :

$$4Y = 3x \text{ and } 3x = 6Z$$

- (a) $2Y = 3Z$ (✓)
(b) $4Y \neq 5Z$ (✗)
(c) $2Y > 3Z$ (✗)
(d) $2Y < 3Z$ (✗)

46. (d)



After walking towards 90° right, he is now in north east direction.

47. (c) LATHPEEN → ELEPHANT
TICRECK → CRICKET
FEFEOC → COFFEE
TAR → RAT

Hence, coffee is not animal.

48. (b) HAKE > HALE > HALT > HAM > HAMLOT

49. (c) $16 \div 64 - 8 \times 4 + 2$
 $\Rightarrow 16 + 64 \div 8 - 4 \times 2$
 $\Rightarrow 16 + 8 - 4 \times 2$
 $\Rightarrow 16 + 8 - 8 \Rightarrow 16$

50. (c) DIGGING cannot be formed from the given word.

PART-B : GENERAL AWARENESS

51. (c) The first step the CPU carries out is to fetch some data instructions from main memory then store them in its own internal temporary memory areas. The next step is

for the CPU to make sense of the instruction it has just fetched this process is called Decode. Execute is the part of the cycle when data processing actually takes place.

52. (b) Reformation was a 16th-century movement in Western Europe that aimed at reforming some doctrines and practices of the Roman Catholic Church and resulted in the establishment of the Protestant churches.

53. (b) Wave particle duality is a quantum mechanics effect. It means the electron sometimes acts like a particle and sometimes it acts like a wave. It depends on the situations.

54. (d) SIDBI stands for Small Industries Development Bank of India. It is an independent financial institution aimed to aid the growth and development of micro, small and medium-scale enterprises (MSME) in India. It was set up on April 2, 1990 through an act of parliament.

55. (b) Vitamin B12 consists of a class of chemically related compounds (vitamers). It contains the biochemically rare element cobalt.

56. (d) Bal Gangadhar Tilak is considered as "Father of Indian National Movement". He was a social reformer, freedom fighter, national leader and a scholar of Indian history, sanskrit, hinduism, mathematics and astronomy. During freedom struggle, his slogan "Swaraj is my birthright and I shall have it" inspired millions of Indians.

57. (a) Stromboli, a small island north of Sicily, is one of the most active volcanoes in the world and famous for its normally small, but regular explosions throwing out glowing lava from several vents inside its summit crater. This activity has been going on for at least 2000 years. Thus, it is called Light house of the Mediterranean.

58. (d) In 1904 the German agronomist and plant physiologist Lorenz Hiltner first coined the term "rhizosphere" to describe the plant-root interface, a word originating in part from the Greek word "rhiza", meaning root . Hiltner described the rhizosphere as the area around a plant root that is inhabited by a unique population of microorganisms influenced, he postulated, by the chemicals released from plant roots.

59. (d) Thermal Power Plants consumes maximum industrial water in India.

60. (b) Rabindranath Tagore was the first Indian ever to receive a Nobel Prize. He was awarded the Nobel Prize for Literature in recognition of his work *Geetanjali*, a collection of poems, in 1913.

61. (b) The Quit India Movement(August Kranti), was a civil disobedience movement launched in India on 9 August 1942 by Mohandas Karamchand Gandhi.

62. (a) The current sequence is Troposphere-Stratosphere-Mesosphere-Ionosphere-Exosphere

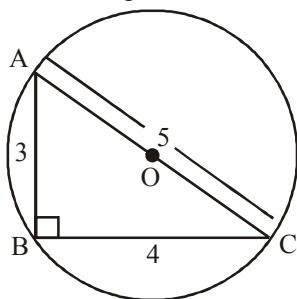
63. (d) The Earth and the atmosphere are heated by energy from the sun. The atmospheric heat budget of the Earth depends on the balance between insolation and outgoing terrestrial radiation.

64. (c) Reverse transcription were discovered by Howard Temin and independently isolated by David Baltimore.
65. (d) Steam will produce more severe burns than boiling water because steam has more heat energy than water due to its latent heat of vaporisation.
66. (c) Fructose is the sweetest of all natural sugar types.
67. (c) Zone melting, any of a group of techniques used to purify an element or a compound or control its composition by melting a short region (i.e., zone) and causing this liquid zone to travel slowly through a relatively long ingot, or charge, of the solid.
68. (d) The troposphere is the first layer above the surface and contains half of the Earth's atmosphere. Weather occurs in this layer. This is closest to the Earth's surface, extending up to about 10-15 km above the Earth's surface.
69. (b) 'Dentrification' is the biological conversion of nitrate to nitrogen gas, nitric oxide or nitrous oxide. These compounds are gaseous compounds and are not readily available for microbial growth; therefore they are typically released to the atmosphere.
70. (c)
 - Bit (Binary digit) = a bit can only have one of two possible values.
 - Byte = 1 byte = 8 bits
 - Field = one or more bits/bytes holding a single piece of information about a single entity
 - Record (Logical) = all the fields which apply to a single entity (except for "Inverted" files)
 - File = all the records which apply to a collection of entities
 - Database = a related collection of Files.
71. (b) Holstein Friesians are a breed of cattle known today as the world's highest-production dairy animals. They are found in Europe and America.
72. (d) The Indian National Congress was founded on December 28, 1885, by members of the Theosophical Society. The founders included a prominent member of the Theosophical Society, Allan Octavian Hume as well as Dadabhai Naoroji and Dinshaw Wacha.
73. (d) Modern Bangladesh emerged as an independent nation in 1971 after achieving independence from Pakistan in the Bangladesh Liberation War. The Provisional Government of Bangladesh was formed on 17 April 1971.
74. (a) 'Brahmo Samaj' was founded by Raja Ram Mohan Roy in 1828.
75. (d) Pulses plants belong to the family Leguminosae.
76. (d) Vijaya Lakshmi Pandit became the first woman to be elected president of the UN General Assembly in 1953. She was an Indian diplomat, politician, and a sister of India's first prime-minister, Jawaharlal Nehru. She was active in the Indian freedom movement and held high national and international positions.
77. (d) The one rupee note bears the signature of secretary ministry of Finance.
78. (a) The currency of Saudi Arabia is Saudi Riyal.
79. (d) After independence, the government passed Reserve Bank (Transfer to Public Ownership) Act, 1948 and took over RBI from private shareholders after paying appropriate compensation. Thus, nationalisation of RBI took place in 1949 and from January 1, 1949, RBI started working as a government owned central bank of India.
80. (d) Garba is a folk dance of state of Gujarat.
81. (b) NABARD is set up as an apex Development Bank with a mandate for facilitating credit flow for promotion and development of agriculture, small-scale industries, cottage and village industries, handicrafts and other rural crafts. It was established on 12 July 1982 by a special act by the parliament
82. (b) Surplus budget is the order of the economies in boom time.
83. (b) G V Mavalankar was the first speaker of the Lok Sabha.
84. (d) Plural voting is the practice whereby one person might be able to vote multiple times in an election.
85. (a) Sugarcane shows chloroplast dimorphism. The presence of bundle sheath with chloroplast in the leaves is granulated and lacking in starch. Such feature is known as chloroplast dimorphism.
86. (c) The equator receives equal day and night throughout the year because it does not tilt in relation to the sun's location. Because of the tilted axis of the Earth, the poles and locations away from the equator lean towards or away from the sun as an orbit is completed, while the equator stays in essentially the same location relative to the sun.
87. (b) Economic profit is the difference between total revenue and total opportunity cost. If a firm's total opportunity cost is less than the total revenues then the firm is making economic profit. If a firm's total opportunity cost is greater than the total revenues then the firm is making economic losses. It is similar to optimum profit.
88. (b) The tropical rainforest is earth's most complex biome in terms of both structure and species diversity. It occurs under optimal growing conditions, abundant precipitation and year round warmth. Mean monthly temperatures are above 64 ° F; precipitation is often in excess of 100 inches a year. There is usually a brief season of reduced precipitation. In monsoonal areas, there is a real dry season but that is more than compensated for with abundant precipitation the rest of the year.
89. (a) pleiotropic gene is a gene that causes a number of distinct but seemingly unrelated phenotypic effects.
90. (a) podsol soil is a soil that develops in temperate to cold moist climates underconiferous or heath vegetation; an organic mat over a grey leached layer.
91. (b) Antoine-Henri Becquerel (1852-1908) is known for his discovery of radioactivity, for which he received the Nobel Prize for Physics jointly with Marie Curie) and Pierre in 1903 and the contributions he made to that field. Henri Becquerel discovered radioactivity, and Mari Curie coined the term.

92. (c) Coagulation removes dirt and other particles suspended in water. Alum and other chemicals are added to water to form tiny sticky particles called "floc" which attract the dirt particles. The combined weight of the dirt and the alum (floc) become heavy enough to sink to the bottom during sedimentation.
93. (c) Retroviral integrase (IN) is an enzyme produced by a retrovirus (such as HIV) that enables its genetic material to be integrated into the DNA of the infected cell.
94. (c) Voting is the process of selecting representatives.
96. (b) Allan Octavian Hume was a civil servant, political reformer in British India who initiated the movement to form the Indian National Congress.
97. (a) All are correct
98. (d) Constitutional monarchy is a form of government in which a king or queen acts as Head of State. The ability to make and pass legislation resides with an elected Parliament, not with the Monarch.
99. (c) Popular sovereignty or the sovereignty of the people is the principle that the authority of the government is created and sustained by the consent of its people, through their elected representatives (Rule by the People), who are the source of all political power.
100. (c) Granite and quartzite areas have upstanding look because these rocks are not easily eroded

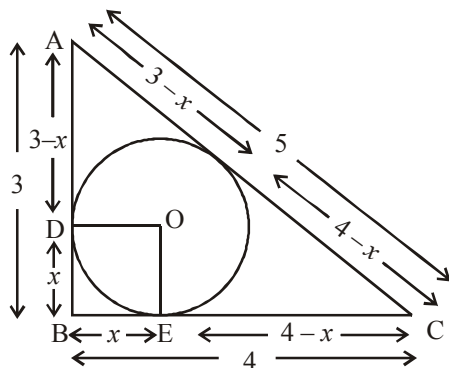
PART-C : QUANTITATIVE APTITUDE

101. (c) Here the side of triangle are 3, 4 and 5. So triangle is right angle triangle. When triangle is circumscribed (C_1)



Radius of circle = $\frac{5}{2}$

When triangle is Inscribed (C_2)



Let $BE = x$

Then $DE = x$ (triangle)

$CE = 4 - x$

$AC = 3 - x + 4 - x$

$$\Rightarrow 5 = 7 - 2x$$

$$x = 1$$

Now,

$$\frac{\text{Area of } C_1}{\text{Area of } C_2} = \frac{\pi r_1^2}{\pi r_2^2}$$

$$\frac{\pi(1)^2}{\pi\left(\frac{5}{2}\right)^2} = \frac{4}{25}$$

102. (d) $x = \frac{1}{\sqrt{2}+1} \times \frac{\sqrt{2}-1}{\sqrt{2}-1} = \sqrt{2}-1$

Now, $x+1 = \sqrt{2}-1+1 = \sqrt{2}$

103. (a) Monthly savings = $\frac{60}{360} \times 36000$
 $= ₹ 6000$
 Yearly savings = 6000×12
 $= ₹ 72000$

104. (b) Let Total Expenditure be ₹ x
 $\frac{x \times (70^\circ - 54^\circ)}{360} = 1600$

$$\Rightarrow \frac{x \times 16}{360} = 1600$$

$$x = ₹ 36000$$

Expenditure on food = $\frac{120^\circ}{360} \times 36000 = ₹ 12000$

105. (a) Ratio of Expenditure = $\frac{120}{60} = \frac{2}{1} = 2 : 1$

106. (a) Correct Average Marks
 $= 88 - \frac{(86-68)}{6}$
 $= 88 - 3$
 $= 85$

107. (d) Highest Average in two Innings = $\frac{60+80}{2} = 70$.

108. (c) Less score in second innings by player pujara = 10

Average score in two innings = $\frac{70+10}{2} = 40$

109. (c) Average score in second Innings
 $= \frac{80+50+10+20}{4} = \frac{160}{4} = 40$.

110. (c) Total score in Ist Innings = $60 + 50 + 70 + 30 = 210$.

111. (d) According to question
 Volume of sphere = surface area of sphere

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

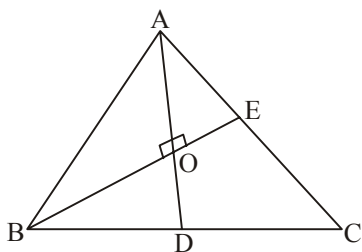
$$\Rightarrow r = 3 \text{ cm}$$

diameter = 6 cm

112. (c) Average speed = 75 km/h
 Distance = 1050 kms

Time taken to cover the distance = $\frac{1050}{75} = 14 \text{ hrs.}$

113. (a) Given $AD = 9$ cm
 $BE = 12$ cm



Here AD and BE intersect at O ($AD \perp BE$)
 $\therefore \angle AOB = 90^\circ$

$$AO = \frac{2}{3} \times AD = \frac{2}{3} \times 9 = 6 \text{ cm}$$

$$OB = \frac{2}{3} \times BE = \frac{2}{3} \times 12 = 8 \text{ cm}$$

$$\begin{aligned} AB &= \sqrt{(AO)^2 + (OB)^2} \\ &= \sqrt{(6)^2 + (8)^2} \\ &= \sqrt{36 + 64} \\ &= 10 \text{ cm} \end{aligned}$$

114. (c) Given that
 $2\sin^2\theta + 3\cos^2\theta$
 $= 2(1 - \cos^2\theta) + 3\cos^2\theta$
 $= 2 - 2\cos^2\theta + 3\cos^2\theta$
 $= 2 + \cos^2\theta$
 For minimum value $\cos\theta = 0$
 Minimum value of $2\sin^2\theta + 3\cos^2\theta = 2$
115. (d) Angles are $(x + 15^\circ)$, $\left(\frac{6x}{5} + 6^\circ\right)$ and $\left(\frac{2x}{3} + 30^\circ\right)$

We know that

Sum of the angles of a triangle is 180° .

$$\Rightarrow x + 15^\circ + \frac{6x}{5} + 6^\circ + \frac{2x}{3} + 30^\circ = 180$$

$$\Rightarrow \frac{15x + 18x + 10x}{15} + 51 = 180$$

$$\Rightarrow \frac{43x}{15} = 180 - 51 = 129$$

$$\Rightarrow 43x = 129 \times 15$$

$$x = 45^\circ$$

Then angle are $= (45 + 15^\circ)$, $\left(\frac{6 \times 45}{5} + 6^\circ\right)$ and

$$\left(\frac{2 \times 45}{3} + 30^\circ\right)$$

$$= 60^\circ, 60^\circ, 60^\circ$$

So this is an equilateral triangle.

116. (b) The value of $v - e + f$
 $= 8 - 12 + 6 = 2$.

117. (a) For surface Area of 5 persen

$$\pi r^2 = 5 \times 16$$

$$r^2 = \frac{80}{\pi}$$

Now, volume of cone = volume of air space of 5 person

$$\Rightarrow \frac{1}{3} \pi r^2 h = 5 \times 100$$

$$\Rightarrow \frac{1}{3} \pi \times \frac{80}{\pi} \times h = 5 \times 100$$

$$\therefore h = \frac{75}{4} = 18.75$$

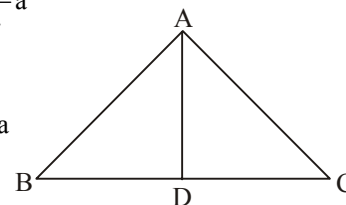
118. (d) Let ABC is equilateral triangle. Where sides is a cm.

$$\Rightarrow \text{Area of equilateral triangle} = \frac{\sqrt{3}}{4} a^2$$

$$\Rightarrow \frac{1}{2} \times 9 \times AD = \frac{\sqrt{3}}{4} a^2$$

$$\Rightarrow \frac{1}{2} \times 12\sqrt{3} = \frac{\sqrt{3}}{4} a$$

$$\Rightarrow a = 24 \text{ cm}$$



$$\text{Now, Area of triangle} = \frac{\sqrt{3}}{4} a^2$$

$$= \frac{\sqrt{3}}{4} \times 24 \times 24$$

$$= 148\sqrt{3} \text{ cm}$$

119. (d) 1st successive discount final rate

$$= -x - 4 + \frac{xy}{100}$$

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

$$= -70 + 12$$

$$= -58\%$$

2nd successive discount final rate

$$= -95 - 20 + \frac{95 \times 20}{100}$$

$$= -65 + 9 = -56\%$$

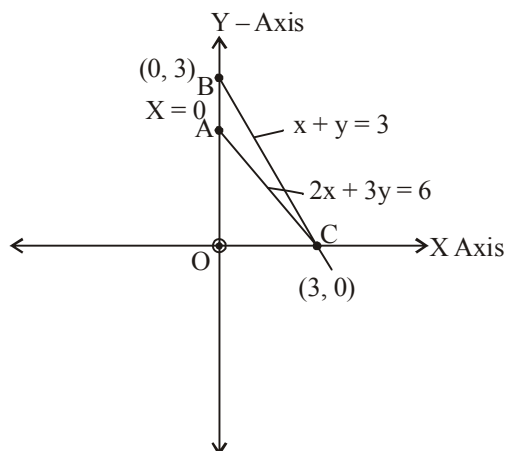
Let more price be MP

$$\text{then } MP \times \frac{58}{100} - MP \times \frac{56}{100} = 12$$

$$\Rightarrow \frac{MP \times 2}{100} = 12$$

$$MP = ₹ 600$$

120. (b) $x = 0$... (1)
 $2x + 3y = 6$... (2)
 $2x + y = 3$... (3)



$$2x + 3y = 6$$

$$x = 0, y = 2$$

$$x = 3, y = 0$$

$$\text{From eqn. (iii) } x + y = 3$$

$$x = 0, y = 3$$

$$x = 3, y = 0$$

Area made by these three lines

$$= \text{Area of triangle OBC} - \text{Area of OAC}$$

$$= \frac{1}{2} \times 3 \times 3 - \frac{1}{2} \times 2 \times 3$$

$$= \frac{9}{2} - 3 = \frac{3}{2} = 1\frac{1}{2} \text{ sq.}$$

121. (a) $2x - 3y = 0$ is passing through origin because it satisfies $x = 0$ and $y = 0$.

122. (c) Given fraction

$$x^8 - 1 = (x^4 + 1)(x^2 + 1)(x - 1)(x + 1)$$

$$x^4 + 2x^3 - 2x - 1 = (x - 1)(x + 1)^3$$

$$\text{HCF of Given factor} = (x - 1)(x + 1) = x^2 - 1$$

123. (b) LCM of 6, 9, 12, 15 and 18

2	6, 9, 12, 15, 18
3	3, 9, 6, 15, 9
3	1, 3, 2, 5, 3
	1, 1, 2, 5, 1

$$\text{LCM} = 2 \times 3 \times 3 \times 2 \times 5 = 180$$

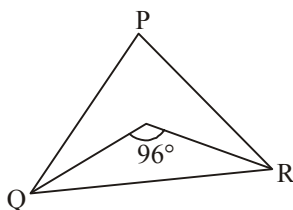
$$\text{Least number} = 180 + 2 = 182$$

124. (a) $\angle QPR = 90^\circ + \frac{\angle P}{2}$

$$\Rightarrow 96^\circ = 90^\circ + \frac{\angle P}{2}$$

$$\Rightarrow \frac{\angle P}{2} = 6^\circ$$

$$\therefore \angle P = 12^\circ$$



125. (d) Final rate of interest for two pens

$$= x + y + \frac{xy}{100}$$

$$= 10 + 10 + \frac{10 \times 10}{100} = 21\%$$

Let principal be P.

$$\Rightarrow P \times \frac{121}{100} = 12100$$

$$P = 100 \times 100 = ₹ 10000$$

126. (d) A's 2 days work = B's 3 days work.

A complete a work in 8 days

$$\text{A's 1 days work} = \frac{1}{8} \text{ days}$$

$$\text{A's 2 days work} = \frac{1}{8} \times 2 = \frac{1}{4} \text{ work.}$$

$$\text{Now, B's 3 days work} = \frac{1}{4} \text{ work}$$

$$\text{B's 1 days work} = \frac{1}{12} \text{ work}$$

\therefore B's will take 12 days to complete the work.

127. (d) Sum of the angle of a triangle = 180°

$$\Rightarrow 2x^\circ + 3x^\circ + 5x^\circ = 180^\circ$$

$$\Rightarrow 10x^\circ = 180^\circ$$

$$x^\circ = 18^\circ$$

Angle are = $36^\circ, 54^\circ, 90^\circ$ So, this is right angles triangle.

128. (d) According to question

$$\frac{2+x}{5+x} = \frac{5}{6}$$

$$\Rightarrow 12 + 6x = 25 + 5x$$

$$x = 25 - 12 = 13.$$

129. (c) Let angles are x and y rad.

$$x - y = 36^\circ$$

... (i)

$$x + y = \frac{22}{9}$$

$$x + y = \frac{22}{9} \times \frac{180}{\pi} = \frac{440^\circ}{\pi} = 140^\circ$$

... (ii)

Now, on solving each (i) and (ii), we get

$$x = 68^\circ, \text{ and } y = 52^\circ$$

So, smaller angle = 52°

130. (d) Now, $M_1 d_1 = M_2 d_2$

$$\Rightarrow (4M + 6W) \times 8 = (2M + 9W) \times 8$$

$$\Rightarrow 4M + 6W = 2M + 9W$$

$$\Rightarrow 2M = 3W$$

$$1M = \frac{3}{2}W$$

$$\text{Now, } 4M + 6W = 4 \times \frac{3}{2}W + 6W = 12W$$

Here 12W complete a work in 8 days.

So, let 18 women complete a work in x days

$$12W \times 8 = 18W \times x$$

$$x = \frac{12 \times 8}{18} = \frac{16}{3} \text{ days}$$

$$= 5\frac{1}{3} \text{ days}$$

131. (d) Given that

$$\frac{x^{24} + 1}{x^{12}} = 7$$

$$\Rightarrow x^{12} + \frac{1}{x^{12}} = 7$$

On cubing both sides we get

$$\Rightarrow x^{36} + \frac{1}{x^{36}} + 3 \cdot x^{12} \cdot \frac{1}{x^{12}} \left(x^{12} + \frac{1}{x^{12}} \right) = 343$$

$$\Rightarrow x^{36} + \frac{1}{x^{36}} + 3 \times 7 = 343$$

$$\Rightarrow \frac{x^{72} + 1}{x^{36}} = 343 - 21 = 322$$

132. (b) $5x + 9y = 5$

$$125x^3 + 729y^3 = 120$$

Now cube both sides of equation (i), we get

$$\Rightarrow (5x + 9y)^3 = (5)^3$$

$$\Rightarrow 125x^3 + 729y^3 + 135xy(5x + 9y) = 125$$

$$\Rightarrow 125x^3 + 729y^3 + 135xy \times 5 = 125$$

Now, put the value of equation (i)

$$120 + 135xy \times 5 = 125$$

$$\Rightarrow 135 \times 5xy = 125 - 120$$

$$\Rightarrow 135 \times 5xy = 5$$

$$xy = \frac{5}{135 \times 5} = \frac{1}{135}$$

133. (*) $4M = 8w$

$$\therefore 1M = 2w$$

$$\text{Now, } 6M + 12w = 6 \times 2w + 12w$$

$$= 12w + 12w$$

$$= 24w$$

$$\text{Now, } M_1 d_1 = M_2 d_2$$

$$\Rightarrow 8w \times 15 = 24w \times d_2$$

$$\Rightarrow \therefore d_2 = \frac{8w \times 15}{24} = 5 \text{ days}$$

None of the options is correct

134. (b) $\sin^2 22^\circ + \sin^2 68^\circ + \cot^2 30^\circ$

$$= \sin^2 (90 - 68)^\circ + \sin^2 68^\circ + \cot^2 30^\circ$$

$$= \cos^2 68^\circ + \sin^2 68^\circ + \cot^2 30^\circ$$

$$= 1 + (\sqrt{3})^2$$

$$= 1 + 3 = 4$$

$$135. (c) 100 \xrightarrow{-10\%} 90 \xrightarrow{-20\%} 72 \xrightarrow{-25\%} 54$$

$$\text{Required single discount} = (100 - 54)\% = 46\%$$

136. (a) $\tan(4\theta - 50^\circ) = \cot(50^\circ - \theta)$

$$\Rightarrow \tan(4\theta - 50^\circ) = \tan(90 - (50^\circ - \theta))$$

$$\Rightarrow 4\theta - 50^\circ = 90 - 50^\circ + \theta$$

$$\Rightarrow 3\theta = 90^\circ$$

$$\theta = 30^\circ$$

137. (a) Now according to question.

$$100 \times CP = 60 \times SP$$

$$\Rightarrow \frac{SP}{CP} = \frac{100}{60} = \frac{5}{3}$$

Both sides subtract 1

$$\Rightarrow \frac{SP - CP}{CP} = \frac{5 - 3}{3} = \frac{2}{3}$$

$$\text{Percentage loss} = \frac{2}{3} \times 100 = 66\frac{2}{3}\%$$

138. (c) $5 \sin \theta = 3$

$$\sin \theta = \frac{3}{5}$$

$$b = \sqrt{(5)^2 - (3)^2} = \sqrt{16} = 4$$

$$\tan \theta = \frac{3}{4}, \quad \cos \theta = \frac{4}{5} \quad \Rightarrow \quad \sec \theta = \frac{5}{4}$$

$$\text{Now, } \frac{\sec \theta - \tan \theta}{\sec \theta + \tan \theta} = \frac{\frac{5}{4} - \frac{3}{4}}{\frac{5}{4} + \frac{3}{4}} = \frac{2}{8} = \frac{1}{4}$$

139. (d) Let the number be x

$$\Rightarrow \frac{3}{4}x = \frac{1}{6}x + 7$$

$$\Rightarrow \frac{3}{4}x - \frac{1}{6}x = 7$$

$$= \frac{+9x - 2x}{12} = 7$$

$$\frac{7x}{12} = 7 \quad \therefore x = 12$$

$$\text{Now, } \frac{5}{3} \text{ of } x = \frac{5}{3} \times 12 = 20.$$

140. (d) For 20 natural last odd number

$$= 1 + (20 - 1) \times 2$$

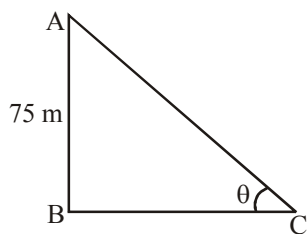
$$= 39$$

Arithmetic mean of odd number

$$= \frac{n+1}{2}$$

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

141. (b)



$$\cot \theta = \frac{BC}{AB}$$

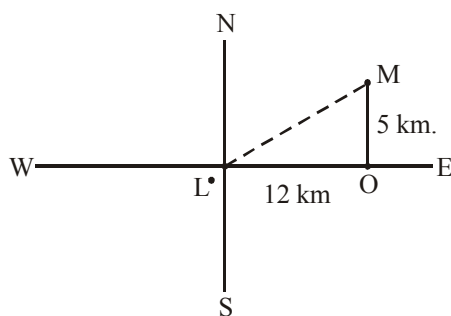
$$\Rightarrow \frac{8}{15} = \frac{BC}{75}$$

$$\Rightarrow BC = 40$$

$$AC = \sqrt{(BC)^2 + AB^2}$$

$$\begin{aligned} AC &= \sqrt{(75)^2 + (40)^2} \\ &= \sqrt{5625 + 1600} \\ &= \sqrt{7225} = 85 \text{ cm.} \end{aligned}$$

142. (d)



$$\begin{aligned} LM &= \sqrt{(OL)^2 + (MO)^2} \\ &= \sqrt{(12)^2 + (5)^2} \\ &= \sqrt{144 + 25} = 13 \text{ km.} \end{aligned}$$

143. (b) Let total mark of Examination be x.

$$\Rightarrow x \times \frac{36}{100} = 190 + 35$$

$$\begin{aligned} \Rightarrow \frac{x \times 36}{100} &= 225 \\ x &= 625 \end{aligned}$$

144. (d) Speed = $90 \times \frac{5}{18} = 25 \text{ m/sec}$

$$\begin{aligned} \text{Time} &= \frac{d}{v} = \frac{180}{25} \\ &= 7.2 \text{ sec.} \end{aligned}$$

145. (d) Now, Let discount be x%

$$975 \times \frac{(100 - x)}{100} = 897$$

$$\Rightarrow 100 - x = \frac{89700}{975}$$

$$\Rightarrow x = \frac{97500 - 89700}{975}$$

$$= \frac{7800}{975} = 8\%$$

146. (b) $\sec \theta + \tan \theta = p$... (i)We know that $\sec^2 \theta - \tan^2 \theta = 1$

$$\Rightarrow (\sec \theta - \tan \theta)(\sec \theta + \tan \theta) = 1$$

Now, Put the value of $\sec \theta + \tan \theta = p$

$$\sec \theta - \tan \theta = \frac{1}{p} \quad \dots (ii)$$

Now, solving eqn. (i) and (ii)

$$\sec \theta = \frac{1}{2} \left(p + \frac{1}{p} \right)$$

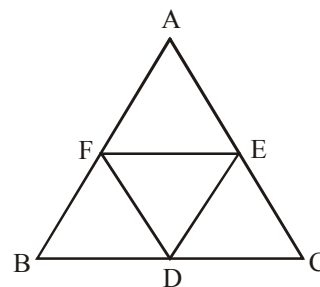
147. (a) Given $P = 99$

$$\begin{aligned} \text{then } P(P^2 + 3P + 3) &= P((P + 1)^2 + P + 2) \\ &= 99((99 + 1)^2 + 101) \\ &= 99 \times (10000 + 101) \\ &= 9999999 \end{aligned}$$

148. (a) Given $x = 2$

$$\begin{aligned} \text{then } x^3 + 27x^2 + 243x + 631 &= 8 + 108 + 486 + 631 \\ &= 1233 \end{aligned}$$

149. (d)

Area of $\square DEFB = BD \times ED$

$$\text{Area of trapezium } \square CAFD = \frac{1}{2} (AC + FD) \times DE$$

Here $AC = 2AE = 2FD$

$$\square CAFD = \frac{1}{2} 3FD \times DE$$

$$\text{Now } \frac{\text{Area of } \square DEFB}{\text{Area of trapezium } \square CAFD} = \frac{BD \times EF}{\frac{3}{2} FD \times DE}$$

$$= \frac{BD \times ED}{\frac{3}{2} \times BD \times DE} = \frac{2}{3}$$

150. (d) Ratio

$$\text{Now, } B^2 - A^2 = 81$$

$$\frac{A}{B} = \frac{4}{5} \Rightarrow \frac{B}{A} = \frac{5}{4}$$

Squaring both sides, we get

$$\Rightarrow \frac{B^2}{A^2} = \frac{25}{16}$$

both sides subtract 1

$$\Rightarrow \frac{B^2 - A^2}{A^2} = \frac{25 - 16}{16} = \frac{9}{16}$$

$$\Rightarrow \frac{81}{A^2} = \frac{9}{16}$$

$$\Rightarrow A^2 = 16 \times 9$$

$$\therefore A = 12$$

PART-D : ENGLISH COMPREHENSION

151. (a) Arrive means to reach a destination by movement or progress; happen denotes an event coming to pass (in time, so that it is real and actual at some time); occur also means (of an event) coming to pass (in time, so that it is real and actual at some time); come means happen or arrive, example: Dawn comes early in June.
152. (c) The phrase call up here denotes having and bringing to mind a memory of something; bringing back knowledge from memory.
153. (c) Up (one's) sleeve means hidden but ready to be used: He still has a few tricks up his sleeve.
154. (d) The phrase day by day means gradually and progressively; "his health is weakening day by day."
155. (b) The police could only fire the mob when it turned violent.
156. (c) Board means food or meals considered as a whole: board and lodging.
157. (d) Peruse means examine or consider with attention and in detail. "Please peruse this report at your leisure."
158. (a) Spume means foam or froth on the sea. Lava, poison and spit do not correspond to the given word.
164. (d) Nor doesn't necessarily have to appear in a sentence with the word "neither." "Nor" can start a sentence. Ex: if you've just mentioned that you don't usually wake up at 6 a.m. and you want to continue being negative, you can start another sentence with "nor": "Nor do I like to wake up at 5 a.m."
165. (a) In the first conditional sentences the structure is: If + simple present simple future
If this thing happens, that thing will happen. Ex: If you don't hurry, you will miss the train. If it rains today, you will get wet.
166. (a) The second part of the sentence clears the ambiguity with 'approval.' Hence, nodded is the right answer.
167. (b) The world is facing a crisis is a meaningful sentence.
168. (c) The verb insist may be used as follows: She insisted on her being innocent or she insisted that she was innocent.
169. (b) She couldn't help but laugh does not need any improvement.
170. (a) I took some grapes for my mother (subject 'I' + verb + immediate object grapes).
171. (c) If the verb is in the past simple we use did. Ex: They went to the theatre, didn't they? She studied in New York, didn't she?
172. (d) Both the teams played a fair game is the correct usage.
173. (b) Endure means put up with something or somebody unpleasant. Ex: The new clerk had to endure a lot of unprofessional remarks.
174. (c) Vacillation means indecision in speech or action while steadfastness means fixed or unchanging.
175. (b) Placid means calm and peaceful, with little movement or activity while stormy means characterized by violent emotions or behaviour.
176. (a) Effeminacy means the traits in a human boy or man that are more often associated with feminine nature, behaviour, mannerisms, style or gender roles which are opposite to the manliness.
177. (d) Something that you say which means it is better to keep what you have than to risk losing it by trying to get something better. If I were you I'd accept the money they're offering. After all, a bird in the hand is worth two in the bush.
178. (b) Luggage means suitcases, trunks, etc, containing personal belongings for a journey; baggage. It is never used in plural form.
179. (b) Just outside my house is a playground for school boys and girls. Playground is in singular, hence, is.
180. (c) Mule means the offspring of a donkey and a horse (strictly, a male donkey and a female horse) which is not tall.
181. (a) Who should be replaced with 'whom' as it signifies the objective case of 'who.'
182. (c) Voluntary means of your own free will or design; done by choice; not forced or compelled.
183. (a) Fugitive is one who is sought by law officers; someone trying to elude justice.
184. (d) Dexterous is the one who is skilful in physical movements; especially of the hands.
185. (b) Improvident means not provident; not providing for the future.
186. (c) Laudable means worthy of high praise.
187. (d) An experienced person who has been through many battles; someone who has given long service is called a veteran.
188. (b) The branch of anthropology that studies prehistoric people and their cultures through their material remains is called archaeology.
191. (d) Compensate means here make payment to; compensate
192. (d) Leave somebody high and dry means leave him alone to do the work.
193. (d) If you are making a mountain out of a molehill, it means you are exaggerating things, blowing them out of proportion.
194. (c) The idiom spills the beans means revealing the secret information.
195. (c) A snake in the grass means a hidden enemy.