

PART - A : GENERAL INTELLIGENCE AND REASONING

Directions : In questions no. 1 to 9, select the related letters/word/number from the given alternatives.

1. UTS : EDC :: WVU : ?
 (A) SJM (B) RST
 (C) GFE (D) XYW
2. 2 : 3 :: 23 : ?
 (A) 46 (B) 29
 (C) 25 (D) 28
3. 2 : 12 :: 8 : ?
 (A) 396 (B) 576
 (C) 18 (D) 128
4. Secretive : Open :: Snide : ?
 (A) Outcome (B) Forward
 (C) Hidden (D) Fortright
5. Oxygen : Breathe :: ?
 (A) Bed : Rest
 (B) Glucose : Strength
 (C) Pen : Ink
 (D) Disease : Birth
6. Thermometer : Heat :: Barometer : ?
 (A) Humidity (B) Altitude
 (C) Temperature (D) Pressure
7. Book : Library :: ?
 (A) Bouquet : Flower
 (B) Ship : Fleet
 (C) Fish : River
 (D) Aeroplane : Sky

8. CDF : GHJ :: ?
 (A) PQR : STU (B) EFT : MNO
 (C) ABD : PQR (D) KLN : OPR
9. CUZA : HYCC :: NNJO : ?
 (A) TRMP (B) SSNR
 (C) TURS (D) SRMQ

Directions : In questions no. 10 to 18, find the odd number/letters/word/number pair from the given alternatives.

10. (A) NORGAE (B) MEJNIAS
 (C) SORE (D) SOTLU
11. (A) Heroic (B) Reserved
 (C) Bold (D) Brave
12. (A) Chocolate (B) Coca-Cola
 (C) Sweetmeat (D) Ice-cream
13. (A) 4514 (B) 9425
 (C) 1243 (D) 7516
14. (A) 136 - 1410 (B) 312 - 316
 (C) 121 - 134 (D) 691 - 61516
15. (A) 183 (B) 289
 (C) 143 (D) 165
16. (A) Copper (B) Gold
 (C) Steel (D) Silver
17. (A) Deputy (B) Representative
 (C) Delegate (D) Person
18. (A) 1722 (B) 1109
 (C) 4512 (D) 3621

SPACE FOR ROUGH WORK

Directions : In questions no. 19 to 21, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it ?

19. b cc ac ca g ba bb cb bc ca
 (A) achca (B) bacab
 (C) baabc (D) abaaa
20. ab bb c ab ab c
 (A) bccab (B) cacab
 (C) cacac (D) cbabc
21. A VZ AV ZA V
 (A) AZVA (B) ZYAZ
 (C) AVAZ (D) ZVZA

Directions : In questions no. 22 to 25, a series is given, with one/two term(s) missing. Choose the correct alternative from the given ones that will complete the series.

22. ² B I O ? X A
 (A) V (B) P
 (C) T (D) R
23. B E ? Q Z
 (A) J (B) I
 (C) K (D) C
24. 4, 8, 11, 22, 25, ?
 (A) 28 (B) 53
 (C) 26 (D) 50
25. Y X Z X W Y W V X V ? ?
 (A) U W (B) V W
 (C) V U (D) W U

26. The daughter of the son of the father of my father's sister is to me
 (A) Daughter (B) Niece
 (C) Aunt (D) Sister

27. In this question, a word has been given followed by four other words, one of which **cannot** be formed by using the letters of the given word. Find this word.

'CHEMOTHERAPY'

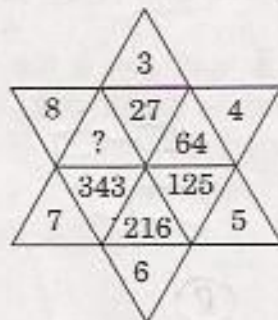
- (A) THEATRE (B) RAPED
 (C) HECTARE (D) MOTHER
28. If REEXAMINATION is written as EXAMINATIONER, how can REFORMER be written in that code ?
 (A) FORREMER (B) FORMERER
 (C) REFORMRE (D) REFROMER
29. Find out the set among the four sets which is like the given set.
 Given set (48, 64, 78)
 (A) 13, 28, 44 (B) 17, 25, 42
 (C) 16, 43, 58 (D) 74, 48, 64
30. If the uncle of the father of Rani is the grandson of the father of Anup and Anup is the only son of his father, then what is the relation of Anup with Rani ?
 (A) Maternal uncle
 (B) Great-grandfather
 (C) Grandfather
 (D) Uncle

SPACE FOR ROUGH WORK

31. When $12 + 10 = 1205$, $11 + 8 = 885$, then
 $16 + 15 = ?$
 (A) 1025 (B) 130
 (C) 2405 (D) 105
32. If TRAIN is coded as WUDLQ, how is the word BUS coded?
 (A) EXV (B) VXE
 (C) EXU (D) DWU
33. In a certain code, NATION is written as ANITNO. In that code, which word will be written as KROFMR?
 (A) REFORM (B) FROMRE
 (C) FORMER (D) ROMFER
34. In the following question
 'A' means 'bigger than',
 '□' means 'smaller than',
 'θ' means 'is equal to',
 '⊕' means 'is not equal to'.
 If $C \Delta A$, $A \square B$, $D \theta B$ and $B \square C$, then
 (A) $A \Delta C$ (B) $B \theta D$
 (C) $D \Delta C$ (D) $D \square C$

Direction : In questions no. 35 to 37, find the missing number in the number pattern.

35.



- (A) 512 (B) 612
 (C) 312 (D) 412

36. 268 (29) 210
 218 (?) 166

- (A) 26 (B) 29
 (C) 42 (D) 25

37.

8	3	21
6	5	25
12	2	?

- (A) 22 (B) 20
 (C) 24 (D) 19

38. If I walk at 4 km an hour from my house, I miss the bus by 7 minutes and if I walk at 6 km an hour, I reach the bus-stop 8 minutes too early. How far is the bus-stop?

- (A) $7\frac{1}{2}$ km (B) 8 km
 (C) 14 km (D) 7 km

39. If ASHA equals 79, then VINAYBHUSHAN = ?

- (A) 144 (B) 130
 (C) 211 (D) 200

SPACE FOR ROUGH WORK

40. If in a certain code, ADVENTURE is coded as BFYISZBAN, how is COUNTRY coded in that code ?

(A) EQWPVTA (B) ~~BNTMSQX~~
(C) DPVOUSZ (D) DQXRYXF

41. If PRESENTATION is written as REPRESENTATION, how can COMMENDATION be written in that code ?

(A) IONENCOMMDAT
(B) DATIONENCOMM
(C) NCOMENDATION
(D) ~~OMCMENDATION~~

42. If MATCH is coded as NCWGM and BOX as CQA, then which of the following is coded as OQWIGUVS ?

(A) NOTFBOPE (B) MOKEBOOT
(C) NOTEBOOK (D) NOTEBOKE

43. If STOP is coded as 19 20 15 16, how can we code the word POTS ?

(A) 16 15 20 19
(B) 16 15 19 20
(C) 15 16 20 19
(D) 19 20 15 16

Directions : In questions no. 44 and 45, two statements are given, followed by two conclusions I and II. You have to consider the statements to be true, even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements.

44. Statements :

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

Conclusions :

- I. All Science teachers are Engineers.
- II. All Engineers do not use plastic bags.

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

45. Statements :

1. Some cats are kittens.
2. All dogs are kittens.

Conclusions :

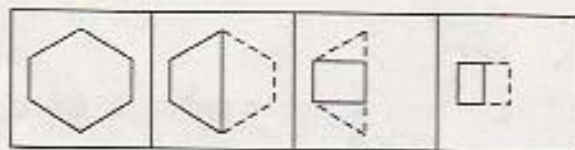
- I. Some cats are dogs.
- II. Some dogs are cats.

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

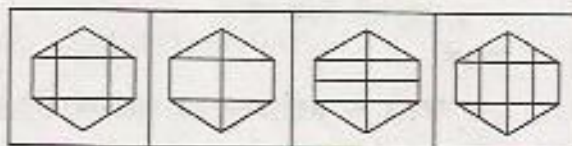
SPACE FOR ROUGH WORK

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

Question figure :



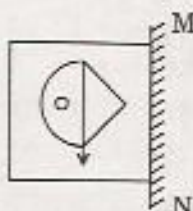
Answer figures :



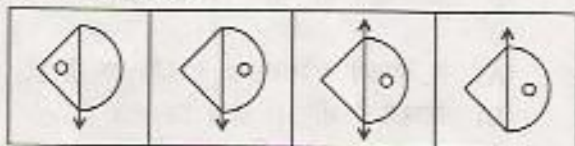
(A) (B) (C) (D)

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

Question figure :



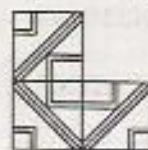
Answer figures :



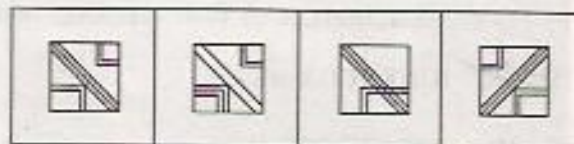
(A) (B) (C) (D)

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

Question figure :



Answer figures :



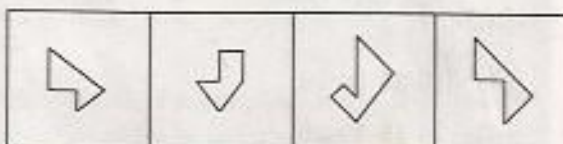
(A) (B) (C) (D)

49. From the answer figures, find out the figure pattern embedded in the question figure.

Question figure :



Answer figures :



(A) (B) (C) (D)

SPACE FOR ROUGH WORK

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 the 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. 'T' can be represented by 31, 76, etc. and 'S' can be represented by 14, 99, etc. Similarly, you have to identify the set for the word NEST.

MATRIX I

	0	1	2	3	4
0	G	V	E	A	C
1	R	O	N	S	S
2	M	N	E	S	I
3	O	T	I	T	A
4	N	S	N	E	P

MATRIX II

	5	6	7	8	9
5	R	E	O	N	G
6	N	P	V	E	S
7	M	T	I	O	N
8	E	A	I	C	O
9	N	T	A	R	S

- (A) 21, 85, 69, 31
(B) 12, 56, 99, 32
(C) 65, 68, 23, 87
(D) 58, 43, 13, 33

FOR VISUALLY HANDICAPPED
CANDIDATES ONLY

46. From the given alternatives, select the word which can be formed using the letters of the given word.

PATERFAMILIAS

- (A) FAMILY (B) TERMINATE
(C) TRANSFER (D) PREFER

47. If 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 are represented by α , β , ω , δ , θ , η , γ , μ , ν , ϕ respectively, then what is the value of $\frac{\omega\eta\gamma}{\theta} - \gamma\beta + \frac{\delta\alpha}{\omega}$?

- (A) $\beta\nu$ (B) $\phi\eta$
(C) $\omega\nu$ (D) $\theta\alpha$

48. Find the missing combination of letters to complete the alphabetic series.

AE, BG, ?, GN, KS

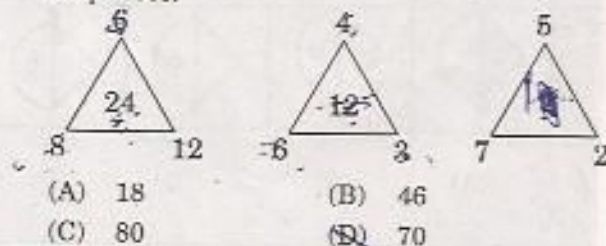
- (A) IJ (B) JL
(C) FJ (D) DJ

49. Select the related word from the given alternatives.

LACONIC : VERBOSE :: LAUDATORY : ?

- (A) DEFAMATORY
(B) SYMMETRY
(C) COMBINED
(D) COMPLETENESS

50. Select the missing number from the given responses.



SPACE FOR ROUGH WORK

PART - B : GENERAL AWARENESS

51. Who will head the Jury of the Awards Committees of Padma, Ratna and other highest honorary awards ?
 (A) Home Minister
 (B) Prime Minister of India
 (C) President of India
 (D) Vice-President of India
52. Most important responsibility of a Welfare State is
 (A) to check exploitation
 (B) to check encroachments on Fundamental Rights
 (C) to preserve private property
 (D) to promote religion of the people
53. Which of the following statements are correct ?
 1. Assam shares a border with Bangladesh and Bhutan.
 2. West Bengal shares a border with Bhutan and Nepal.
 3. Mizoram shares a border with Bangladesh and Myanmar.
 (A) 2, 3 (B) 1, 3
 (C) 1, 2, 3 (D) 1, 2
54. Arrange the following Presidents in chronological order as to who came first and who came later :
 1. Fakhruddin Ali Ahmed
 2. Zakir Hussain
 3. Justice Hidayatullah
 4. A.P.J. Abdul Kalam
 (A) 2, 1, 3, 4 (B) 2, 3, 4, 1
 (C) 3, 2, 1, 4 (D) 2, 3, 1, 4
55. Gross Domestic Product is the monetary value of
 (A) goods produced for the market only
 (B) goods produced for the market and for self consumption
 (C) stock of goods and services
 (D) all final goods and services produced in a year
56. Which one of the following market structures has a kinked demand curve ?
 (A) Oligopoly
 (B) Monopolistic competition
 (C) Perfect competition
 (D) Monopoly
57. Which of the following pairs is *not* correct ?
 (A) XI Plan - (2007 - 2012)
 (B) VI Plan - (1980 - 1985)
 (C) I Plan - (1951 - 1956)
 (D) III Plan - (1966 - 1971)
58. Which of the following institutions deals with credit to Agriculture and Rural Development ?
 (A) SIDBI (B) ICICI
 (C) IDBI (D) NABARD
59. As per the results of the 2011 Population Census, which of the following groups occupies the three top places in respect of literacy ?
 (A) Kerala, Lakshadweep, Mizoram
 (B) Mizoram, Kerala, Tripura
 (C) Kerala, Goa, West Bengal
 (D) Chandigarh, Goa, Kerala
60. District Judges in a State are appointed by the
 (A) Governor
 (B) Chief Justice of High Court
 (C) Advocate-General of the State
 (D) Council of Ministers of the State

61. Which of the following is called the 'Crossroads of the Pacific' ?
 (A) Hawaii (B) Ellice
 (C) Tonga (D) Fiji
62. Which one of the following is an act of man that disturbs the ecological balance ?
 (A) Lumbering
 (B) Social forestry
 (C) Vanamahotsav
 (D) Afforestation
63. Which one is **not** correctly matched ?
 (A) Glasgow — Great Britain
 (B) Pittsburg — U.S.A.
 (C) Longcoy — Russia
 (D) Rhine — Germany
64. How many States in India are coastal ?
 (A) 9 (B) 10
 (C) 7 (D) 8
65. International boundary between India and Pakistan is demarcated by
 (A) Radcliffe Line
 (B) Maginot Line
 (C) McMahon Line
 (D) Durand Line
66. Which one of the following is called the amphibian in plant kingdom ?
 (A) Bryophyta (B) Pteridophyta
 (C) Algae (D) Fungi
67. Find the odd one out.
 (A) Tapeworm (B) Ringworm
 (C) Hookworm (D) Guinea worm
68. National Institute of Nutrition is a research institute located in the State of
 (A) Madhya Pradesh
 (B) Uttar Pradesh
 (C) Andhra Pradesh
 (D) Himachal Pradesh
69. Which one of the following events are chronologically correct ?
 (A) Quit India Movement — Civil Disobedience Movement — Cabinet Mission Plan
 (B) Civil Disobedience Movement — The Cabinet Mission Plan — Quit India Movement
 (C) Civil Disobedience Movement — Quit India Movement — The Cabinet Mission Plan
 (D) The Cabinet Mission Plan — Civil Disobedience Movement — Quit India Movement
70. Who founded the Vikramasila University ?
 (A) Dharmapala (B) Mahipala
 (C) Dhruva (D) Devapala
71. Which of the following was **not** known during the Rigvedic period ?
 (A) Varna system (caste)
 (B) Marriage system
 (C) Joint family system
 (D) Agriculture
72. Match the following :
- | | <u>Dynasty</u> | <u>Founder</u> |
|----|----------------|------------------|
| a. | Pallavas | 1. Dantidurg |
| b. | Chalukyas | 2. Vishnuvardhan |
| c. | Rashtrakutas | 3. Simhavishnu |
| d. | Hoysalas | 4. Pulakesin I |
- | | a | b | c | d |
|-----|---|---|---|---|
| (A) | 1 | 4 | 2 | 3 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 2 | 1 | 4 | 3 |
| (D) | 3 | 4 | 1 | 2 |
73. Abul Fazl wrote
 (A) Akbar-Nama
 (B) Alamgir-Nama
 (C) Babur-Nama
 (D) Humayun-Nama

74. Which data communication method is used for sending data in both directions at the same time ?
 (A) Half duplex
 (B) Full duplex
 (C) Super duplex
 (D) Simplex
75. What does the acronym ISDN stand for ?
 (A) Intelligent Services Digital Network
 (B) Integrated Services Data Network
 (C) Indian Standard Digital Network
 (D) Integrated Services Digital Network
76. Darkening property of photochromatic glass is due to the presence of
 (A) silver nitrate
 (B) silver chloride
 (C) silver bromide
 (D) silver oxide
77. Supersonic aircrafts discharge the following substance into the stratosphere :
 (A) CO_2 (B) H_2
 (C) NO_x (D) SO_x
78. Chemical nature of laughing gas is
 (A) Nitrous oxide
 (B) Sulphur dioxide
 (C) Nitric oxide
 (D) Hydrogen chloride
79. The difference between isotopes of an element is due to the presence of a different number of
 (A) electrons (B) photons
 (C) protons (D) neutrons
80. The increasing abundance of greenhouse gases in the atmosphere has led to the following effects *except*
 (A) Oxygen fertilization effect
 (B) Carbon dioxide fertilisation effect
 (C) Global warming
 (D) Depletion of ozone layer in the stratosphere
81. A tree's age can be found by
 (A) counting the number of branches
 (B) no means
 (C) measuring its height
 (D) counting the number of annual rings
82. The left aortic arch is observed in
 (A) Reptiles (B) Aves
 (C) Amphibians (D) Mammals
83. Tendon connects
 (A) Bone to muscle
 (B) Muscle to muscle
 (C) Bone to bone
 (D) Muscle to bone
84. Mercury is generally used in thermometers because it has a
 (A) high conductivity
 (B) high specific heat
 (C) high fluidity
 (D) high density
85. To an observer on the lunar surface, during daytime, the sky will appear to be
 (A) Orange (B) Black
 (C) Light yellow (D) Blue
86. Which of the following quantities is the measure of 'inertia' ?
 (A) Mass (B) Weight
 (C) Velocity (D) Acceleration
87. The intensity of a wave
 1. follows inverse square law.
 2. is proportional to its amplitude.
 3. is proportional to the square of the amplitude.
 (A) Only 2 is true
 (B) 1 and 3 are true
 (C) 1 and 2 are true
 (D) 2 and 3 are true

88. In which of the following States, is the child-sex ratio the lowest as per the 2011 Census ?
 (A) Chhattisgarh (B) Bihar
 (C) Haryana (D) Punjab
89. Kaziranga National Park is situated in
 (A) Rajasthan (B) Assam
 (C) Odisha (D) Gujarat
90. Who is the author of the book 'If Cricket is Religion, Sachin is God' ?
 (A) Vijai Santhanam
 (B) Shyam Balasubramaniam
 (C) Both (A) and (B)
 (D) None of the above
91. Which of the following statements is *not* correct about Sunder Lal Bahuguna ?
 (A) He started the 'Chipko Movement' to create awareness of deforestation
 (B) He was elected to Lok Sabha from Uttarkashi in Uttarakhand
 (C) He is an eminent environmentalist
 (D) He was awarded Padma Bhushan in 2009
92. The three countries, in serial order, who won the highest number of gold medals in the Beijing Olympics Games were
 (A) China, Germany, Australia
 (B) China, Germany, USA
 (C) China, USA, Russia
 (D) China, USA, Germany
93. The first woman from India to be conferred the Sainthood by Pope Benedict XVI is
 (A) Sister Alphonsa
 (B) Sister Nirmala
 (C) Sister Desouza
 (D) Sister Madorana
94. Which of the following fuels causes minimum environmental pollution ?
 (A) Hydrogen (B) Coal
 (C) Diesel (D) Kerosene
95. Minamata epidemic that caused several deaths in Japan in 1965 occurred due to pollution in water by
 (A) Fluoride (B) DDT
 (C) Lead (D) Mercury
96. Ozone affects human health by causing severe pulmonary edema at a concentration of
 (A) 3.0 ppm (B) 9.0 ppm
 (C) 0.2 ppm (D) 0.3 ppm
97. The first President to sail in a submarine in India was
 (A) V.V. Giri
 (B) N. Sanjeeva Reddy
 (C) K.R. Narayanan
 (D) Dr. A.P.J. Abdul Kalam
98. Cooking vessels have wooden or bakelite handles because
 (A) the handle must be strong
 (B) the handle should be attractive
 (C) wood and bakelite are bad conductors of heat
 (D) None of the above
99. "Deshbandhu" is the title of
 (A) B.C. Pal
 (B) Rabindranath Tagore
 (C) B.R. Ambedkar
 (D) C.R. Das
100. Which one of the following pairs is *incorrect* ?
 (A) Abhinav Bindra — Rifle shooting
 (B) Sania Mirza — Badminton
 (C) Jeev Milkha Singh — Golf
 (D) Irfan Pathan — Cricket

PART - C : QUANTITATIVE APTITUDE

101. A completes a piece of work in 4 days and B completes it in 6 days. If they both work on it together, then the number of days required to complete the same work is
- (A) $2\frac{2}{5}$ days (B) $3\frac{2}{5}$ days
- (C) $3\frac{5}{2}$ days (D) $2\frac{5}{2}$ days
102. The length of the side of a square is 14 cm. Find out the ratio of the radii of the inscribed and circumscribed circle of the square.
- (A) $\sqrt{2} : 3$ (B) $2 : 1$
- (C) $\sqrt{2} : 1$ (D) $1 : \sqrt{2}$
103. A buys an article listed at ₹ 1200 and gets successive discounts of 10% and 20%. He spends 10% of his cost price on transport. At what price should he sell the article to earn a profit of 15%?
- (A) ₹ 1125 (B) ₹ 1100
- (C) ₹ 1130.75 (D) ₹ 1092.96
104. The ratio of milk and water in 55 kg of a mixture is 7 : 4. The quantity of water that must be added to make the ratio 7 : 6 is
- (A) 5 kg (B) 12 kg
- (C) 15 kg (D) 10 kg
105. The next term of the series 1, 2, 6, 24, 120, ... is
- (A) 720 (B) 810
- (C) 600 (D) 216
106. The greatest number of 5 digits to be added to 8321, so that the sum will be exactly divisible by 15, 20, 24, 27, 32 and 36 is
- (A) 99779 (B) 99879
- (C) 99360 (D) 99679
107. A and B invest in a business in the ratio 5 : 4. If 10% of the total profit goes to charity and A's profit share is ₹ 7,500, then the total profit is
- (A) ₹ 12,000 (B) ₹ 15,000
- (C) ₹ 7,500 (D) ₹ 10,000
108. If $\sqrt{3} = 1.732$, the value of $\frac{3 + \sqrt{6}}{5\sqrt{3} - 2\sqrt{12} - \sqrt{32} + \sqrt{50}}$ is
- (A) 1.414 (B) 1.732
- (C) 4.899 (D) 2.551
109. The remainder, when $17^{37} + 29^{37}$ is divided by 23, is
- (A) 17 (B) 29
- (C) 0 (D) 1

SPACE FOR ROUGH WORK

110. A motor car goes to a place at a speed of 20 km/hr and returns from there at a speed of 30 km/hr. The average speed (in km/hr) of the car in the entire journey is
- (A) 24 (B) 24.5
(C) 26 (D) 25
111. A man invests an amount of ₹ 15,860 in the names of his three sons A, B and C in such a way that they get the same amount after 2, 3 and 4 years respectively. If the rate of simple interest is 5%, then the ratio of amounts invested in the name of A, B and C is
- (A) 6 : 4 : 3 (B) 6 : 3 : 4
(C) 4 : 3 : 6 (D) 4 : 6 : 3
112. If $2a - \frac{2}{a} + 3 = 0$, the value of $(a^3 - \frac{1}{a^3} + 2)$ is
- (A) $-\frac{40}{7}$ (B) $-\frac{47}{8}$
(C) 5 (D) $-\frac{35}{8}$
113. If $x = \frac{\sqrt{3}}{2}$, then the value of $\sqrt{1+x} + \sqrt{1-x}$ will be
- (A) $\sqrt{3}$ (B) 2
(C) $\frac{1}{\sqrt{3}}$ (D) $2\sqrt{3}$
114. The average age of a group of 30 boys is 12 years. When 2 new boys join them, the average increases by $\frac{1}{4}$ year. What is the average age (in years) of the two new boys?
- (A) 14 (B) 16
(C) 12 (D) 13
115. Average of two numbers is 7.5 and square root of their product is 6. What are the numbers?
- (A) 10 and 5 (B) 12 and 3
(C) 13 and 2 (D) 9 and 6
116. The profit earned by a shopkeeper by selling an article at a gain of 8% is ₹ 28 more than when he sells it at a loss of 8%. The cost price of the article is
- (A) ₹ 175 (B) ₹ 165
(C) ₹ 170 (D) ₹ 190
117. Krishna has 12 oranges with him. He sells x of them at a profit of 10% and remaining at a loss of 10%. He gains 5% on the whole outlay. The value of x is
- (A) 9 (B) 10
(C) 7 (D) 8

SPACE FOR ROUGH WORK

if then

118. If $x^3 + y^3 = 35$ and $x + y = 5$, the value

of $\left(\frac{1}{x} + \frac{1}{y}\right)$ is

- (A) $\frac{5}{6}$ (B) $\frac{3}{5}$
(C) $\frac{4}{7}$ (D) $\frac{3}{8}$

119. If $\frac{x^2}{by + cz} = \frac{y^2}{cz + ax} = \frac{z^2}{ax + by} = 1$, then

the value of $\frac{a}{a+x} + \frac{b}{b+y} + \frac{c}{c+z}$ is

- (A) 1 (B) -2
(C) -1 (D) 2

120. The values of a and b ($a > 0$, $b < 0$) for which $8x^3 - ax^2 + 54x + b$ be a perfect cube are

- (A) $a = 18$, $b = -27$
(B) $a = 16$, $b = -9$
(C) $a = 12$, $b = -9$
(D) $a = 36$, $b = -27$

121. If G is the centroid and AD be a median with length 12 cm of ΔABC , then the value of AG is

- (A) 10 cm (B) 6 cm
(C) 4 cm (D) 8 cm

122. ABC is a right-angled triangle. AD is perpendicular to the hypotenuse BC . If $AC = 2 AB$, then the value of BD is

- (A) $\frac{BC}{4}$ (B) $\frac{BC}{5}$
(C) $\frac{BC}{2}$ (D) $\frac{BC}{3}$

123. The length of the portion of the straight line $8x + 15y = 120$ intercepted between the axes is

- (A) 16 units (B) 17 units
(C) 14 units (D) 15 units

124. If $(x + 1)$ and $(x - 2)$ be the factors of $x^3 + (a + 1)x^2 - (b - 2)x - 6$, then the values of a and b will be

- (A) 5 and 3 (B) 3 and 7
(C) 2 and 8 (D) 1 and 7

125. If x is real and $x^4 + \frac{1}{x^4} = 119$, then the

value of $\left(x - \frac{1}{x}\right)$ is

- (A) ± 3 (B) ± 2
(C) ± 4 (D) ± 9

126. If $a = \sqrt{2} + 1$, $b = \sqrt{2} - 1$, then the value of $\frac{1}{a+1} + \frac{1}{b+1}$ is

- (A) 1 (B) 2
(C) 9 (D) 3

127. If $a = 3 + 2\sqrt{2}$, then the value of

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

- (A) 204 (B) 212
(C) 192 (D) 240

SPACE FOR ROUGH WORK

128. The perimeter of a rhombus is 146 cm and one of its diagonals is 55 cm. The other diagonal is
 (A) 48 cm (B) 72 cm
 (C) 92 cm (D) 73 cm
129. ABCD is a cyclic quadrilateral. Sides AB and DC, when produced meet at the point P and sides AD and BC, when produced meet at the point Q. If $\angle ADC = 85^\circ$ and $\angle BPC = 40^\circ$, then $\angle CQD$ is equal to
 (A) 55° (B) 85°
 (C) 30° (D) 40°
130. In a right-angled triangle ABC, $AB = 2.5$ cm, $\cos B = 0.5$, $\angle ACB = 90^\circ$. The length of side AC, in cm, is
 (A) $\frac{5}{4}\sqrt{3}$ (B) $\frac{5}{16}\sqrt{3}$
 (C) $5\sqrt{3}$ (D) $\frac{5}{2}\sqrt{3}$
131. If $\cos \theta = \frac{4}{5}$, then the value of $\frac{\operatorname{cosec} \theta}{1 + \cot \theta}$ is
 (A) $\frac{5}{7}$ (B) $\frac{4}{7}$
 (C) $\frac{7}{5}$ (D) $\frac{2}{7}$
132. The value of θ ($0^\circ < \theta < 90^\circ$) for which $\frac{\cos \theta}{1 - \sin \theta} + \frac{\cos \theta}{1 + \sin \theta} = 4$ is
 (A) 45°
 (B) 60°
 (C) 30°
 (D) None of these
133. In ΔABC , AD is drawn perpendicular from A on BC. If $AD^2 = BD \cdot CD$, then $\angle BAC$ is
 (A) 60° (B) 90°
 (C) 30° (D) 45°
134. ABC is a triangle. The internal bisector of the angles $\angle A$, $\angle B$ and $\angle C$ intersect the circumcircle at X, Y and Z respectively. If $\angle A = 50^\circ$, $\angle CZY = 30^\circ$, then $\angle BYZ$ will be
 (A) 35° (B) 30°
 (C) 45° (D) 55°
135. If a circle with radius of 10 cm has two parallel chords 16 cm and 12 cm and they are on the same side of the centre of the circle, then the distance between the two parallel chords is
 (A) 5 cm (B) 8 cm
 (C) 2 cm (D) 3 cm
136. Two circles of radii 8 cm and 2 cm respectively touch each other externally at the point A. PQ is the direct common tangent of those two circles of centres O_1 and O_2 respectively. Then length of PQ is equal to
 (A) 4 cm (B) 8 cm
 (C) 2 cm (D) 3 cm
137. O is the orthocentre of the triangle ABC. If $\angle BOC = 120^\circ$, then $\angle BAC$ is
 (A) 135° (B) 90°
 (C) 150° (D) 60°
138. Circumcentre of ΔABC is O. If $\angle BAC = 85^\circ$, $\angle BCA = 80^\circ$, then $\angle OAC$ is
 (A) 60° (B) 75°
 (C) 80° (D) 30°

SPACE FOR ROUGH WORK

139. If $\cos \theta + \sec \theta = \sqrt{3}$, then the value of $\cos^3 \theta + \sec^3 \theta$ is

(A) -1 (B) $\sqrt{3}$
(C) 0 (D) 1

140. If for all real values of α , $x = \cos^4 \alpha + \sin^2 \alpha$, then the range in which x lies is

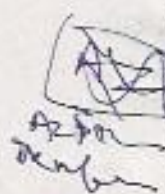
(A) $\frac{13}{16} \leq x \leq 1$ (B) $\frac{1}{2} \leq x \leq 2$

(C) $\frac{3}{4} \leq x \leq 1$ (D) $\frac{3}{4} \leq x \leq \frac{13}{15}$

141. The maximum value of $24 \sin \theta + 7 \cos \theta$ is

(A) 24 (B) 25
(C) 7 (D) 17

142. In ΔABC , $\angle A$ is a right angle and AD is perpendicular to BC . If $AD = 4$ cm, $BC = 12$ cm, then the value of $(\cot B + \cot C)$ is



(A) 4 (B) $\frac{3}{2}$
(C) 6 (D) 3

143. If $\sec \theta + \tan \theta = 2$, then $\sec \theta$ is equal to

Sec θ
tan θ

(A) $\frac{5}{2}$ (B) $\frac{5}{4}$

(C) $\frac{7}{4}$ (D) $\frac{7}{2}$

144. If $\tan 2\theta \cdot \tan 4\theta = 1$, then the value of $\tan 3\theta$ is

(A) $\frac{1}{2}$ (B) 2
(C) 0 (D) 1

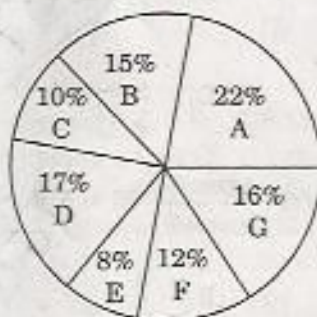
145. A pole broken by the storm of wind and its top struck the ground at an angle of 30° and at a distance of 20 m from the foot of the pole. The height of the pole before it was broken was

(A) $60\sqrt{3}$ m (B) $\frac{100\sqrt{3}}{3}$ m

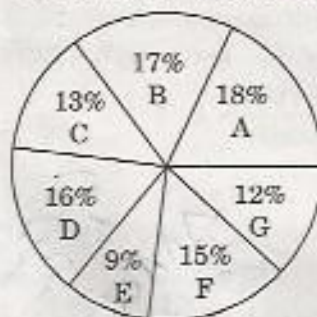
(C) $20\sqrt{3}$ m (D) $\frac{40\sqrt{3}}{3}$ m

Directions : Percentage of the candidates enrolled in seven different schools for the CBSE 10th examination and candidates who passed the examination is given by the following pie-graph. Study the graph and answer questions no. 146 - 150.

Candidates Enrolled = 8550



Candidates Passed = 5700



CATX A2

SPACE FOR ROUGH WORK

Calc

Explain

146. What is the ratio of candidates passed to the candidates enrolled from the school A ?

- (A) 6 : 7 (B) 7 : 6
(C) 6 : 11 (D) 11 : 6

147. What percentage of candidates passed to the candidates enrolled for the schools B and C together ?

- (A) 76 (B) 80
(C) 60 (D) 72

148. Which school has the highest percentage of candidates passed to the candidates enrolled ?

- (A) E (B) F
(C) B (D) C

149. The number of candidates passed from the schools D and A together exceeds the number of candidates enrolled from the schools E and C together by

- (A) 399 (B) 439
(C) 299 (D) 379

150. What percentage of candidates passed in the examination from school E out of total number of candidates enrolled from the same school ?

- (A) 75 (B) 80
(C) 60 (D) 65

**FOR VISUALLY HANDICAPPED
CANDIDATES ONLY**

146. A truck covers a distance of 600 meters in 1 minute whereas a bus covers a distance of 32 km in 40 minutes. The ratio of their speeds is

- (A) 3 : 4 (B) 4 : 5
(C) 1 : 2 (D) 2 : 3

147. The compound interest on a certain sum for 2 years is ₹ 4,100 and the simple interest is ₹ 4,000. Then the rate of interest is

- (A) 6% (B) 8%
(C) 4% (D) 5%

148. A shopkeeper bought 24 bags for ₹ 240. What will be his profit if he sells them at ₹ 15 each ?

- (A) ₹ 120 (B) ₹ 100
(C) ₹ 180 (D) ₹ 140

149. If a square is inscribed in a circle whose area is 314 sq. cm, then the length of each side of the square is
[Given $\pi = 3.14$]

- (A) 10 cm (B) $10\sqrt{2}$ cm
(C) $5\sqrt{2}$ cm (D) $20\sqrt{2}$ cm

150. In a bag, there are some 20-Rupees, 10-Rupees and 5-Rupees notes in the ratio 2 : 3 : 4. If there are in all ₹ 360 in the bag, how many 20-Rupees notes are there ?

- (A) 4 (B) 8
(C) 12 (D) 16

SPACE FOR ROUGH WORK

PART - D : ENGLISH COMPREHENSION

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

151. Some of the people / were standing on the street /
(A) (B)
watch cricket match, while others were sitting. / No error.
(C) (D)
152. I am glad / that the news / are good. / No error.
(A) (B) (C) (D)
153. The judge tested the accused / to see if he would / read English. / No error.
(A) (B) (C) (D)
154. I have neither visited / or intend / to visit hill stations. / No error.
(A) (B) (C) (D)
155. Kamala is not / inferior than Geetha / in her studies. / No error.
(A) (B) (C) (D)

Directions : In questions no. 156 to 160, sentences are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four and indicate it by blackening the appropriate rectangle [■] in the Answer Sheet.

156. I don't think I can _____ with him any longer.
(A) put up (B) put out
(C) put on (D) put off
157. The _____ of many temples in South and Central India surpasses even that of the Taj Mahal.
(A) appearance
(B) goodness
(C) magnificence
(D) look
158. C.V. Raman was an _____ scientist.
(A) itinerant (B) immanent
(C) eminent (D) imminent
159. He never drinks and drives. He is too _____ to do something silly like that.
(A) sensual (B) sensible
(C) sensuous (D) sensitive
160. On account of an accident, the traffic on the G.T. Road was _____.
(A) dislocated (B) distorted
(C) disturbed (D) disrupted

Directions : In questions no. 161 to 165, out of the four alternatives, choose the one which best expresses the meaning of the given word and mark it in the Answer Sheet.

161. Narcissism

- (A) self-admiration
- (B) rude behaviour
- (C) unpleasant behaviour
- (D) self-condemnation

162. Camouflage

- (A) demonstrate (B) fabric
- (C) disguise (D) cover

163. Yearn

- (A) confront (B) crave
- (C) deny (D) accept

164. Pensive

- (A) contemplative (B) precise
- (C) reluctant (D) unhappy

165. Impeccable

- (A) upright (B) harmless
- (C) inoffensive (D) flawless

Directions : In questions no. 166 to 170, choose the word opposite in meaning to the given word and mark it in the Answer Sheet.

166. Disparage

- (A) comfort (B) connect
- (C) compliment (D) convince

167. Garrulous

- (A) gruesome (B) creative
- (C) quiet (D) exaggerated

168. Augment

- (A) supplement (B) decrease
- (C) increase (D) defend

169. Amateurish

- (A) skilled (B) professional
- (C) seasoned (D) trained

170. Ignominious

- (A) honourable (B) clever
- (C) valuable (D) desirable

Directions : In questions no. 171 to 175, 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.

171. A good sportsman cannot afford to have a fit of the blues before the game.

- (A) stimulants
- (B) entertainment
- (C) steroids or drugs
- (D) depression

172. His utopian idea was entertaining but not acceptable.

- (A) classic idea
- (B) intelligent idea
- (C) unworthy idea
- (D) imaginary idea

173. He has the habit of getting into a row over trivial matters.

- (A) seeking the help
- (B) picking up a fight
- (C) getting a right path
- (D) giving unwanted advice

174. A small fry

- (A) little
- (B) important
- (C) unimportant
- (D) weak

175. Do not lose your head in public.

- (A) be embarrassed
- (B) shave your hair
- (C) get angry
- (D) get a headache

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

176. John is wearing his jacket as it is getting very cold.

- (A) getting on
- (B) putting on
- (C) taking on
- (D) No improvement

177. I worked in this office since 2005.

- (A) have worked
- (B) have been working
- (C) am working
- (D) No improvement

178. The host offered me tea but I denied it.

- (A) said no
- (B) rejected
- (C) refused
- (D) No improvement

179. Can any spiritually dead man be so as to have no love for his native country ?

- (A) Can any man be so spiritually dead as to have no love for his native country ?
- (B) Can any native man be so dead as to have no love for his spiritual country ?
- (C) Can any dead man be so as to have no spiritual love for his native country ?
- (D) No improvement

180. How can anyone sympathize with you when what you say is hardly gullible ?

- (A) credible
- (B) incredible
- (C) credulous
- (D) No improvement

Directions : In questions no. 181 to 185, out of the four alternatives, choose the one which can be substituted for the given words/sentence.

181. A person eighty years of age

- (A) Octogenarian
- (B) Sexogenarian
- (C) Septogenarian
- (D) Nonagenarian

182. Too much official formality

- (A) Diplomacy
- (B) Autocracy
- (C) Bureaucracy
- (D) Red-tapism

183. Enclosure for birds

- (A) Lair
- (B) Aviary
- (C) Pen
- (D) Nest

184. That cannot be conquered

- (A) Intangible
- (B) Inevitable
- (C) Invincible
- (D) Invulnerable

185. Hard to please

- (A) Fastidious
- (B) Epicurean
- (C) Loquacious
- (D) Stubborn

Directions : In questions no. 186 to 190, there are four different words out of which one is correctly spelt. Find the correctly spelt word and indicate it by blackening the appropriate rectangle [■] in the Answer Sheet.

186. (A) acqvisision
 (B) ackuisition
 (C) acquissition
 (D) acqisition
187. (A) demanstrative
 (B) attractive
 (C) reprasentative
 (D) adminestrative
188. (A) monarchy
 (B) discrapancy
 (C) hieararchy
 (D) anorchy
189. (A) referrence
 (B) relliancc
 (C) occurence
 (D) recurrence
190. (A) discriptive
 (B) receptive
 (C) cooperative
 (D) competitive

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

Passage I (191 - 195)

Unlike the masses, intellectuals have a taste for rationality and an interest in facts. Their critical habit of mind makes them resistant to the kind of propaganda that works so well on the majority. Intellectuals are the kind of people who demand evidence and are shocked by logical inconsistencies and fallacies. They regard over-simplification as the original sin of the mind and have no use for the slogans, the unqualified assertions and sweeping generalizations, which are the propagandist's stock-in-trade.

191. Intellectuals are the kind of people who
- (A) look for evidence in support of logical inconsistencies and fallacies
- (B) accept only those things which are logically consistent and well supported by evidence
- (C) demand logical inconsistencies and fallacies
- (D) ignore faulty logic and wrong beliefs

192. 'Fallacies' means

- (A) illogical arguments
- (B) inconsistencies
- ☒ (C) false evidence
- (D) false beliefs

193. A trait which intellectuals do not possess is

- ☒ (A) over-simplification
- (B) logical thinking
- (C) critical thinking
- (D) rationality

194. The first sentence of the passage suggests that

- (A) intellectuals behave like individuals, not like members of a crowd
- (B) individuals are intellectuals
- ☒ (C) all individuals have a taste for rationality and an interest in facts
- (D) groups consist of intellectuals

195. The majority of people

- ☒ (A) work well with intellectuals
- (B) possess a critical habit of mind
- (C) resist propaganda
- (D) do not possess a critical habit of mind

Passage II (196 - 200)

Unquestionably, a literary life is for the most part an unhappy life, because, if you have genius, you must suffer the penalty of genius; and if you have only talent, there are so many cares and worries incidental to the circumstances of men of letters, as to make life exceedingly miserable. Besides the pangs of composition, and the continuous disappointment which a true artist feels at his inability to reveal himself, there is the ever-recurring difficulty of gaining the public ear. Young writers are buoyed up by the hope and the belief, that they have only to throw that poem at the world's feet to get back in return the laurel-crown; that they have only to push that novel into print to be acknowledged at once as a new light in literature. You can never convince a young author that the editors of magazines and the publishers of books are a practical body of men, who are by no means frantically anxious about placing the best literature before the public. Nay, that, for the most part, they are mere brokers, who conduct their business on the hardest lines of a Profit and Loss account. But supposing your book fairly launches, its perils are only beginning. You have to run the gauntlet of the critics. To a young author, again, this seems to be a terrible order. When you are a little older, you will find that criticism is not

much more serious than the bye-play of clowns in a circus, when they beat about the ring the victim with bladders slung at the end of long poles. A time comes in the life of every author when he regards critics as comical, rather than formidable; and goes his way unheeding. But there are sensitive souls that yield under the chastisement, and, perhaps, after suffering much silent torture, abandon the profession of the pen for ever. Keats, perhaps, is the saddest example of a fine spirit hounded to death by savage criticism; because, whatever his biographers may aver, that furious attack of Gifford and Terry undoubtedly expedited his death. But no doubt there are hundreds who suffer keenly from hostile and unscrupulous criticism; and who have to bear that suffering in silence, because it is a cardinal principle in literature that the most unwise thing in the world for an author is to take public notice of criticism in the way of defending himself. Silence is the only safeguard, as it is the only dignified protest against insult and offence.

196. The writer's attitude towards the literary critics is of

- (A) scorn
- ☒ (B) respect
- (C) reverence
- (D) indifference

197. The writer's advice to the literary artists regarding criticism of their work is to

- (A) withdraw it
- ☒ (B) maintain perfect silence
- (C) defend it publicly
- (D) protest against it

198. It is an established fact that our literary artists are

- (A) unhappy
- ☒ (B) successful
- (C) geniuses
- (D) talented

199. Young writers are

- (A) candid
- ☒ (B) canny
- (C) over-confident
- (D) sceptical

200. The literary publishers publish only what is

- ☒ (A) topical
- (B) handy
- (C) best
- (D) saleable