

SSC

Held on 19-05-2013

Combined Graduate Level (Tier-I) Exam-2013

Time : 2 Hours

Max. Marks : 200

GENERAL INTELLIGENCE & REASONING

DIRECTIONS (Qs. 1-3): In a given series, with one term missing. Choose the correct alternative from the given ones that will complete the series.

1. AKU, FPZ, ?, PZJ, UEO, ZJT
(a) JUE (b) KVE
(c) KUE (d) JVE
2. MRS, LTU, K VW, ?
(a) TQR (b) MOP
(c) JXY (d) CDE
3. B, G, K, N, ?
(a) P (b) O
(c) H (d) L

DIRECTIONS (Qs. 4-10): Select the missing number from the given responses.

4. 1944, 108, ?, 6, 3
(a) 16 (b) 18
(c) 11 (d) 12
5. 251 (12) 107
381 (?) 125
(a) 14 (b) 24
(c) 11 (d) 16
6. 354 (110) 526
297 (?) 2631
(a) 128 (b) 116
(c) 135 (d) 143
7. 0, 7, 26, 63, ?
(a) 125 (b) 126
(c) 217 (d) 124
8. 8 10 12
5 7 9
12 14 ?
(a) 16 (b) 15
(c) 18 (d) 17
9. 4 9 2
3 5 7
8 1 ?
(a) 9 (b) 6
(c) 15 (d) 14

10. 2, 5, 10, 19, 36, ?
(a) 70 (b) 71
(c) 68 (d) 69
11. If $2 = 5$, $4 = 18$, $6 = 39$, $8 = 68$ then $10 = ?$
(a) 100 (b) 105
(c) 110 (d) 116
12. If the day to day-after-tomorrow is Sunday, which day was day-before-yesterday?
(a) Thursday (b) Wednesday
(c) Tuesday (d) Monday
13. Asha drives 6 km towards West and turns to the right and drives 3 km. Then, she turns again and drives towards right hand and drives 6 km. How far is she from her starting point? In which direction would she be driving?
(a) 6 km East (b) 3 km West
(c) 3 km East (d) 6 km North
14. Five coaches P, L, R, M, O are in a row. R is to the right of M and left of P. L is to the right of P and left of O. Which coach is in the middle?
(a) P (b) L
(c) R (d) O

DIRECTIONS (Qs. 15-17): From the given alternatives select the word which **cannot** be formed using the letters of the given word.

15. INVESTIGATION
(a) INSTIGATION (b) GESTATION
(c) VEST (d) STIGMA
16. SANCTION
(a) ACTION (b) NATION
(c) NOTION (d) NION
17. RESEARCH
(a) SEARCH (b) REACH
(c) HEAR (d) READ
18. If each of the letter in the English alphabet is assigned odd numerical value beginning coding A = 1, B = 3 & so on, what will be the total value of the letter of the word 'SNAKE' ?
(a) 95 (b) 105
(c) 115 (d) 113
19. If DFIN is coded as WURM, then HJMO can be coded as
(a) RPNO (b) SQNP
(c) SQNL (d) TRPO

20. If RUMOUR can be written as QJSKPL, then how HERMIT can be written?
 (a) GEPKHR (b) GCOIDN
 (c) GCPIDM (d) GCPIEN
21. If '-' stand for addition, '+' stands for subtraction, '÷' stands for multiplication and '×' stands for division, then which one of the following equations is correct?
 (a) $25 \times 5 \div 20 - 27 + 7 = 120$
 (b) $25 + 5 \times 20 - 27 \div 7 = 128$
 (c) $25 + 5 - 20 + 27 \times 7 = 95$
 (d) $25 - 5 + 20 \times 27 \div 7 = 100$
22. In the following question, some relationship have been expressed through symbols which are
 \times = greater than θ = not less than
 \div = less than β = not greater than
 $+$ = equal to ϕ = not equal to,
 then $A \theta B \times C$ implies
 (a) $B \theta C$ (b) $A \div C$
 (c) $A \phi C$ (d) $B \beta C$
23. If $63 - 30 = 30$, $72 - 10 = 40$, then $81 - 60 = ?$
 (a) 50 (b) 35
 (c) 15 (d) 20
24. Priya starts walking in the afternoon facing the Sun. After some time, she turned to the right. Later again, she turned to her left and again also left. At what direction is Priya moving now?
 (a) East (b) West
 (c) North (d) South
25. A direction pole was situated on the crossing. Due to an accident, the pole turned in such a manner that the pointer which was showing East started showing South. One traveller went to the wrong direction thinking it to be West. In what direction actually was he travelling?
 (a) South (b) East
 (c) West (d) North
26. The digits are given as below:
 562, 871, 438, 753
 If the position of the first and the third digits of each of the numbers are interchanged, which of the following will be the sum of the first and the second digits of the third highest number?
 (a) 9 (b) 7
 (c) 6 (d) 8

DIRECTIONS (Qs. 27-30): Select the related words/numbers from the given alternatives.

27. $A + B + Y + Z = 54$
 $C + D + W + X = ?$
 (a) 45 (b) 54
 (c) 56 (d) 52
28. Petrology : Rocks :: Palaeontology : ?
 (a) Birds (b) Animals
 (c) Fossils (d) Soil

29. Melt : Liquid :: Freeze : ?
 (a) Crystal (b) Solid
 (c) Ice (d) Evaporate
30. $8 : 27 :: ? : 81$
 (a) 24 (b) 34
 (c) 44 (d) 54
31. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
 - - b a b a a - a a -
 (a) b b a a (b) b a a b
 (c) a a b b (d) a b a b

DIRECTIONS (Qs. 32-35): Find the odd words/letters/number pair from the given alternatives.

32. (a) Fervent (b) Enthusiastic
 (c) Apathetic (d) Ardent
33. (a) FAA (b) OFF
 (c) ATT (d) EPP
34. (a) 117-143 (b) 142-156
 (c) 64-78 (d) 103-169
35. (a) Radio (b) Television
 (c) Transistor (d) Tube
36. Find the number which does not fit in the following series:
 49, 81, 123, 156, 221
 (a) 81 (b) 123
 (c) 156 (d) 49

DIRECTIONS (Qs. 37-38): In the following questions two/three statements are given followed by two/three conclusions respectively. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follow from the given statements.

37. Statements:

- I. Some towers are windows.
 II. All windows are houses.
 III. Some houses are temples.

Conclusions:

- I. Some towers are temples.
 II. Some houses are towers.
 (a) Only conclusion I follows.
 (b) Only conclusion II follows.
 (c) Both conclusions I & II follow.
 (d) Neither conclusion I nor II follows.

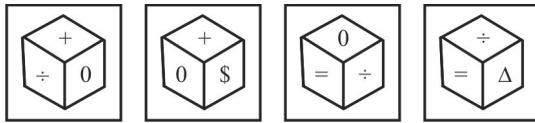
38. Statements:

- I. Man can find ultimate reality by dedication to God through meditation.
 II. Meditation is the process to enrich the peace of mind.

Conclusions:

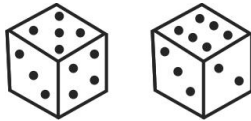
- I. Meditation is the process to realize the God.
 II. Meditation does not help to find out the Mukti of Soul.
 III. Perfect dedication to God is essential to realize the existence of ultimate reality.
 (a) Only conclusion I follows
 (b) Only conclusion II & III follow.
 (c) Only conclusion I and III follow.
 (d) All conclusions follow.

39. Four views of a dice have been shown below, which of the following symbols is on the face opposite to the face having the symbol \div ?



- (a) \$ (b) 0
(c) = (d) Δ

40. Two positions of a dice are shown below. If 1 is at the bottom, which number will be on top?



- (a) 4 (b) 3
(c) 8 (d) 5

41. What comes next in the series?

Question Figures :

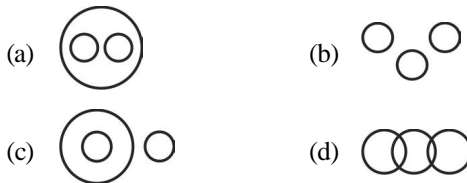


Answer Figures :



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

42. Which one of the following diagrams represents the relationship among Delhi, Lucknow, Uttar Pradesh?

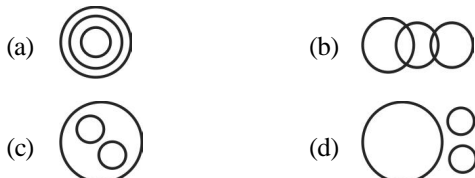


43. How many triangles are there in the given figure?



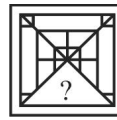
- (a) 10 (b) 12
(c) 14 (d) 11

44. Which one of the following diagrams represents the correct relationship among day, week, year?

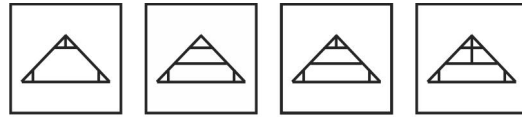


DIRECTIONS (Qs. 45-47): Which answer figure will complete the pattern in the question figure?

45. **Question Figures :**

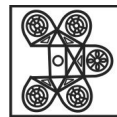


Answer Figures :



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

46. **Question Figures :**

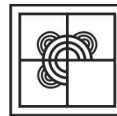


Answer Figures :



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

47. **Question Figures :**



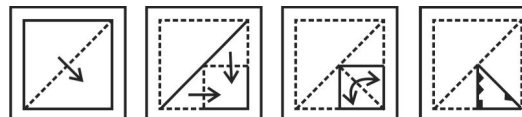
Answer Figures :



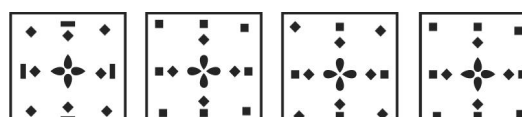
- (a) (b) (c) (d)

48. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

Question Figures :



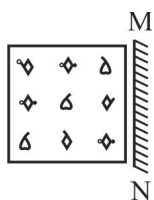
Answer Figures :



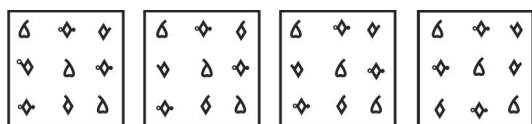
- (a) (b) (c) (d)

49. Which of the answer figures is exactly the mirror image of the given figure when the mirror is held at MN?

Question Figures :



Answer Figures :



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

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., 'G' can be represented by 04, 40 etc. and 'K' can be represented by 56, 75 etc. Similarly, you have to identify the set for the word 'CHILD'.

Matrix I

	0	1	2	3	4
0	C	D	E	F	G
1	F	G	C	D	E
2	D	E	F	G	C
3	E	F	G	C	D
4	G	C	D	E	F

Matrix II

	5	6	7	8	9
5	H	K	L	I	N
6	I	N	H	K	L
7	K	L	I	N	H
8	L	I	N	H	K
9	N	H	K	L	I

- (a) 24, 21, 99, 57, 01 (b) 12, 79, 99, 57, 01
(c) 33, 57, 99, 57, 01 (d) 41, 79, 99, 57, 11

GENERAL AWARENESS

51. Reduction of nitrates to ammonia can be achieved through one of the following methods :
- in alkaline medium using Devarda's alloy.
 - in neutral medium using Devarda's alloy.
 - in acidic medium using Devarda's alloy.
 - in neutral medium using Cupric oxide.
52. The Red Data Books published by the International Union for Conservation of Nature and Natural Resources enumerate
- Biodiversity parks and wild life sanctuaries in different countries.
 - Centres of origin of cultivated plants.
 - Centres of origin of all economically important plants.
 - Threatened species of plants and animals.
53. Grits of sewage are removed in
- Grit chamber
 - Detritus tank
 - Skimming tank
 - Trickling filter
54. Environmental impact assessment was first formally established in 1969 in which country ?
- United Kingdom
 - United States
 - France
 - Netherlands
55. The most affected sulphur containing amino acid by PAN is
- Cysteine
 - Methionine
 - Proline
 - Globuline
56. Who won the Women Australian Open Singles Title in 2013?
- Serena Williams
 - Victoria Azarenka
 - Li Na
 - Sharapova
57. The first non-Englishman elected as Chairman of the International Cricket Council was
- Cydlle Walcott
 - Gary Sobers
 - Imran Khan
 - Sunil Gavaskar
58. Which of the following has zero electron affinity ?
- Oxygen
 - Fluorine
 - Nitrogen
 - Neon
59. For which language included in the Indian Constitution, the Jnanpith Award has not been given upto 2011?
- Sanskrit
 - Sindhi
 - Kashmiri
 - Konkani
60. Who is the first British Author to win the Man Booker Prize for fiction twice ?
- Peter Carey
 - J.M. Coetzee
 - Hilary Mantel
 - None of the above
61. Which one of the following is wrongly paired?
- | Country | Currency |
|----------------|----------|
| (a) Japan | Yen |
| (b) Iran | Rand |
| (c) Bangladesh | Taka |
| (d) Bhutan | Ngultrum |

62. The two South American countries, which are members of the Organisation of Petroleum Exporting Countries (OPEC) are
 (a) Ecuador and Brazil
 (b) Ecuador and Bolivia
 (c) Ecuador and Venezuela
 (d) Venezuela and Brazil
63. Who is the Chairperson of the National Green Tribunal ?
 (a) Markandey Katju (b) Swatantra Kumar
 (c) Satyananda Mishra (d) K.G Balakrishnan
64. Which is the capital of Mali ?
 (a) Mopti (b) Barmako
 (c) Cairo (d) Nairobi
65. Which was the first film of Jaspal Bhatti ?
 (a) Power Cut
 (b) Mahaul Theek Hai
 (c) Thank You Jijaji
 (d) None of the three above
66. Who was the first recipient of the "Bharat Ratna" Award posthumously ?
 (a) K. Kamaraj (b) Lal Bahadur Shastri
 (c) M.G Ramachandran (d) B.R. Ambedkar
67. An irrigation project is categorized as a major project if it covers a cultivable command area of
 (a) less than 2,000 hectares
 (b) 2,000 to 10,000 hectares
 (c) above 10,000 hectares
 (d) all the above
68. High powered money is
 (a) Banks reserves at Central Bank
 (b) All loans and advances of banks
 (c) Money held by banks
 (d) Currency held by public and reserves with the Central Bank
69. Hardening interest rate means
 (a) interest rate is remaining sticky
 (b) interest rate is very low
 (c) interest rate is increasing
 (d) interest rate is falling
70. "Dumping" is a situation when the seller
 (a) supplies more than the demand for products in the World Market.
 (b) supplies more in the Domestic Market.
 (c) sells a commodity at a lower price in the World Market and charges a higher price in the Domestic Market.
 (d) sells a commodity at a higher price in the World Market and charges a lower price in the Domestic Market.
71. Which one of the following is not a function of Election Commission ?
 (a) Allotment of symbols
 (b) Fixation of election dates
 (c) Maintaining fairness of election
 (d) Selecting the candidates for election
72. 'State is a necessary evil' is associated with
 (a) Individualism (b) Idealism
 (c) Marxism (d) Constructivism
73. The programme of 'Operation Flood' was concentrated on
 (a) increasing irrigation facilities.
 (b) flood control.
 (c) increasing the milk production.
 (d) increase the flood grains production.
74. Which of the following is not associated with Marxism ?
 (a) Dialectical Materialism
 (b) Class Struggle
 (c) Welfare State
 (d) Surplus Value
75. Article 324 of the Indian Constitution deals with the
 (a) imposition of President's Rule in States.
 (b) appointment of Finance Commission.
 (c) powers and functions of the Chief Election Commissioner.
 (d) functions of the Union Public Service Commission.
76. The founder of the Lodi Dynasty was
 (a) Bahlol Lodi (b) Sikandar Shah Lodi
 (c) Jalal Khan Lodi (d) Ibrahim Lodi
77. The Gandharva School of art is also known as the
 (a) Buddhist-Roman art
 (b) Dravidian-Roman art
 (c) Greco-Roman art
 (d) Greco-Roman-Buddhist art
78. The Bolshevik Revolution of Russia symbolized following:
 (a) coming of the Communist Rule
 (b) establishment of Republic of Russia
 (c) establishment of Democracy in Russia
 (d) overthrow of Romanov Dynasty
79. Which General, who commanded the British forces against the Americans in their War of Independence later became Governor-General of India ?
 (a) Dalhousie (b) William Bentinck
 (c) Wellesley (d) Cornwallis
80. Who was the first President of the All India Trade Union Congress (AITUC) ?
 (a) C.R. Das (b) V.V.Giri
 (c) Lala Lajpat Rai (d) Sarojini Naidu
81. If there is a deadlock between Rajya Sabha and Lok Sabha over an ordinary bill, it will be resolved by
 (a) The President
 (b) The Council of Ministers
 (c) The Joint Session of Parliament
 (d) The Supreme Court
82. According to Ferrel's law (Coriolis Force) winds change their direction
 (a) Towards left in Northern hemisphere and towards right in Southern hemisphere.
 (b) Towards right in Northern hemisphere and towards left in Southern hemisphere.
 (c) Towards right in both the hemisphere.
 (d) Towards left in both the hemisphere.
83. Which one of the following atmospheric layers absorb ultraviolet rays of the sun?
 (a) Troposphere (b) Stratosphere
 (c) Ionosphere (d) Ozonosphere

84. The drainage pattern developed on folded sedimentary rock is termed as
 (a) Trellis (b) Dendritic
 (c) Radial (d) Deranged
85. Which one of the following is not a line of demarcation between two countries ?
 (a) Durand Line (b) Mac Mahon Line
 (c) Plimsoll Line (d) Maginot Line
86. Water potential remains lowest in
 (a) Water plants (b) Woody plants
 (c) Succulents (d) Halophytes
87. The free living bacterium in the soil which increases the yield of rice is
 (a) Rhizobium (b) Azotobacter
 (c) Acetobacter (d) Anabaena
88. The human body's largest blood vessel is
 (a) Pulmonary artery (b) Aorta
 (c) Renal artery (d) Coronary artery
89. In human body, which one of the following hormones regulates blood calcium and phosphate ?
 (a) Glucagon (b) Growth hormone
 (c) Parathyroid hormone (d) Thyroxine
90. Frontal cyclones occur characteristically in
 (a) Equatorial region (b) Tropical region
 (c) Mid-latitudinal region (d) Polar region
91. How do most insects respire ?
 (a) Through skin (b) Through gills
 (c) By tracheal system (d) By lungs
92. In nuclear reactions, there is conservation of
 (a) mass only
 (b) momentum only
 (c) energy only
 (d) mass, energy and momentum
93. When a particle and an antiparticle come in contact with each other, they
 (a) repel each other
 (b) annihilate each other
 (c) go undisturbed
 (d) spin about a common axis
94. Photoelectric effect is
 (a) an instantaneous process
 (b) delayed process
 (c) emission of protons
 (d) emission of neutrons
95. For a particle moving with a constant speed along a straight line PQ, the hodograph is
 (a) a straight line parallel to PQ
 (b) a straight line perpendicular to PQ
 (c) a point
 (d) a circle
96. Which computer was the first to use the magnetic drum for memory ?
 (a) IBM - 650 (b) IBM - 7090
 (c) IBM - 701 (d) IBM - 360
97. Identify the FIFO (First In First Out) structure among the following :
 (a) Stack (b) Queue
 (c) De-queue (d) Array
98. Aluminium is obtained by the electrolysis of pure Al_2O_3 dissolved in
 (a) Bauxite (b) Cryolite
 (c) Feldspar (d) Alumina
99. Complete hydrolysis of cellulose gives
 (a) D-fructose (b) L-glucose
 (c) D-glucose (d) L-fructose
100. Each body segment of Earthworm is called
 (a) Proglottid (b) Metamere
 (c) Scolex (d) Rostellum

QUANTITATIVE APTITUDE

101. A, B, P are three points on a circle having centre O. If $\angle OAP = 25^\circ$ and $\angle OBP = 35^\circ$, then the measure of $\angle AOB$ is
 (a) 120° (b) 60°
 (c) 75° (d) 150°
102. Side \overline{BC} of $\triangle ABC$ is produced to D. If $\angle ACD = 140^\circ$ and $\angle ABC = 3\angle BAC$, then find $\angle A$.
 (a) 55° (b) 45°
 (c) 40° (d) 35°
103. The length of tangent (upto the point of contact) drawn from an external point P to a circle of radius 5 cm is 12 cm. The distance of P from the centre of the circle is
 (a) 11 cm (b) 12 cm
 (c) 13 cm (d) 14 cm
104. ABCD is a cyclic quadrilateral, AB is a diameter of the circle. If $\angle ACD = 50^\circ$, the value of $\angle BAD$ is
 (a) 30° (b) 40°
 (c) 50° (d) 60°
105. Two circles of equal radii touch externally at a point P. From a point T on the tangent at P, tangents TQ and TR are drawn to the circles with points of contact Q and R respectively. The relation of TQ and TR is
 (a) $TQ < TR$ (b) $TQ > TR$
 (c) $TQ = 2TR$ (d) $TQ = TR$
106. When two circles touch externally, the number of common tangents are
 (a) 4 (b) 3
 (c) 2 (d) 1
107. D and E are the mid-points of AB and AC of $\triangle ABC$. If $\angle A = 80^\circ$, $\angle C = 35^\circ$, then $\angle EDB$ is equal to
 (a) 100° (b) 115°
 (c) 120° (d) 125°
108. If the inradius of a triangle with perimeter 32 cm is 6 cm, then the area of the triangle in sq. cm is
 (a) 48 (b) 100
 (c) 64 (d) 96

109. The value of $\frac{\sin 53^\circ}{\cos 37^\circ} \div \frac{\cot 65^\circ}{\tan 25^\circ}$ is
 (a) 2 (b) 1
 (c) 3 (d) 0
110. The value of $\frac{\cos 60^\circ + \sin 60^\circ}{\cos 60^\circ - \sin 60^\circ}$ is
 (a) -1 (b) $\sqrt{3} + 2$
 (c) $-(2 + \sqrt{3})$ (d) $\sqrt{3} - 2$
111. The value of $\frac{\cot 5^\circ \cdot \cot 10^\circ \cdot \cot 15^\circ \cdot \cot 60^\circ \cdot \cot 75^\circ \cdot \cot 80^\circ \cdot \cot 85^\circ}{(\cos^2 20^\circ + \cos^2 70^\circ) + 2}$ is
 (a) $\frac{9}{\sqrt{3}}$ (b) $\frac{1}{9}$
 (c) $\frac{1}{\sqrt{3}}$ (d) $\frac{\sqrt{3}}{9}$
112. In a triangle, the angles are in the ratio 2 : 5 : 3. What is the value of the least angle in the radian ?
 (a) $\frac{\pi}{20}$ (b) $\frac{\pi}{10}$
 (c) $\frac{2\pi}{5}$ (d) $\frac{\pi}{5}$
113. If $x = a \cos \theta - b \sin \theta$, $y = b \cos \theta + a \sin \theta$, then find the value of $x^2 + y^2$.
 (a) a^2 (b) b^2
 (c) $\frac{a^2}{b^2}$ (d) $a^2 + b^2$
114. If $\tan \alpha + \cot \alpha = 2$, then the value of $\tan^7 \alpha + \cot^7 \alpha$ is
 (a) 2 (b) 16
 (c) 64 (d) 128
115. From 125 metre high towers, the angle of depression of a car is 45° . Then how far the car is from the tower ?
 (a) 125 metre (b) 60 metre
 (c) 75 metre (d) 95 metre
116. A can do a certain work in the same time in which B and C together can do it. If A and B together could do it in 10 days and C alone in 50 days, then B alone could do it in
 (a) 15 days (b) 20 days
 (c) 25 days (d) 30 days
117. A can do a piece of work in 6 days. B can do the same work in 12 days. How long would both of them take to do the same work ?
 (a) 2 days (b) 4 days
 (c) 6 days (d) 8 days
118. If $a = 2$, $b = 3$, then $(a^b + b^a)^{-1}$ is
 (a) $\frac{1}{31}$ (b) $\frac{1}{17}$
 (c) $\frac{1}{21}$ (d) $\frac{1}{13}$
119. The smallest positive integer which when multiplied by 392, gives a perfect square is
 (a) 2 (b) 3
 (c) 5 (d) 7
120. A square is inscribed in a circle of radius 8 cm. The area of the square is
 (a) 16 square cm (b) 64 square cm
 (c) 128 square cm (d) 148 square cm
121. The biggest possible circle is inscribed in a rectangle of length 16 cm and breadth 6 cm. Then its area is
 (a) $3\pi \text{ cm}^2$ (b) $4\pi \text{ cm}^2$
 (c) $5\pi \text{ cm}^2$ (d) $9\pi \text{ cm}^2$
122. 12 men construct 1.5 km of road in 7 days. 28 men will construct 12 km of roads in
 (a) 20 days (b) 24 days
 (c) 28 days (d) 38 days
123. Kabir buys an article with 25% discount on its marked price. He makes a profit of 10% by selling it at ₹ 660. The marked price is
 (a) ₹ 600 (b) ₹ 685
 (c) ₹ 700 (d) ₹ 800
124. On the eve of Gandhi Jayanti, Gandhi Ashram declared a 25% discount on silk. If selling price of a silk saree is ₹ 525, what is its marked price ?
 (a) ₹ 700 (b) ₹ 725
 (c) ₹ 750 (d) ₹ 775
125. A shopkeeper marks an article at a price which gives a profit of 25%. After allowing certain discount, the profit reduces to $12\frac{1}{2}\%$. The discount percent is
 (a) 12% (b) 12.5%
 (c) 10% (d) 20%
126. The prize money of ₹ 1,800 is divided among 3 students A, B and C in such a way that 4 times the share of A is equal to 6 times the share of B, which is equal to 3 times the share of C. Then A's share is
 (a) ₹ 400 (b) ₹ 600
 (c) ₹ 700 (d) ₹ 800
127. Divide 81 into three parts so that $\frac{1}{2}$ of 1st, $\frac{1}{3}$ of 2nd and $\frac{1}{4}$ of 3rd are equal.
 (a) 36, 27, 18 (b) 27, 18, 36
 (c) 18, 27, 36 (d) 30, 27, 24
128. If the diagonal of a square is doubled, then its area will be
 (a) three times (b) four times
 (c) same (d) none of these
129. Out of 40 boys in a class, average weight of 30 is 60 kg and the average weight of the remaining is 56 kg. The average weight (in kilogram) of the whole class is
 (a) 58.5 (b) 58
 (c) 57 (d) 59

130. A CD was sold at a profit of $12\frac{1}{2}\%$. If it had been sold at a profit of 15%, it would have gained him ₹ 10 more. The cost prices of CD is (in ₹)

(a) 450 (b) 500
(c) 400 (d) 550

131. Rakesh got 273 marks in an examination and scored 5% more than the pass %. If Lokesh got 312 marks, then by what % above the pass mark did he pass the examination?

(a) 20% (b) 27%
(c) 25% (d) 15%

132. Anil calculated that it will take 45 minutes to cover a distance of 60 km by his car. How long will it take to cover the same distance if the speed of his car is reduced by 15 km/hr?

(a) 36 min (b) 55.38 min
(c) 48 min (d) 40 min

133. A train 100 metres long moving at a speed of 50 km/hr. crosses a train 120 metres long coming from opposite direction in 6 sec. The speed of the second train is

(a) 60 km/hr. (b) 82 km/hr.
(c) 70 km/hr. (d) 74 km/hr.

134. Two equal sums were borrowed at 8% simple interest per annum for 2 years and 3 years respectively. The difference in the interest was ₹ 56. The sums borrowed were

(a) ₹ 800 (b) ₹ 700
(c) ₹ 560 (d) ₹ 350

135. The average of the first five multiples of 7 will be

(a) 14 (b) 21
(c) 17.5 (d) 24.5

136. The expression $x^4 - 2x^2 + k$ will be a perfect square when the value of k is

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

137. If $3x - \frac{1}{4y} = 6$, then the value of $4x - \frac{1}{3y}$ is

(a) 2 (b) 4
(c) 6 (d) 8

138. If $a + b + c = 0$, find the value of $\frac{a+b}{c} - \frac{2b}{c+a} + \frac{b+c}{a}$.

(a) 0 (b) 1
(c) -1 (d) 2

139. If $x + \frac{4}{x} = 4$, find the value of $x^3 + \frac{4}{x^3}$.

(a) 8 (b) $8\frac{1}{2}$
(c) 16 (d) $16\frac{1}{2}$

140. If $x = 3 + 2\sqrt{2}$, then the value of $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)$ is

(a) 1 (b) 2
(c) $2\sqrt{2}$ (d) $3\sqrt{3}$

141. If 'a' be a positive number, then the least value of $a + \frac{1}{a}$ is

(a) 1 (b) 0
(c) 2 (d) $\frac{1}{2}$

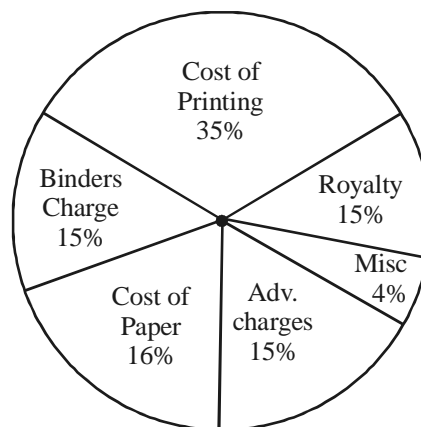
142. If $a = 0$, $b \neq 0$, $c \neq 0$, then the equation $ax + by + c = 0$ represents a line parallel to

(a) $x + y = 0$ (b) x-axis
(c) y-axis (d) none of these

143. The sum of the ages of Puneet and his father is 45 years and the product of their ages is 126. What is the age of Puneet?

(a) 3 years (b) 5 years
(c) 10 years (d) 45 years

DIRECTIONS (Qs. 144-146): The following graph shows the expenditure incurred in bringing a book, by a magazine producer. Study the graph and answer question.



144. What should be the central angle of the sector for the cost of the paper?

(a) 57.6° (b) 54.4°
(c) 56.7° (d) 54.8°

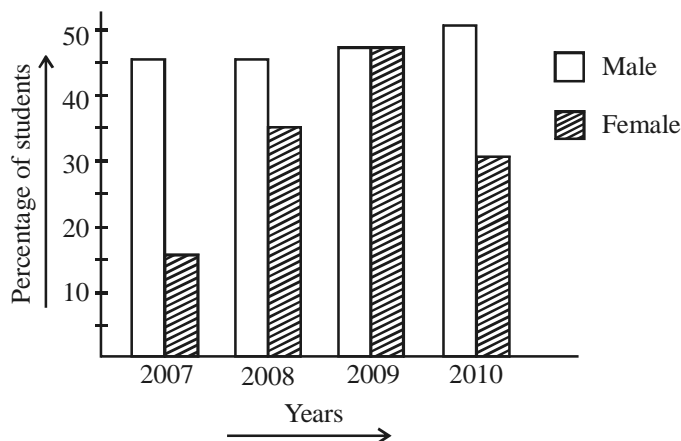
145. If the miscellaneous charges are ₹ 6,000, the cost of paper is

(a) ₹ 12,000 (b) ₹ 18,000
(c) ₹ 15,000 (d) ₹ 24,000

146. If 5500 copies are published, miscellaneous expenditures amount to ₹ 1,848, find the cost price of 1 copy.

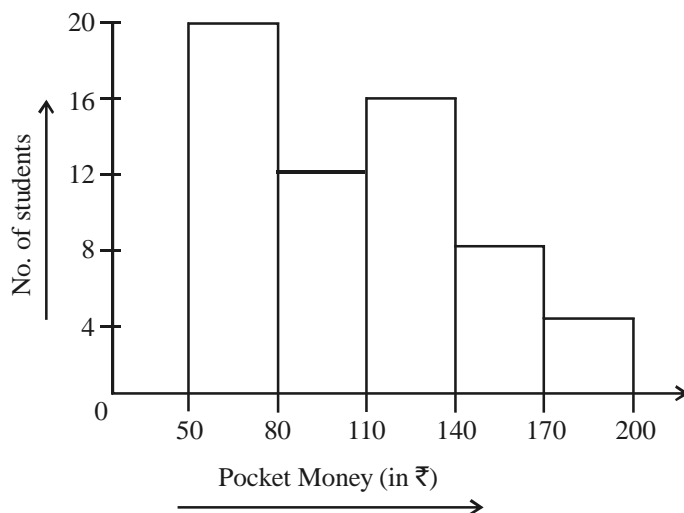
(a) ₹ 10.40 (b) ₹ 9.40
(c) ₹ 12.40 (d) ₹ 8.40

DIRECTIONS (Qs. 147-148): The pass percentage for an examination in a school is shown in the adjoining bar diagram, for males and females separately for four years. Study the diagram and answer the question.



147. The maximum percentage of students passed in the year is
 (a) 2007 (b) 2008
 (c) 2009 (d) 2010
148. The year in which the difference of pass percentage between male and female is maximum, is
 (a) 2010 (b) 2009
 (c) 2008 (d) 2007

DIRECTIONS (Qs. 149-150): The adjacent histogram shows the average pocket money received by 60 students for a span of one month. Study the diagram and answer the question.



149. Maximum number of students received pocket money between
 (a) 50 - 80 (b) 140 - 170
 (c) 80 - 110 (d) 110 - 140
150. The number of students who received pocket money upto ₹ 140 is
 (a) 20 (b) 32
 (c) 48 (d) 56

ENGLISH COMPREHENSION

DIRECTIONS (Qs. 151-153): Choose the word opposite in meaning to the given word and mark it in the Answer Sheet.

151. Fabricate
 (a) Unearth (b) Construct
 (c) Demolish (d) Renovate
152. Gregarious
 (a) Sociable (b) Societal
 (c) Unsociable (d) Solitary
153. Pragmatic
 (a) Indefinite (b) Vague
 (c) Optimistic (d) Idealistic

DIRECTIONS (Qs. 154 - 158): In the following questions, four alternatives are given for the Idiom/Phrase underlined. Choose the alternative which best expresses the meaning of the Idiom/Phrase and mark it in the Answer Sheet.

154. To be above board.
 (a) To have a good height
 (b) To be honest in any business deal
 (c) Having no debts
 (d) To try to be beautiful
155. To cry wolf.
 (a) To listen eagerly (b) To give false alarm
 (c) To turn pale (d) To keep off starvation
156. He is on the wrong side of seventy.
 (a) more than seventy years old
 (b) less than seventy years old
 (c) seventy years old
 (d) eighty years old
157. To have an axe to grind.
 (a) a private end to serve
 (b) to fail to arouse interest
 (c) to have no result
 (d) to work for both sides
158. To drive home.
 (a) To find one's root
 (b) To return to place of rest
 (c) Back to original position
 (d) To emphasise

DIRECTIONS (Qs. 159 - 168): In the following questions, a sentence/part of the sentence is underlined. Below are given alternatives to the underlined sentence/part of the sentence at (a), (b) and (c) which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is (d).

159. The climate of Karnataka is cooler than Tamil Nadu.
 (a) is cooler to (b) is cooler than of
 (c) is cooler than that of (d) No improvement
160. The Tsunami victims suffered of cholera.
 (a) suffered from (b) suffered under
 (c) suffered in (d) No improvement

161. I gave to Sana the keys.
 (a) I gave (b) I gave to the
 (c) I gave the (d) No improvement
162. If he smokes less he might get rid of his cough.
 (a) If he smoked less he would get rid of his cough.
 (b) If he had smoked less he might get rid of his cough.
 (c) If he smokes less he might have got rid of his cough.
 (d) No improvement.
163. He compensated the loss to me.
 (a) He compensated the loss for me.
 (b) He compensated me to the loss
 (c) He compensated me for the loss.
 (d) No improvement.
164. As employees, we are accountable for our stakeholders.
 (a) accountable with (b) accountable to
 (c) accountable against (d) No improvement
165. Recently he had insured for a mediclaim policy.
 (a) He had recently insured for
 (b) Recently he insured for
 (c) He insured recently for
 (d) No improvement
166. Everyday, we usually had lunch at 1.30 p.m.
 (a) we have had usually
 (b) we have usually
 (c) we usually have
 (d) No improvement
167. All nations must first become agricultural strong.
 (a) become agricultural strong
 (b) become strong agriculture
 (c) become agriculture strong
 (d) No improvement
168. An orangutan's intelligence is as superior to that of man.
 (a) is more superior to
 (b) is superior to
 (c) is superior than that of
 (d) No improvement

DIRECTIONS (Qs. 169 - 175) : In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/sentence.

169. That which has a double meaning
 (a) doubtless (b) uncertain
 (c) controversial (d) ambiguous
170. Incapable of making errors
 (a) infallible (b) incorrigible
 (c) impervious (d) inexplicable
171. Governed by a sense of duty
 (a) conscious (b) sensible
 (c) intelligent (d) conscientious
172. The depository where state records and documents are preserved
 (a) museum (b) library
 (c) emporium (d) archive

173. That which is no longer fashionable or in use
 (a) unused (b) ancient
 (c) obsolete (d) old
174. Murder of a king
 (a) homicide (b) fratricide
 (c) regicide (d) parricide
175. A place where birds are kept
 (a) Aviary (b) House
 (c) Aquarium (d) Apiary

DIRECTIONS (Qs. 176 & 177) : In the following questions, four words are given in each question, out of which only one word is correctly spelt.

176. (a) millennium (b) millenium
 (c) milleneum (d) millennium
177. (a) ocaasion (b) occassion
 (c) occasion (d) occation

DIRECTIONS (Qs. 178 - 187) : Read the passage carefully and choose the best answer to each question out of the four alternatives.

The stunning Baltimore Oriole is a common summer visitor to eastern and mid western deciduous woodlands, neighbourhoods, and gardens. Baltimore Orioles winter in the tropics. About 7 inches in length, the male Baltimore Oriole has a black head, throat, back and wings. Its breast, stomach, and rump are bright orange. It also has an orange patch on the top of each wing and white wing bars. The tail is mostly black with orange fringes. The female is dull orange throughout.

Baltimore Orioles range throughout the eastern and mid western United States, and can be found as far west as the Dakotas. At the western edge of their range, Baltimore Orioles may breed with the Bullock's Oriole (They were once considered the same species under the name Northern Oriole).

Baltimore Orioles build unusual pouch like nests that hang down from branches. They usually nest high in the trees, but often come down to lower heights, flashing bright orange and black feathers to delighted observers. Active and acrobatic by nature, Baltimore Orioles may even feed upside down at time.

Baltimore Orioles eat insects and berries. They can easily be attracted to gardens by nailing orange wedges to tree branches. Baltimore Orioles are also known to feed at hummingbird feeders and sapsucker wells.

178. The other name of Baltimore Oriole was _____.
 (a) Bullock's Oriole (b) Baltimore's Oriole
 (c) Northern Oriole (d) Southern Oriole
179. The nest of the Baltimore Oriole _____.
 (a) is in a tree cavity
 (b) stands upon a branch of a tree
 (c) hangs from a branch of a tree
 (d) is usually low in the branches
180. Which of the following is the closest in size to a Baltimore Oriole ?
 (a) The size of a half-scale
 (b) A little more than a half-scale
 (c) A little less than a half-scale
 (d) A foot ruler

181. The Baltimore Oriole spend the winters in the _____ .

- (a) Dakotas (b) Carolinas
(c) Tropics (d) Deserts

182. What is the colour of the female Baltimore Oriole ?

- (a) Bright Orange (b) Light Orange
(c) Dull Orange (d) White

183. Which of the following does not attract the Baltimore Oriole?

- (a) Oranges (b) Hummingbird feeders
(c) Sapsucker wells (d) Sunflower seeds

184. The Baltimore Oriole can be found as far west as

- (a) North and South Dakota
(b) The Carolinas
(c) California
(d) Baltimore

185. Which of the following is not true about the Baltimore Oriole?

- (a) They feed upside down sometimes.
(b) They may breed with the Bullock's Oriole.
(c) The Baltimore Oriole is uncommon in the U.S.
(d) The Baltimore Oriole has a black throat.

186. Where would I probably not find a Baltimore Oriole ?

- (a) High in the trees
(b) In gardens and neighbourhoods
(c) Deciduous woodlands
(d) The Sahara desert

187. Which of these colours is not found on a Baltimore Oriole?

- (a) Purple (b) Orange
(c) White (d) Black

DIRECTIONS (Qs. 188 - 192) : In the following questions, some parts of the sentences have errors and some are correct. Find out which part of a sentence has an error. If a sentence is free from error, your answer is (d) i.e. No error.

188. Mohans' eyes / reflect a hope
(a) (b)

/ for a better future in Microsoft. / No error.
(c) (d)

189. He went to Mumbai / with a view / to secure a job.
(a) (b) (c)

No error.
(d)

190. The Headmaster with all his senior teachers
(a)

/ have come / to attend the meeting. / No error.
(b) (c) (d)

191. The teacher said that / the building adjacent with his house
(a) (b)

/ needed repairs. / No error.
(c) (d)

192. Grapes / cannot gathered / from thistles. / No error.
(a) (b) (c) (d)

DIRECTIONS (Qs. 193 - 197) : In the following questions, sentences are given with blanks to be filled with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four and indicate it.

193. Mr. Murugan has been in this college _____ 2010.

- (a) for (b) since
(c) after (d) before

194. We attended a _____ discourse.

- (a) spiritual (b) spirituous
(c) spirituality (d) spiritually

195. The valley is known for its _____ growth of vegetation.

- (a) luxurious (b) luxury
(c) luxuriant (d) luxuriously

196. Satyajitray's films _____ all barriers of caste, creed and religion. They are universal.

- (a) transcend (b) transcends
(c) transcend (d) transend

197. I could hardly recognize him _____ I saw him.

- (a) after (b) but
(c) and (d) when

DIRECTIONS (Qs. 198 - 200) : In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.

198. Condone

- (a) Forgive (b) Support
(c) Forget (d) Defend

199. Analogy

- (a) Difference (b) Comparison
(c) Addition (d) Deletion

200. Allure

- (a) Extol (b) Excite
(c) Entice (d) Elicit

ANSWER KEY

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

Hints & Explanations

GENERAL INTELLIGENCE & REASONING

1. (c) $A \xrightarrow{+5} F \xrightarrow{+5} K \xrightarrow{+5} P \xrightarrow{+5} U \xrightarrow{+5} Z$
 $K \xrightarrow{+5} P \xrightarrow{+5} U \xrightarrow{+5} Z \xrightarrow{+5} E \xrightarrow{+5} J$
 $U \xrightarrow{+5} Z \xrightarrow{+5} E \xrightarrow{+5} J \xrightarrow{+5} O \xrightarrow{+5} T$

2. (c) $M \xrightarrow{1} L \xrightarrow{1} K \xrightarrow{1} J$
 $R \xrightarrow{+2} T \xrightarrow{+2} V \xrightarrow{+2} X$
 $S \xrightarrow{+2} U \xrightarrow{+2} W \xrightarrow{+2} Y$

3. (a) $B \xrightarrow{+5} G \xrightarrow{+4} K \xrightarrow{+3} N \xrightarrow{+2} P$

4. (b) $6 \times 3 = 18$
 $18 \times 6 = 108$
 $108 \times 18 = 1944$

Hence, 18 is the missing number in the sequence.

5. (d) $251 - 107 = 144 = (12)^2$
 $\therefore 381 - 125 = 256 = (16)^2$
Hence, 16 is the missing number in the given question.

6. (b) $354 + 526 = \frac{880}{8} = 110$

$$\therefore 297 + 631 = \frac{928}{8} = 116$$

7. (d) $0, 7, 26, 63, 124$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $1^3-1 \quad 2^3-1 \quad 3^3-1 \quad 4^3-1 \quad 5^3-1$

8. (a) $8 \xrightarrow{-3} 5 \xrightarrow{+7} 12$
 $10 \xrightarrow{-3} 7 \xrightarrow{+7} 14$
 $12 \xrightarrow{-3} 9 \xrightarrow{+7} 16$

10. (d) $2 \xrightarrow{+3} 5 \xrightarrow{+5} 10 \xrightarrow{+9} 19 \xrightarrow{+17} 36 \xrightarrow{+33} 69$
 $2 \times 2 - 1 \quad 3 \times 2 - 1 \quad 5 \times 2 - 1 \quad 9 \times 2 - 1 \quad 17 \times 2 - 1$

11. (b) $2 = 5 \Rightarrow 2^2 + 1$
 $4 = 18 \Rightarrow 4^2 + 2$
 $6 = 39 \Rightarrow 6^2 + 3$
 $8 = 68 \Rightarrow 8^2 + 4$
 $10 = 10^2 + 5 = 105$

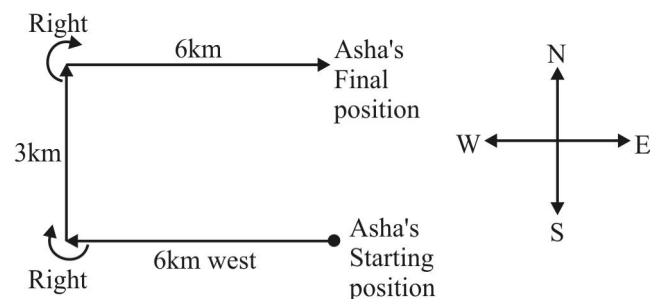
12. (c) Tuesday was the day before yesterday. Below figure shows the days pattern:

Tuesday \leftarrow day before yesterday

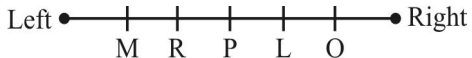
Thursday \leftarrow day (current)

Sunday \leftarrow day after tomorrow

13. (c)



Hence, Asha is 3km from starting point and in the east direction.

14. (a) Left  Right

Hence, P coach is in the middle of the five coaches.

15. (d) STIGMA cannot be formed using word 'INVESTIGATION' because letter M is not in the given reference word.
16. (c) NOTION cannot be formed because two Os are not in the reference word.
17. (d) READ cannot be formed as letter D is not in the reference word.

18. (a)
$$\begin{array}{ccccc} S & N & A & K & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 37 & + & 27 & + & 1 & + & 21 & + & 9 = 95 \end{array}$$

19. (c)
$$\begin{array}{ccccccc} D & F & I & N & & H & J & M & O \\ \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow & \downarrow \\ W & U & R & M & & S & Q & N & L \end{array}$$

20. (b)
$$\begin{array}{cccccc} R & U & M & O & U & R \\ -1\downarrow & -2\downarrow & -3\downarrow & -4\downarrow & -5\downarrow & -6\downarrow \\ Q & S & J & K & P & L \\ \\ H & E & R & M & I & T \\ -1\downarrow & -2\downarrow & -3\downarrow & -4\downarrow & -5\downarrow & -6\downarrow \\ G & C & O & I & D & N \end{array}$$

 \therefore

21. (a) Solve by options, we can check all the options one by one.

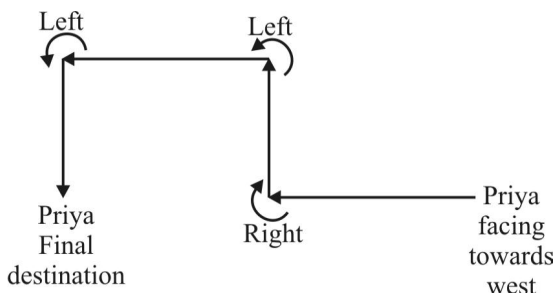
$$25 \div 5 \times 20 + 27 - 7 \Rightarrow 5 \times 20 + 27 - 7 \Rightarrow 100 + 27 - 7$$

$$120 = 120$$

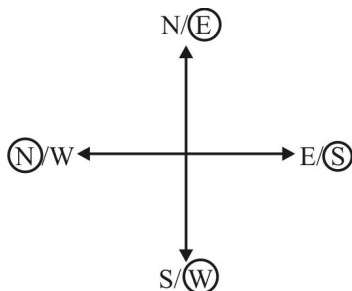
22. (a) $A \theta B \times C$
 $A \theta B ; B \times C$
 $\therefore A \geq B ; B > C$

Hence, option (a) implies the given equation.

23. (c) $(6 + 3) - (3 + 0) = 6 \times 5 = 30$
 $(7 + 2) - (1 + 0) = 8 \times 5 = 40$
 $\therefore (8 + 1) - (6 + 0) = 3 \times 5 = 15$

24. (d) 

Hence, Priya is moving in the South direction.

25. (d) 

As East started showing south then west was actually north.

26. (d) Arranging digits according to question.

265, 178, 834, 357

Hence, third highest would be 265 and 8 be the sum of first and second digits of the number.

27. (b) $A + B + Y + Z = 1 + 2 + 25 + 26 = 54$
 $\therefore C + D + W + X = 3 + 4 + 24 + 23 = 54$
28. (c) Petrology is the branch of geology that deals with the origin, composition, structure and alteration of rocks. Therefore, palaeontology is the study of fossils to determine the structure and evolution of extinct animals and plants and the age and the conditions of deposition of the rock strata in which they are found.

29. (c) First is the process of formation of the second.

30. (a) $27 \times = 81$

$$\therefore 8 \times 3 = 24$$

31. (c) $\underline{a} \underline{a} \underline{b} / a \underline{a} \underline{b} / \underline{a} \underline{a} \underline{b}$

32. (c) Fervent: having or displaying a passionate intensity.
Enthusiastic: having or showing intense and eager enjoyment.

Ardent: very enthusiastic or passionate

Apathetic: showing or feeling no interest, enthusiasm or concern.

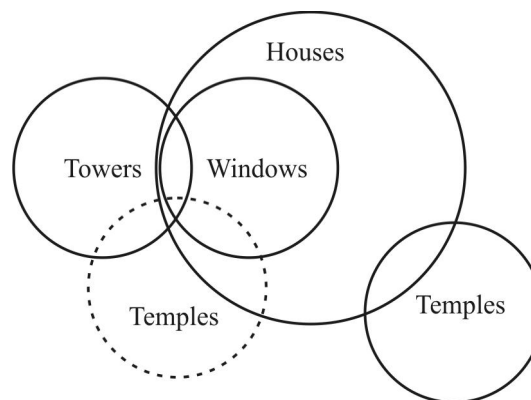
Hence, apathetic is odd one out.

33. (a) In all other groups, a vowel is followed by a consonant repeated twice.

34. (a) Only 117-143 is divisible by 13. Therefore, it is odd one out.

35. (d) Radio, Transistor and television are the way of broadcasting. Hence, tube is odd one out.

37. (b)



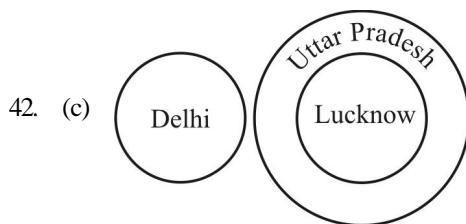
By looking at above venn diagram, we can concluded that only conclusions II follow.

39. (a) $\div \rightarrow \nrightarrow \nrightarrow \nrightarrow \nrightarrow$

All other symbols are adjacent to \div . Therefore, $\$$ symbol is opposite to it.

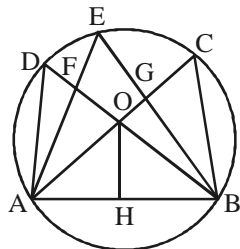
40. (b) By looking, the dice position, we can say that 2, 4, 5 and 6 are adjacent faces of 3. therefore, if 1 number is at the bottom then 3 will be on the top.

41. (c) The series represents continuous alphabets starting from K. Hence, N is the right answer.



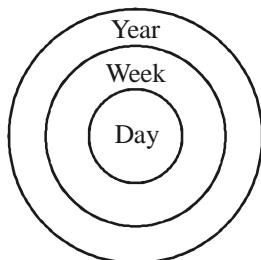
Delhi is separate state while Lucknow is part of Uttar Pradesh.

43. (c)

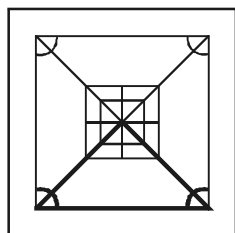


There 14 triangles in the given figure. These are AHO, ACB, BHO, BAD, ABE, ABD, BAF, ABG, AOF, AFD, BOG, BGC, ADO and BOC.

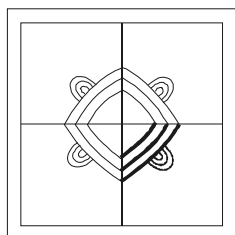
44. (a)



45. (d)



47. (c)



50. (b) C = 00, 12, 24, 33, 41
H = 55, 67, 79, 88, 96
I = 58, 65, 77, 86, 99
L = 57, 69, 76, 85, 98
D = 01, 13, 20, 34, 42
 \therefore CHILD = 12, 79, 99, 57, 01

GENERAL AWARENESS

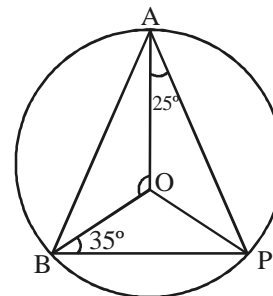
51. (a) Devarda's alloy, is an alloy of aluminium (44% - 46%), copper (49% - 51%) and zinc (4% - 6%). Devarda's alloy is used as reducing agent in analytical chemistry for the determination of nitrates after their reduction to ammonia under alkaline conditions. It owes its name to the Italian chemist Arturo Devarda (1859-1944), who synthesized it at the end of the 19th century to develop a new method to analyze nitrate in Chile saltpeter.
52. (d) The Red Data Book is the state document established for documenting rare and endangered species of animals, plants and fungi as well as some local sub-species that exist within the territory of the state or country. This book provides central information for studies and monitoring programmes on rare and endangered species and their habits.
53. (a) Grit chambers are long narrow tanks that are designed to slow down the flow so that solids such as sand, coffee grounds, and eggshells will settle out of the water. Grit causes excessive wear and tear on pumps and other plant equipment. Its removal is particularly important in cities with combined sewer systems, which carry a good deal of silt, sand, and gravel that wash off streets or land.
54. (b) Environmental impact assessments commenced in the 1960s, as part of increasing environmental awareness. EIAs involved a technical evaluation intended to contribute to more objective decision making. In the United States, environmental impact assessments obtained formal status in 1969, with enactment of the National Environmental Policy Act.
55. (a) Cysteine (abbreviated as Cys or C) is an α -amino acid with the chemical formula $\text{HO}_2\text{CCH}(\text{NH}_2)\text{CH}_2\text{SH}$. It is a semi-essential amino acid, which means that it can be biosynthesized in humans. The thiol side chain in cysteine often participates in enzymatic reactions, serving as a nucleophile.
56. (b) Victoria Azarenka successfully defended her title, defeating Li Na in the final 4-6, 6-4, 6-3. All of the top three seeds (Victoria Azarenka, Maria Sharapova and Serena Williams) were in contention for the World No. 1 ranking at the start of the tournament.
57. (a) Sir Clyde Leopold Walcott, KA, GCM (17 January 1926 - 26 August 2006) was a West Indian cricketer. Walcott was a member of the "three W's", the other two being Everton Weekes and Frank Worrell: all were very successful batsmen from Barbados, born within a short distance of each other in Bridgetown, Barbados in a period of 18 months from August 1924 to January 1926; all made their Test cricket debut against England in 1948. In the mid-1950s, Walcott was arguably the best batsman in the world. In later life, he had an active career as a cricket administrator, and was the first non-English and non-white chairman of the International Cricket Council.

58. (d) Neon is a chemical element with symbol Ne and atomic number 10. It is in group 18 (noble gases) of the periodic table. Neon is a colorless, odorless, inert monatomic gas under standard conditions, with about two-thirds the density of air.
59. (b) The Jnanpith Award is a literary award in India. Along with the Sahitya Akademi Fellowship. It is one of the two most prestigious literary honours in the country. The award was instituted in 1961. Any Indian citizen who writes in any of the official languages of India is eligible for the honour. It is presented by the Bharatiya Jnanpith, a trust founded by the Sahu Jain family, the publishers of the The Times of India newspaper.
60. (c) Hilary Mary Mantel is an English writer whose work ranges in subject from personal memoir and short story to historical fiction and essay. She has twice been awarded the Booker Prize. She won her first Booker Prize for the 2009 novel, *Wolf Hall*, a fictional account of Thomas Cromwell's rise to power in the court of Henry VIII. She won her second Booker Prize for the 2012 novel, *Bring Up the Bodies*, the second instalment of the Thomas Cromwell trilogy. Mantel was the first woman to receive the award twice.
61. (b) The currency of Iran is Rial.
62. (c) OPEC is an intergovernmental organization that was created at the Baghdad Conference on September 10-14, 1960, by Iraq, Kuwait, Iran, Saudi Arabia and Venezuela. Later it was joined by nine more governments: Libya, United Arab Emirates, Qatar, Indonesia, Algeria, Nigeria, Ecuador, Angola, and Gabon. OPEC was headquartered in Geneva, Switzerland before moving to Vienna, Austria, on September 1, 1965.
63. (b) Swatantra Kumar is the Chairperson of National Green Tribunal.
64. (b) Barmako is the capital of Mali.
65. (b) Jaspal Singh Bhatti (3 March 1955 - 25 October 2012) was an Indian television personality famous for his satirical take on the problems of the common man. He is most well known for his television series *Flop Show* and mini capsules *Ulta Pulta* which ran on Doordarshan, India's national television network, in the late 1980s and early 1990s. In 2013, he was honoured with the Padma Bhushan (posthumously), India's third highest civilian award
66. (b) Lal Bahadur Shastri was the second Prime Minister of the Republic of India and a leader of the Indian National Congress party. Shastri joined the Indian independence movement in the 1920s.
67. (c) Above 10,000 hectares
68. (a) Bank's reserves at Central Bank
69. (a) Interest rate is remaining sticky
70. (c) Sells a commodity at lower price in the world market and charges a higher price in the domestic market
71. (d) Selecting the candidate of election is the function of the political party
72. (a) This quote is given by the theory of Individualism
73. (c) Operation Flood in India, a project of the National Dairy Development Board (NDDB) was the world's biggest dairy development program which made India, a milk-deficient nation, the largest milk producer in the world, surpassing the USA in 1998, with about 17 percent of global output in 2010-11, which in 30 years doubled the milk available per person, and which made dairy farming India's largest self-sustainable rural employment generator. All this was achieved not merely by mass production, but by production by the masses.
74. (c) Marxism is a socio-economic and political worldview or inquiry based on a materialist interpretation of historical development, a dialectical view of social transformation, an analysis of class-relations and conflict within society. Marxist methodology informs an economic and sociopolitical enquiry applying to the analysis and critique of the development of capitalism and the role of class struggle in systemic economic change. In the mid-to-late 19th century, the intellectual tenets of Marxism were inspired by two German philosophers: Karl Marx and Friedrich Engels.
75. (c) powers and functions of the chief Election Commissioner
76. (a) Bahlul Khan Lodi was the founder of Lodi dynasty of the Delhi Sultanate in India upon the abdication of the last claimant from the previous Sayyid rule.
77. (d) Greco-Roman-Buddhist Art
78. (a) the Bolshevik Revolution, was a seizure of state power instrumental in the larger Russian Revolution of 1917. It took place with an armed insurrection in Petrograd traditionally dated to 25 October 1917.
79. (b) Lieutenant-General Lord William Henry Cavendish-Bentinck, GCB, GCH, PC, known as Lord William Bentinck, was a British soldier and statesman. He served as Governor-General of India from 1828 to 1835.
80. (c) The All India Trade Union Congress is the oldest trade union of India, established in 1920, History of AITUC is coterminous with the history of organised labour movement in India. Since its birth, AITUC has had a major role to play in mass movement phase in India's freedom struggle.
81. (c) The Joint Session of Parliament resolves the deadlock between Lok Sabha and Rajya Sabha over an ordinary bill.
82. (b) the law explains that wind is deflected to the right in the Northern Hemisphere and to the left in the Southern Hemisphere, derived from the application of the Coriolis effect to air masses.
83. (d) ozone layer, also called ozonosphere, region of the upper atmosphere, between roughly 15 and 35 km (9 and 22 miles) above Earth's surface, containing relatively high concentrations of ozone molecules (O₃).
84. (b) A dendritic drainage pattern refers to the pattern formed by the streams, rivers, and lakes in a particular drainage basin. It usually looks like the branching pattern of tree roots and it mainly develops in regions underlain by homogeneous material.

85. (c) Plimsol line is not a line of demarcation between two countries.
86. (d) A halophyte is a plant that grows in waters of high salinity, coming into contact with saline water through its roots or by salt spray, such as in saline semi-deserts, mangrove swamps, marshes and sloughs, and seashores. An example of a halophyte is the salt marsh grass *Spartina alterniflora* (smooth cordgrass).
87. (b) *Azotobacter* is a genus of usually motile, oval or spherical bacteria that form thick-walled cysts and may produce large quantities of capsular slime.
88. (b) The aorta is the largest artery in the human body, originating from the left ventricle of the heart and extending down to the abdomen, where it bifurcates into two smaller arteries (the common iliac arteries). The aorta distributes oxygenated blood to all parts of the body through the systemic circulation.
89. (c) Parathyroid hormone (PTH), parathormone or parathyrin, is secreted by the chief cells of the parathyroid glands as a polypeptide containing 84 amino acids. It acts to increase the concentration of calcium (Ca^{2+}) in the blood, whereas calcitonin (a hormone produced by the parafollicular cells (C cells) of the thyroid gland) acts to decrease calcium concentration.
90. (c) Extratropical cyclones, sometimes called mid-latitude cyclones or wave cyclones, are a group of cyclones defined as synoptic scale low pressure weather systems that occur in the middle latitudes of the Earth (outside the tropics) not having tropical characteristics, and are connected with fronts and horizontal gradients in temperature and dew point otherwise known as "baroclinic zones".
91. (c) by tracheal system
92. (c) In nuclear physics and nuclear chemistry, a nuclear reaction is semantically considered to be the process in which two nuclei, or else a nucleus of an atom and a subatomic particle (such as a proton, neutron, or high energy electron) from outside the atom, collide to produce one or more nuclides that are different from the nuclide(s) that began the process.
93. (b) annihilate each other
94. (a) In the photoelectric effect, electrons are emitted from solids, liquids or gases when they absorb energy from light. Electrons emitted in this manner may be called photoelectrons.
95. (d) a circle
96. (a) The IBM 650 Magnetic Drum Data-Processing Machine was one of IBM's early computers, and the world's first mass-produced computer. It was announced in 1953 and almost 2000 systems were produced, the last in 1962. Support for the 650 and its component units was withdrawn in 1969.
97. (a) stack
98. (b) Cryolite (Na_3AlF_6 , sodium hexafluoroaluminate) is an uncommon mineral identified with the once large deposit at Ivigtût on the west coast of Greenland, depleted by 1987.
99. (c) Glucose ($\text{C}_6\text{H}_{12}\text{O}_6$, also known as D-glucose, dextrose, or grape sugar) is a simple monosaccharide found in plants. It is one of the three dietary monosaccharides, along with fructose and galactose, that are absorbed directly into the bloodstream during digestion.
100. (b) Any of the homologous segments, lying in a longitudinal series, that compose the body of certain animals, such as earthworms and lobsters. Also called somite.

QUANTITATIVE APTITUDE

101. (a) In $\triangle OBP$,
 $OB = OP$ (\because radius)



$$\therefore \angle OBP = \angle OPB = 35^\circ$$

In $\triangle AOP$

$$OA = OP \quad (\because \text{radius})$$

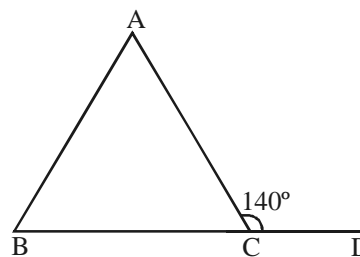
$$\therefore \angle OAP = \angle OPA = 25^\circ$$

$$\text{Now, } \angle APB = \angle OPA + \angle OPB \\ = 25^\circ + 35^\circ = 60^\circ$$

$$\text{Hence, } \angle AOB = 2\angle APB$$

$$(\text{Angle subtended by arc at centre is twice}) \\ = 2 \times 60^\circ = 120^\circ$$

102. (d)



$$\angle ACB + \angle ACD = 180^\circ \quad (\text{linear pair}) \\ \therefore \angle ACB = 180^\circ - 140^\circ = 40^\circ$$

In $\triangle ABC$

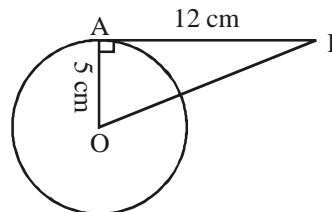
$$\angle BAC + \angle ABC + \angle ACB = 180^\circ$$

$$\angle BAC + 3\angle BAC + 40^\circ = 180^\circ$$

$$4\angle BAC = 180^\circ - 40^\circ$$

$$\angle BAC = \frac{140}{4} = 35^\circ$$

103. (c)



AP is a tangent and OA is a radius.

Therefore, $OA \perp AP$.

So, In $\triangle OAP$

$$OP^2 = 5^2 + 12^2$$

$$OP^2 = 25 + 144 = 169$$

$$OP = 13 \text{ cm}$$

104. (b) In $\triangle ABC$, $\angle ACB = 90^\circ$

$$\therefore \angle ACB + \angle ACD$$

$$\Rightarrow 90^\circ + 50^\circ = 140^\circ$$

As angle made by triangle in semicircle is equal to 90° .

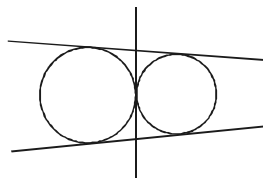
$$\therefore \text{In quad. } ABCD \angle BAD + \angle BCD = 180^\circ$$

angle of (opp. pair of quad is equal to 180°)

$$\angle BAD = 180^\circ - 140^\circ = 40^\circ$$

105. (d) The relation of TQ and TR is $TQ = TR$.

106. (b)



107. (b) DE is parallel to BC

$$\text{So } \angle AED = \angle C = 35^\circ$$

$$\text{Since } \angle A = 80^\circ$$

$$\text{Then } \angle ADE = 65^\circ$$

$\angle EDB$ is supplement to $\angle ADE$.

$$\text{So, } \angle EDB = 180^\circ - \angle ADE$$

$$= 180^\circ - 65^\circ = 115^\circ$$

108. (d) Area of triangle = Inradius \times Semi-perimeter

$$= 6 \times 16 = 96 \text{ sq. cm}$$

109. (b) $\frac{\sin 53^\circ}{\cos 37^\circ} \div \frac{\cot 65^\circ}{\tan 25^\circ}$

$$\frac{\sin 53^\circ}{\cos 37^\circ} \times \frac{\tan 25^\circ}{\cot 65^\circ} \Rightarrow \frac{\sin 53^\circ}{\cos(90^\circ - 53^\circ)} \times \frac{\tan 25^\circ}{\cot(90^\circ - 25^\circ)}$$

$$\Rightarrow \frac{\sin 53^\circ}{\sin 53^\circ} \times \frac{\tan 25^\circ}{\tan 25^\circ} = 1$$

$$[\because \cos(90^\circ - \theta) = \sin \theta \text{ and } \cot(90^\circ - \theta) = \tan \theta]$$

110. (c) $\frac{\cos 60^\circ + \sin 60^\circ}{\cos 60^\circ - \sin 60^\circ} = \frac{\frac{1}{2} + \frac{\sqrt{3}}{2}}{\frac{1}{2} - \frac{\sqrt{3}}{2}} = \frac{1 + \sqrt{3}}{1 - \sqrt{3}} \times \frac{1 + \sqrt{3}}{1 + \sqrt{3}}$

$$\Rightarrow \frac{(1 + \sqrt{3})^2}{1^2 - (\sqrt{3})^2} = \frac{1 + 3 + 2\sqrt{3}}{1 - 3} = \frac{4 + 2\sqrt{3}}{-2}$$

$$\Rightarrow \frac{-2(2 + \sqrt{3})}{2} = -(2 + \sqrt{3})$$

111. (d) $\frac{\cot 5^\circ \cdot \cot 10^\circ \cdot \cot 15^\circ \cdot \cot 60^\circ \cdot \cot 75^\circ \cdot \cot 80^\circ \cdot \cot 85^\circ}{(\cos^2 20^\circ + \cos^2 70^\circ) + 2}$

$$\Rightarrow \frac{\cot(90^\circ - 85^\circ) \cdot \cot(90^\circ - 80^\circ) \cdot \cot(90^\circ - 75^\circ) \cdot \cot 60^\circ \cdot \cot 75^\circ \cdot \cot 80^\circ \cdot \cot 85^\circ}{(\cos^2(90^\circ - 70^\circ) + \cos^2 70^\circ) + 2}$$

$$\Rightarrow \frac{\cot 60^\circ}{(1 + 2)} = \frac{\frac{1}{\sqrt{3}}}{3} = \frac{1}{3\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{9}$$

112. (d) Let angles are $2x$, $5x$ and $3x$.

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

(sum of interior angle of triangles is 180°)

$$10x = 180^\circ$$

$$x = 18^\circ$$

$$\therefore \text{Least angle in degree} = 2x = 2 \times 18 = 36^\circ$$

$$\text{In radian} = \frac{\pi}{180^\circ} \times 36^\circ = \frac{\pi}{5}$$

113. (d) $x = a \cos \theta - b \sin \theta$

$$y = b \cos \theta + a \sin \theta$$

$$x^2 + y^2 = (a \cos \theta - b \sin \theta)^2 + (b \cos \theta + a \sin \theta)^2$$

$$\Rightarrow a^2 \cos^2 \theta + b^2 \sin^2 \theta - 2ab \cos \theta \sin \theta + b^2 \cos^2 \theta$$

$$+ a^2 \sin^2 \theta + 2ab \cos \theta \sin \theta$$

$$\Rightarrow (a^2 + b^2) \cos^2 \theta + (a^2 + b^2) \sin^2 \theta$$

$$\Rightarrow a^2 + b^2 (\cos^2 \theta + \sin^2 \theta)$$

$$\Rightarrow a^2 + b^2 \cdot (1) \Rightarrow a^2 + b^2$$

114. (a) $\tan \alpha + \cot \alpha = 2$

$$\tan \alpha + \frac{1}{\tan \alpha} = 2 \Rightarrow \tan^2 \alpha + 1 = 2 \tan \alpha$$

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

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

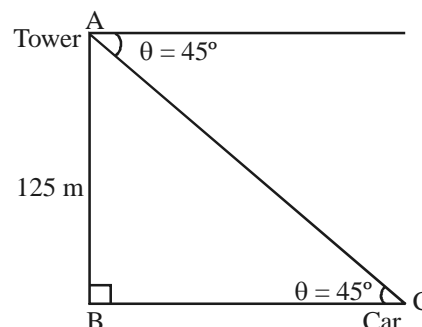
$$\Rightarrow \tan \alpha (\tan \alpha - 1) - 1 (\tan \alpha - 1) = 0$$

$$(\tan \alpha - 1) (\tan \alpha - 1) = 0$$

$$\therefore \tan \alpha = 1$$

$$\text{Now, } \tan^7 \alpha + \cot^7 \alpha \Rightarrow (\tan \alpha)^7 + \frac{1}{(\tan \alpha)^7} = 1 + 1 = 2$$

115. (a)



In $\triangle ABC$

$$\tan \theta = \frac{AB}{BC} \Rightarrow \tan 45^\circ = \frac{125}{BC} \Rightarrow 1 = \frac{125}{BC}$$

$$BC = 125 \text{ m}$$

Hence, car is 125 m from the tower.

116. (c) $(A + B)$'s 1 day's work = $\frac{1}{10}$; C 's 1 day's work = $\frac{1}{50}$

$$(A + B + C)$$
's 1 day's work = $\left(\frac{1}{10} + \frac{1}{50}\right) = \frac{6}{10} = \frac{3}{25} \dots (1)$

Also, A 's 1 day's work = $(B + C)$'s 1 day's work $\dots (2)$

$$\text{From (1) and (2), we get : } 2 \times (A \text{'s 1 day's work}) = \frac{3}{25}$$

$$\Rightarrow A \text{'s 1 day's work} = \frac{3}{25}$$

$$\therefore \text{B's 1 day's work} = \left(\frac{1}{10} - \frac{3}{50} \right) = \frac{2}{50} = \frac{1}{25}$$

So, B alone could do the work in 25 days.

117. (c) $\text{A's 1 day's work} = \frac{1}{10}$ and $\text{B's 1 day's work} = \frac{1}{15}$

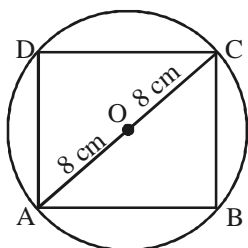
$$\therefore (\text{A} + \text{B})\text{'s 1 day's work} = \left(\frac{1}{10} + \frac{1}{15} \right) = \frac{1}{6}$$

So both together will finish the work in 6 days.

118. (b) $(a^b + b^a)^{-1} = (2^3 + 3^2)^{-1} = (8 + 9)^{-1} = (17)^{-1} = \frac{1}{17}$

119. (a) $392 \times 2 = 784 \Rightarrow (27)^2$
Hence, 2 can be multiplied by 392 which gives perfect square.

120. (c)



Diagonal of square = Diameter of circle

$$\sqrt{2} \times \text{side of square} = 16 \text{ cm}$$

Squaring on both sides

$$(\sqrt{2} \times \text{sides of square})^2 = 16^2$$

$$\Rightarrow (\text{side of square})^2 = \frac{16 \times 16}{2}$$

$$\Rightarrow \text{Area of square} = 128 \text{ sq. cm}$$

121. (d) The area of circle is $9\pi \text{ cm}^2$.

122. (b) Let the required number of days be x .
Then, more men, more km (Direct proportion)
more days, more km (Direct proportion)
men

$$\left. \begin{array}{l} \text{Men } 12 : 28 \\ \text{Days } 7 : x \end{array} \right\} :: 1.5 : 12$$

$$\therefore 12 \times 7 \times 12 = 28 \times x \times 1.5$$

$$x = \frac{12 \times 7 \times 12}{28 \times 1.5} = 24$$

123. (d) Let the marked price be ₹ x .

$$\therefore \text{C.P.} = (x - 25\% \text{ of } x) = \frac{3}{4}x$$

$$\Rightarrow \text{S.P.} = \left(\frac{3x}{4} + 10\% \text{ of } \frac{3x}{4} \right) = \frac{33}{40}x$$

$$\text{But, } \frac{33}{40}x = 660 \Rightarrow x = 800.$$

124. (a) Let the marked price be ₹ x .

$$\therefore \text{S.P.} = (x - 25\% \text{ of } x) = \frac{3}{4}x$$

$$\text{But, S.P.} = ₹ 525$$

$$\therefore \frac{3}{4}x = 525 \Rightarrow x = 700$$

125. (c) **Short cut method :**

$$\text{Net profit} = \text{Profit} + \text{Discount} + \frac{\text{Profit} \times \text{Discount}}{100}$$

$$\frac{25}{2} = 25 - \text{Discount} - \frac{25 \times \text{Discount}}{100}$$

('−' to represent discount)

$$\frac{25}{2} - 25 = \frac{-5}{4} \text{ Discount}$$

$$\therefore \text{Discount \%} = 10\%$$

126. (b) $4A = 6B \Rightarrow 2A = 3B \Rightarrow A : B = 3 : 2$

$$B = 3C \Rightarrow 2B = C \Rightarrow B : C = 1 : 2$$

$$\begin{array}{l} A : B : C \\ 3 : 2 : 2 \\ \hline 3 : 2 : 4 \end{array}$$

$$\text{A's share} = \frac{3}{(3+2+4)} \times 1800 = \frac{3}{9} \times 1800 = 600$$

127. (c) Let 1st, 2nd and 3rd part represented by x, y, z

$$\text{Let } \frac{1}{2}x = \frac{1}{3}y = \frac{1}{4}z = k$$

$$\therefore x = 2k, y = 3k, z = 4k$$

According to question

$$x + y + z = 81$$

$$\Rightarrow 2k + 3k + 4k = 81 \Rightarrow 9k = 81 \Rightarrow k = 9$$

Hence, parts are 18, 27, 36.

128. (b) Diagonal of a square (d) = $\sqrt{2} \times \text{side of square (a)}$.

$$d = \sqrt{2}a \Rightarrow a = \frac{d}{\sqrt{2}}$$

$$\text{Area of square} \Rightarrow a^2 = \frac{d^2}{2}$$

Now, diagonal gets doubled

$$a = \frac{(2d)}{\sqrt{2}}$$

$$\text{Area of square} = \left(\frac{2d}{\sqrt{2}} \right)^2 = 4 \left(\frac{d^2}{2} \right)$$

$$\frac{d^2}{2} \text{ is area of square}$$

Therefore, Area will be four times.

129. (d) Average weight of 30 = 60 kg

$$\Rightarrow \text{Sum of weight of 30 boys} = 1800$$

$$\text{Average weight of 10} = 56 \text{ kg}$$

$$\Rightarrow \text{Sum of weight of 10 boys} = 560$$

Average weight of the whole class

$$= \frac{\text{Sum of weight of all boys}}{40}$$

$$= \frac{\text{sum of weight of 30 boys} + \text{sum of weight of 10 boys}}{40}$$

$$= \frac{60 \times 30 + 56 \times 10}{40} = 59 \text{ kg}$$

130. (c) **Ist case :**

$$S.P = \frac{100 \times \text{Profit}\%}{100} \times C.P. \Rightarrow S.P. = \frac{100 + \frac{25}{2} \times C.P.}{100}$$

$$\Rightarrow S.P = \frac{112.5}{100} C.P \quad \dots(1)$$

IInd case :

$$S.P = \frac{100 + \text{Profit}\%}{100} \times C.P. \Rightarrow (S.P + 10) = \frac{100 + 15}{100} \times C.P.$$

$$\Rightarrow (S.P + 10) = \frac{115}{100} C.P \quad \dots(2)$$

Dividing equation (1) by (2)

$$\frac{S.P}{S.P + 10} = \frac{112.5}{100} (C.P) \times \frac{100}{115(C.P)}$$

$$S.P = \left(\frac{112.5}{115} \right) (S.P + 10)$$

$$115 S.P = 112.5 S.P + 1125$$

$$S.P = 450$$

$$\therefore C.P = \frac{S.P \times 100}{112.5} = \frac{450 \times 100}{112.5} = 400$$

131. (a) Let passing marks be represented by p .

$$p \times 1.05 = 273$$

$$p = 260$$

$$\text{Lokesh passing \%} = \frac{312 - 260}{260} \times 100 = 20\%$$

132. (b) $D = S \times T$

$$60 = S \times \left(\frac{45}{60} \right) \text{ hr}$$

$$S = \frac{60 \times 60}{45} \Rightarrow 80 \text{ km/hr}$$

Now, new speed = $80 - 15 = 65 \text{ km/hr}$.

$$\therefore \text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{60}{65} \text{ hr.}$$

$$\text{or } \frac{60}{65} \times 60 \text{ min} = 55.38 \text{ min.}$$

Hence, Time to taken by car to travel same distance is 55.38 min.

133. (b) Let speed of the second train = $x \text{ km/hr}$.

Relative speed of trains = $(50 + x) \text{ km/hr}$.

Distance travelled by trains = $(100 + 120) = 220 \text{ metres}$

Distance = Speed \times Time

$$\left(\frac{220}{1000} \right) \text{ km} = (50 + x) \text{ km/hr.} \times \left(\frac{6}{3600} \right) \text{ hr}$$

$$50 + x = \frac{220 \times 3600}{1000 \times 6}$$

$$50 + x = 132$$

$$x = 132 - 50 = 82 \text{ km/hr}$$

134. (b) Let principal be represented by P .

Ist Case :

$$S.I. = \frac{P \times R \times T}{100} = \frac{P \times 8 \times 3}{100}$$

IInd Case :

$$S.I = \frac{P \times R \times T}{100} = \frac{P \times 8 \times 3}{100}$$

According to question

$$\frac{P \times 8 \times 3}{100} - \frac{P \times 8 \times 2}{100} = 56$$

$$\frac{P \times 8}{100} = 56 \Rightarrow P = \frac{56 \times 100}{8} = 700$$

$$135. (b) \text{ Average} = \frac{7 + 14 + 21 + 28 + 35}{5} = 21$$

$$136. (a) x^4 - 2x^2 + k$$

$$(x^2)^2 - 2x^2 + k \Rightarrow (x^2)^2 - 2.1. x^2 + k$$

For above expression to make a perfect square, the k value is equal to 1.

$$137. (d) 3x - \frac{1}{4y} = 6 \quad 3x = 6 + \frac{1}{4y}$$

Taking 3 common on both sides

$$x = \frac{6}{3} + \frac{1}{4.3y} \Rightarrow x = 2 + \frac{1}{12y}$$

Dividing equation by 4 on both sides

$$4x = 8 + \frac{1}{3y} \Rightarrow 4x - \frac{1}{3y} = 8$$

$$138. (a) a + b + c = 0$$

$$\text{i.e. } a = -(b + c); b = -(c + a); c = -(a + b)$$

$$\text{Now, } \frac{a+b}{c} - \frac{2b}{c+a} + \frac{b+c}{a}$$

$$\Rightarrow \frac{a+b}{-(a+b)} - \frac{2[-(c+a)]}{c+a} + \frac{b+c}{-(b+c)}$$

$$\Rightarrow -1 + 2 - 1 = 0$$

$$139. (b) x + \frac{4}{x} = 4$$

$$x^2 + 4 = 4x \Rightarrow x^2 - 4x + 4 = 0 \Rightarrow (x - 2)^2 = 0$$

$$x = 2$$

$$x^3 + \frac{4}{x^3} = (2)^3 + \frac{4}{(2)^3} \Rightarrow 8 + \frac{4}{8} \Rightarrow 8 + \frac{1}{2} \Rightarrow 8\frac{1}{2}$$

$$140. (b) x = 3 + 2\sqrt{2}$$

$$x = 2 + 1 + 2\sqrt{2}$$

$$x = (\sqrt{2})^2 + (1)^2 + 2.1.\sqrt{2}$$

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

$$\sqrt{x} = (\sqrt{2} + 1) \quad \dots(1)$$

$$\frac{1}{\sqrt{x}} = \frac{1}{\sqrt{2} + 1} \times \frac{\sqrt{2} - 1}{\sqrt{2} - 1} = \frac{\sqrt{2} - 1}{2 - 1} = \sqrt{2} - 1$$

$$\text{Now, } \sqrt{x} - \frac{1}{\sqrt{x}} = \sqrt{2} + 1 - (\sqrt{2} - 1) = \sqrt{2} + 1 - \sqrt{2} + 1$$

$$\sqrt{x} - \frac{1}{\sqrt{x}} = 2$$

141. (c) The least value of $a + \frac{1}{a}$ is 2 where $a = 1$.

142. (b) If $a = 0, b \neq 0, c \neq 0$, then equation $ax + by + c = 0$ represents a line parallel to x-axis.

143. (a) Let Puneet's age = x yr.
Let Puneet's father age = y yr.
 $x + y = 45 \Rightarrow y = (45 - x)$
 $xy = 126$

Putting the value of y .

$$(x)(45 - x) = 126$$

$$45x - x^2 = 126$$

$$x^2 - 45x + 126 = 0$$

$$x^2 - 42x - 3x + 126 = 0$$

$$x(x - 42) - 3(x - 42) = 0$$

$$x = 3, x = 42$$

Hence, Puneet's age in 3yr.

144. (a) Central angle of the sector for cost of the paper

$$= \frac{\text{Cost of paper \%}}{100} \times 360^\circ = \frac{16}{100} \times 360^\circ = 57.6^\circ$$

145. (d) If the cost of paper = ₹ x , then from the given pie-chart

$$\frac{\text{Cost of paper}}{\text{Miscellaneous charges}} = \frac{16\%}{4\%}$$

$$\Rightarrow \frac{x}{6000} = \frac{16}{4} \Rightarrow x = \frac{16 \times 6000}{4} = ₹ 24000$$

147. (c) By observing the graph, we can say that yr. 2009 has maximum percentage of students passed in the year.

148. (d) Year 2007.

150. (c) $20 + 12 + 16 = 48$

ENGLISH COMPREHENSION

151. (a) Fabricate means make up something artificial or untrue while demolish means destroy completely which is just opposite.
152. (c) Gregarious denotes tending to form a group with others of the same species and unsociable is the opposite.
153. (a) Pragmatic means concerned with practical matters while indefinite denotes vague or not clearly defined or stated.
154. (b) If somebody is above board, he/she is honest in any business deal.
155. (b) To cry wolf means that someone is giving false alarm.
156. (a) If somebody is on the right/ wrong side of 30/ 40 etc that means he/she is younger/ older than 30/ 40 etc.
157. (a) If you have an axe to grind; that means you have a private end to serve.
158. (d) If you drive something home, that means you are making something completely clear to someone. She didn't have to drive the point home. The movie had done that.

159. (c) Here we compare the climate of Karnataka with the climate of Tamil Nadu and not with the Tamil Nadu itself; hence we use 'than that of'.
160. (a) If someone suffers from an unpleasant or difficult experience or situation, then we use 'suffer from.' Ex: Shiela is suffering from ill health. Lately factories are suffering from a desperate shortage of labours.
161. (a) The correct arrangement of sentence is - I gave Sana the keys.
162. (a) When you are using if to talk about something that is unlikely to happen or is impossible, use the past tense in the if-clause, not present. Ex: If someone gave me (NOT gives or would give me) the money, I'd buy a car tomorrow.
163. (c) 'He compensated me for the loss.' is the correct answer.
164. (b) The proposition 'to' is complementary with accountable.
165. (a) Recently denotes not long ago and thus usually takes perfect tense.
166. (c) Present tense shows what exists or happening now. It also denotes a habit which in this case is the timing of having lunch.
167. (a) Here 'agriculturally' is the adverb that adds to the meaning of the adjective 'strong'. Other examples are 'slowly' in 'He ran slowly', 'very' in 'It's very hot', or 'naturally' in 'Naturally, we want you to come.'
168. (b) Superior always takes preposition 'to'. Ex: Your computer is far superior to mine.
169. (d) Ambiguous means having more than one possible meaning.
170. (a) If someone or something is infallible, that means they are incapable of failure or error.
171. (d) Conscientious is the one who is guided by or in accordance with conscience or sense of duty and right and wrong.
173. (c) Obsolete means no longer in use
174. (c) regicide means the act of killing a king.
175. (a) Aviary is a building where birds are kept.
180. (b) Baltimore Oriole is of 7 inches in length.
188. (b) Here Mohan's eyes reflect means that it was Mohan's habit which is not the case. Hence, it should be as Mohan's eyes reflected
189. (c) With a view to (doing) something because you are planning to do something in the future. Ex: We bought the house with a view to retiring there.
190. (b) 'has come' is the correct option because the verb will agree with the first subject.
191. (b) adjacent always takes the preposition 'to'.
192. (b) Grapes cannot be the subject of the sentence; hence it should be 'Grapes cannot be gathered.....'
193. (b) Since is usually followed by a time expression ('last year', 'this morning', '4 o'clock' etc) or by a clause in the simple past tense. Use the present perfect or the past perfect in the other clause. Use for when you state the length of time that something has been or had been happening. Ex: We have known each other for ten years (NOT since ten years).
198. (a) condone and forgive are similar in meaning.
199. (b) Analogy denotes comparison.
200. (c) Allure and entice both denote provoking someone to do something through (often false or exaggerated) promises or persuasion.