

PART - A

GENERAL INTELLIGENCE AND REASONING

Directions for question no. 1 to 9:

Select the related letter/word/number from the given alternatives:

1. EVFU : TGSJ :: IRJQ : ?
 (A) KWLX (B) PKOL
 (C) OLPK (D) PKLO
2. L × M : 12 × 13 :: U × W : ?
 (A) 21 × 22 (B) 24 × 26
 (C) 9 × 11 (D) 21 × 23
3. CFIL : XURO :: ORUX : ?
 (A) ROLI (B) RITO
 (C) LIFC (D) MJFC
4. CFIL : ABCD :: ? : WXYZ
 (A) ZYXW (B) DCBA
 (C) JHPS (D) XURO
5. Zoology : Animal :: Psychology : ?
 (A) Animal
 (B) Human-being
 (C) Animal and human-being
 (D) Plant
6. Life starts : embryo :: Life ends : ?
 (A) Old age (B) Dead body
 (C) Illness (D) Death
7. Man : Mammal :: ?
 (A) Hail : Snow
 (B) Native : Inhabitant
 (C) Offspring : Family
 (D) Liberty : Literate
8. 1 : 8 :: 4 : ?
 (A) 64 (B) 512
 (C) 128 (D) 32
9. 6 : 2 :: 8 : ?
 (A) 1 (B) 3
 (C) 7 (D) 5

Directions : In question no. 10 to 20 find the odd number/letters/number pair from the given alternatives.

10. (A) 81 (B) 93
 (C) 66 (D) 72
11. (A) Frog (B) Tortoise
 (C) Crab (D) Fish
12. (A) 186 - 69 (B) 168 - 570
 (C) 1001 - 100 (D) 5270 - 2936
13. (A) (64, 216) (B) (216, 02)
 (C) (343, 01) (D) (125, 27)
14. (A) Jammu and Kashmir
 (B) Haryana
 (C) Himachal Pradesh
 (D) Arunachal Pradesh
15. (A) IVEF (B) VEENS
 (C) EINN (D) VEIIDD
16. (A) 17 (B) 27
 (C) 37 (D) 47
17. (A) 63852 (B) 52638
 (C) 28751 (D) 85362
18. (A) Number (B) Form
 (C) Weight (D) Size
19. (A) Commission (B) Team
 (C) Agenda (D) Board
20. (A) Addition (B) Subtract
 (C) Multiplication (D) Division

Directions : In question no. 21 to 24 a series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.

21. DF, GJ, KM, NQ, RT, ?

- (A) UW (B) YZ
(C) XZ (D) UX

22. BIP ? D

- (A) W (B) S
(C) R (D) U

23. AAC BBD CCE DDF EEG F ?

- (A) FG (B) GH
(C) FH (D) DG

24. RAZ SBY TCX UDW VEV ?

- (A) WFU (B) FWU
(C) XGX (D) ZAT

Directions : In question no. 25 and 26, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it ?

25. a _ ba _ c _ aad _ aa _ ea

- (A) babbd (B) babbc
(C) bacde (D) babbb

26. aa _ aa bb _ b _ aa _ aa bb _ bb.

- (A) bbbba (B) aabbb
(C) babba (D) bbbaa

27. If DEAF is equal to 32, what will be LEAF = ?

- (A) 48 (B) 50
(C) 52 (D) 56

28. In a certain code, "CERTAIN" is coded as "XVIGZRM", "SEQUENCE" is coded as "HVJFVMXV". How would "REQUIRED" be coded ?

- (A) VJIFWTRV (B) WVJRIFVI
(C) IVJFRIVW (D) FJIVWVIR

29. If P denotes \div , Q denotes \times , R denotes $+$, and S denotes $-$, then $18 Q 12 P 4 R 5 S 6 = ?$

- (A) 53 (B) 51
(C) 57 (D) 95

$$18 \times 12 \div 4 + 5 - 6 = 18 \times 3 + 5 - 6 = 54 + 5 - 6 = 53$$

30. Find the wrong number in the series from the given alternatives.

17, 36, 53, 68, 83, 92

- (A) 53 (B) 68
(C) 83 (D) 92

$$\begin{array}{r} 83 \\ - 28 \\ \hline 15 \end{array}$$

Directions : In question no. 31 from the given alternatives select the word which cannot be formed using the letters of the given word.

31. 'CONSTITUTIONAL'

- (A) LOCATION (B) TUTION
(C) TALENT (D) CONSULT

32. If $25 \div 5 = 15$, $30 \div 6 = 20$, then $35 \div 7 = ?$

- (A) 20 (B) 50
(C) 25 (D) 75

33. If $33 + 45 = 30$, $90 + 26 = 40$, then $30 + 45 = ?$

- (A) 14 (B) 16
(C) 18 (D) 15

34. It was Shriram's and Sreedevi's 12th Wedding Anniversary. Shriram said "When we got married, Sreedevi was $\frac{3}{4}$ th of my age, but now she is $\frac{5}{6}$ th of my age". What actually are their present ages ?

- (A) Shriram 36, Sreedevi 30
(B) Shriram 30, Sreedevi 24
(C) Shriram 40, Sreedevi 34
(D) Shriram 38, Sreedevi 32

35. If $64 \div 14 = 5$, $92 \div 31 = 7$, $26 \div 11 = 6$, then $56 \div 22 = ?$

- (A) 39 (B) 7
(C) 36 (D) 11

Directions : In question no. 36 and 37 select the missing number from the given responses.

36.



(A) 2

~~(C) 4~~

(B) 3

(D) 6

37.

7	6	9
2	8	4
4	3	?
36	42	26

~~(A) 2~~

(C) 4

(B) 3

(D) 5

38. Sheryl starting from a fixed point goes 15 m towards North and then after turning to his right he goes 15 m. Then he goes 10, 15 and 15 metres after turning to his left each time. How far is he from his starting point?

(A) 5 metres

(C) 20 metres

~~(B) 10 metres~~

(D) 15 metres

39. Ram and Sham start walking in opposite directions. Ram covers 6 kms and Sham 8 kms. Then Ram turns right and walks 8 kms and Sham turns left and walks 6 kms. How far each is from the starting point?

(A) 8 kms

~~(C) 10 kms~~

(B) 9 kms

(D) 11 kms

Question No. 40 and 41.

40. Two statements are followed by 2 conclusions numbered I and II. Which one of the four alternatives is correct?

Statement I : All teachers are aged.

Statement II : Some women are teachers.

Conclusion I : All aged are women.

Conclusion II : Some women are aged.

(A) Only conclusion I follows

~~(B) Only conclusion II follows~~

(C) Neither conclusion I nor II follows

(D) Both conclusion I and II follow

41. Statement I : All skaters are good swimmers.

Statement II : All good swimmers are runners.

Conclusion I : Some runners are skaters. ✓

Conclusion II : Some skaters are good swimmers.

~~(A) Only conclusion I follows~~

(B) Only conclusion II follows

(C) Both conclusion I and II follow

(D) Neither conclusion I nor II follow

42. If Alphabets are serially numbered, one of the answers given below has a meaningful word hidden in it. Identify the answer.

(A) 5, 1, 3, 5, 20, 8, 18

~~(B) 18, 5, 8, 1, 3, 5, 20~~

(C) 20, 5, 8, 1, 3, 5, 18

(D) 5, 18, 5, 8, 1, 3, 5, 20

43. If LUXOR is coded as 30, then GUILDS will be coded as ?

(A) 36

(C) 24

(B) 38

(D) 40

44. In the following list of English alphabets, one alphabet has not been used. Identify the same.
 XNFAPSRWLTMD EXMGB
 CXQJLOPVR CQJZOHSG
 ODIPTSMRAB EFGNUNE

(A) I (B) K
 (C) J (D) V

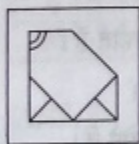
45. How many 9's are followed by and preceded by numbers divisible by 2?

8965359683496526973729413794173
 498453976153195742968532957489451

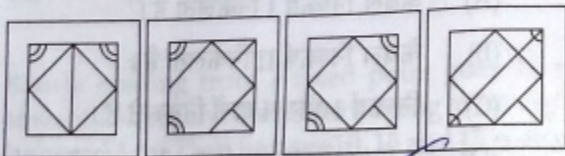
(A) 6 (B) 8
 (C) 10 (D) 12

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

Question figure



Answer figures



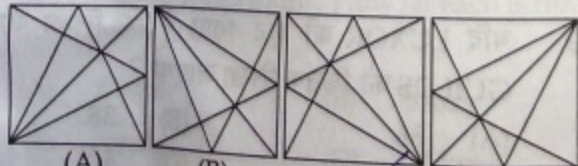
(A) (B) (C) (D)

Directions : In question no. 47, which answer figure will complete the question figure?

47. Question figure



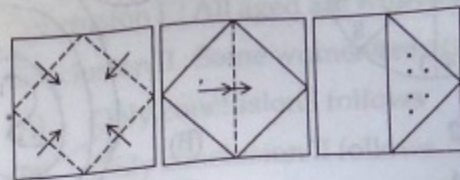
Answer figures



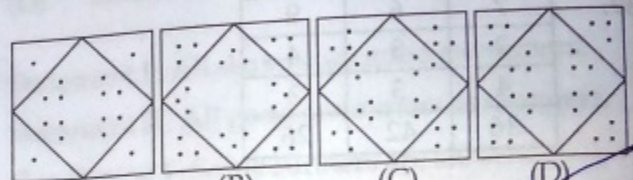
(A) (B) (C) (D)

48. A square sheet of paper has been folded and punched as shown below. You have to figure out from amongst the four response figures, how it will appear when opened?

Question figure



Answer figures



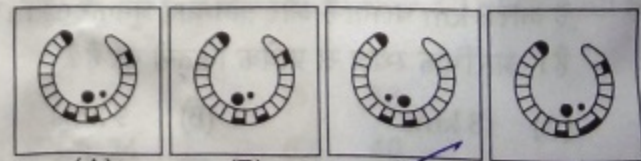
(A) (B) (C) (D)

Directions : In question no. 49, if a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

49. Question figure



Answer figures



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

Directions : (Question No. 50) A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, e.g., '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 STAR.

50.

Matrix - I					
	0	1	2	3	4
0	G	V	E	A	C
1	R	O	N	G	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) 23, 76, 33, 98

(B) 14, 87, 98, 97

(C) 69, 96, 03, 56

(D) 99, 31, 86, 98

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46. In an examination, Ravi got 8 marks less than 80% of total marks and Amit got 5 marks more than 70% of total marks. Ravi secured 2 marks more than Amit. How many marks did Ravi secure ?

(A) 220

(B) 120

(C) 112

(D) 96

Directions : In question no. 47, from the given alternatives select the word which **cannot** be formed using the letters given in the word.

47. CORRESPONDENT

(A) DESPARATE

(B) CORE

(C) RESPOND

(D) PONDER

Directions : In question no. 48 and 49, select the missing number/letters from the given responses.

48. 1, 2, 8, 33, 148, ?

(A) 265

(B) 465

(C) 565

(D) 765

49. EV, GT, JQ, ?

(A) OP

(B) LN

(C) NM

(D) MN

50. ZHYG : XFWI :: ? : UCTB

(A) WEVD

(B) WFYE

(C) DEVW

(D) VDUC

GENERAL AWARENESS

51. Who decides the disputes regarding election of President?
 (A) The Supreme Court
 (B) The Election Commission
 (C) The Parliament
 (D) Both Supreme Court and High Courts
52. An apparatus used for locating submerged objects is known as:
 (A) radar
 (B) sonar
 (C) quasar
 (D) pulsar
53. Near which one of the following cities, the Palitana Temples are situated?
 (A) Bhav Nagar
 (B) Mount Abu
 (C) Mearke
 (D) Ujjain
54. Main cause for agitations for separate states in India is
 (A) regionalism
 (B) growing regional imbalances
 (C) people's political consciousness
 (D) social inequalities
55. Law of 'Use and disuse' was proposed by:
 (A) Hugo De Vries
 (B) Lederberg
 (C) Lamarck
 (D) Darwin
56. Which revenue earned by Union Government is not distributed among State Governments?
 (A) Excise duty
 (B) Income tax
 (C) Customs duty
 (D) None of these
57. The substance that causes the worst air pollution is
 (A) smoke
 (B) sulphur dioxide
 (C) carbon dioxide
 (D) carbon monoxide
58. Two bodies of the same mass are thrown with equal speed from the top of a tower simultaneously. One body (x) is thrown vertically downwards. The other (y) is thrown horizontally.
 (A) Both x and y reaches ground simultaneously
 (B) Both reaches ground with same Kinetic energy
 (C) x reaches ground with greater Kinetic energy
 (D) y reaches ground with greater Kinetic energy
59. The rocket which gives us information about Mars is:
 (A) Cassinie
 (B) Discovery
 (C) Insat 4
 (D) Atlas 5
60. JDBC stands for
 (A) Java Data Base Conductivity
 (B) Java Developer Connectivity
 (C) Java Database Connectivity
 (D) Java Developing Connectivity
61. Choose the correct one from among the following:
 (A) Siksha - astrology
 (B) nirukta - metre
 (C) jyotisha - phonetics
 (D) vyakarana - grammar
62. The famous book "A Better India, A better world" has been written by:
 (A) Rajiv Sikri
 (B) Azim Prem Ji
 (C) N. R. Narayana Murthy
 (D) Praveen Mahapatra
63. The world's fastest growing water plant is
 (A) Water Chestnut
 (B) Amazon water lily
 (C) Water hyacinth
 (D) Utricularia
64. The International agreement to reduce greenhouse gases between 2008 - 2012 is known as:
 (A) Agenda 21
 (B) Rule of 70
 (C) Rio Protocol
 (D) Kyoto Protocol
65. Which of the following has recently produced the first cloned camel?
 (A) U. S. A.
 (B) DUBAI
 (C) IRAN
 (D) SYRIA
66. The Newzealander's are also known as
 (A) Sams
 (B) Kiwis
 (C) Arabs
 (D) Orientals
67. Find the odd one out:
 (A) EXIM Bank - Financial assistance to exporters and importers
 (B) IDBI - Financial assistance to large industries
 (C) SIDBI - Financial assistance to small industries
 (D) FCI - Financial assistance to food-grains merchants

68. Who is the first Law Officer of the Government of India ?
 (A) The Chief Justice of India
 (B) Law Secretary
 (C) Union Law Minister
 (D) Attorney General of India
69. 'Milk of magnesia' is a suspension of
 (A) Magnesium sulphate
 (B) Magnesium carbonate
 (C) Magnesium hydroxide
 (D) Magnesium chloride
70. If all the plants of the world dies, all the animals would also die due to shortage of
 (A) Shelter (B) Cold air
 (C) Food (D) Oxygen
71. A person opens his mouth on hearing a thunder in order to
 (A) over come fear
 (B) equalise pressure of air on both sides of the ear drum
 (C) receive more sound
 (D) allow air to come out of the mouth
72. 'El Nino effect' is closely associated with
 (A) Gulf current
 (B) Humboldt current
 (C) Equatorial counter current
 (D) Canaries current
73. If a bacterium cell divides in every 20 minutes, how many bacteria will be formed in two hours ?
 (A) 4 (B) 16
 (C) 8 (D) 64
74. The state of Jhansi was made a part of the British empire in India through the :
 (A) Doctrine of Lapse
 (B) Policy of Subsidiary alliance
 (C) War against Rani Lakshmi Bai
 (D) None of these
75. *Pila globosa* is used as biofilter in cleaning pollution of water by :
 (A) Algal blooms (B) Mercury
 (C) Arsenic (D) Cadmium
76. As per 2011 census, in India the number of females per thousand males is
 (A) 972 (B) 940
 (C) 934 (D) 933
77. Chemical name of Plaster of Paris is
 (A) Calcium sulphate
 (B) Hydrated calcium carbonate
 (C) Calcium hydrate
 (D) Calcium sulphate hemihydrate
78. Who was the first envoy of the East Company to meet Jahangir in 1608 A.D ?
 (A) William Hawkins
 (B) William Edwards
 (C) Sir Thomas Roe
 (D) Edward Terry
79. Carbohydrates are compounds of
 (A) Carbon and hydrogen
 (B) Carbon, oxygen and hydrogen
 (C) Carbon, nitrogen and hydrogen
 (D) Carbon and nitrogen
80. The growth of bacteria is measured by
 (A) auxanometer
 (B) hemacytometer
 (C) spectrophotometer
 (D) calorimeter
81. A government is classified as federal or unitary on the basis of
 (A) Relations between the centre and states
 (B) Relations between the executive and the legislature
 (C) Relations between three organs of government
 (D) None of the above
82. 'EVM' stands
 (A) Electric Vending Machine
 (B) Electronic Vending Machine
 (C) Electronic Voting Machine
 (D) None of the above
83. When ice is heated from 0°C to 10°C , the volume of water
 (A) Increases steadily
 (B) Decreases steadily
 (C) First increases then decreases
 (D) First decreases then increases
84. Mammals form urea in the :
 (A) Liver (B) Kidney
 (C) Spleen (D) Bladder

85. Wanchoo Committee dealt with
 (A) Agricultural Prices
 (B) Agricultural Taxation
 (C) Direct Taxes
 (D) Monopolies and Trade Practices
86. Which of the following are **wrongly** matched ?
 (i) Tropic of Cancer - $23\frac{1}{2}^{\circ}$ N latitude
 (ii) Tropic of Capricorn - $66\frac{1}{2}^{\circ}$ N latitude
 (iii) International Date line - 0° longitude
 (iv) Antarctic Circle - $66\frac{1}{2}^{\circ}$ S latitude
 (A) (i)
~~(B) (ii) and (iii)~~
 (C) (i), (ii) and (iv)
 (D) None of these
87. The tributary of River Indus which flows through Himachal Pradesh is
 (A) Hunza (B) Sutlej
 (C) Beas (D) Ravi
88. Which one of the following is an essential ingredient of parliamentary government ?
~~(A) A written constitution~~
 (B) A rigid constitution
 (C) Political parties
 (D) An Independent judiciary
89. Through which states does the river Chambal flows ?
~~(A) U.P., M.P., Rajasthan~~
 (B) M.P., Gujarat, U.P.
 (C) Rajasthan, M.P., Bihar
 (D) Gujarat, M.P., Chhattisgarh
90. The contents of memory will not be lost, when the power goes off in _____
 (A) ROM (B) EPROM
 (C) EEPROM (D) All the above
91. Simple Goitre is a disease affecting :
 (A) Gums (B) Tear glands
 (C) Liver ~~(D) Thyroid glands~~
92. The word 'Secular' is a part of the Preamble of the Constitution of India :
~~(A) after the 42nd amendment~~
 (B) after the 44th amendment
 (C) after the 73rd amendment
 (D) from the date of implementation
93. The Programme which is being implemented in all the districts of the country is :
 (A) Navoday Vidyalaya
 (B) Rajiv Gandhi Gramin Vidyutikaran Yojna
 (C) Sarva Shiksha Abhiyan
~~(D) M. G. N. R. E. G. Programme~~
94. Which one of the following Cricketers has been declared by the ICC as 'Cricketer of the Twentieth Century' ?
 (A) Anil Kumble
~~(B) Sachin Tendulkar~~
 (C) Kapil Dev
 (D) Rahul Dravid
95. As per the 2011 population census, the most populous state in the country is
 (A) Rajasthan
 (B) Madhya Pradesh
~~(C) Uttar Pradesh~~
 (D) West Bengal
96. Which one of the following is not an internal factor for industrial sickness ?
 (A) Mismanagement
 (B) Diversion of funds
~~(C) Technological Obsolescence~~
 (D) Wrong dividend policy
97. Vikramshila University was founded by
 (A) Chandra Gupta Maurya
 (B) Kanishka
 (C) Dharampala
 (D) Pulakesin II
98. Acidity of rain is measured by
 (A) Barometer (B) Hygrometer
 (C) Ammeter ~~(D) pH-meter~~
99. For which one of the following, are honey bees used ?
 (A) Sericulture (B) Apiculture
~~(C) Horticulture~~ (D) Pisciculture
100. Chlorination is
 (A) a process of converting chlorides into chlorine
 (B) adding small amounts of chloride to contaminated water
 (C) a chemical reaction in which chlorine is formed
 (D) the formation of a salt containing chlorine

PART - C
QUANTITATIVE APTITUDE

101. The average temperature of Monday, Tuesday and Wednesday was 30°C and that of Tuesday, Wednesday and Thursday was 33°C . If the temperature on Monday was 32°C , then the temperature on Thursday was:

- (A) 30°C (B) 31°C
(C) 32°C (D) 33°C

102. A watch is sold at a profit of 30%. Had it been sold for ₹ 80 less, there would have been a loss of 10%. What is the cost price in rupees?

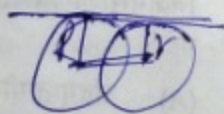
- (A) 200 (B) 400
(C) 800 (D) 150

103. The mean of 19 observations is 24. If the mean of the first 10 observations is 17 and that of the last 10 observations is 24, find the 10th observation.

- (A) 37 (B) 46
(C) 53 (D) 65

104. R and r are the radius of two circles ($R > r$). If the distance between the centre of the two circles be d, then length of common tangent of two circles is:

- (A) $\sqrt{d^2 - (R - r)^2}$
(B) $\sqrt{(R - r)^2 - d^2}$
(C) $\sqrt{R^2 - d^2}$
(D) $\sqrt{r^2 - d^2}$



105. O is the circum centre of the triangle ABC with circumradius 13 cm. Let $BC = 24$ cm and OD is perpendicular to BC. Then the length of OD is:

- (A) 3 cm (B) 4 cm
(C) 5 cm (D) 7 cm

106. If a commission of 10% is given on the marked price of a work, the publisher gains 20%. If the commission is increased to 15%, the gain percentage is:

- (A) $16\frac{2}{3}\%$ (B) $13\frac{1}{3}\%$
(C) $15\frac{1}{6}\%$ (D) 15%

107. If $(5x^2 - 3y^2) : xy = 11 : 2$, then the positive value of x/y is:

- (A) $5/2$ (B) $3/2$
(C) $5/3$ (D) $7/2$

108. A boy standing in the middle of a field, observes a flying bird in the north at an angle of elevation of 30° and after 2 minutes, he observes the same bird in the south at an angle of elevation of 60° . If the bird flies all along in a straight line at a height of $50\sqrt{3}$ m, then its speed in km/h is:

- (A) 3 (B) 9
(C) 6 (D) 4.5

109. By selling 9 articles for a rupee, a man incurred a loss of 4%. To make a gain of 44%, the number of articles to be sold for a rupee is:

- (A) 3 (B) 4
(C) 6 (D) 5

110. By decreasing 15° of each angle of a triangle, the ratios of their angles are 2 : 3 : 5. The radian measure of greatest angle is:

- (A) $\pi/12$ (B) $\pi/24$
(C) $5\pi/24$ (D) $11\pi/24$

SPACE FOR ROUGH WORK

$$\frac{5x^2 - 3y^2}{xy} = \frac{11}{2}$$

$$\frac{10x^2 - 6y^2}{2xy} = \frac{11 \times 2}{2 \times 2}$$

$$10x + 4y = 180$$

$$n = \frac{136 \times 8}{10}$$

111. AB is a diameter of a circle with centre O. CD is a chord equal to the radius of the circle. AC and BD are produced to meet at P. Then the measure of $\angle APB$ is:

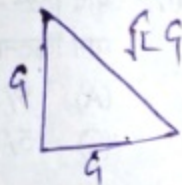
- (A) 30° (B) 60°
(C) 90° (D) 120°

112. The least value of $4 \operatorname{cosec}^2 \alpha + 9 \sin^2 \alpha$ is:

- (A) 10 (B) 11
(C) 12 (D) 14

113. The perimeter of an isosceles right-angled triangle is $2p$ unit. The area of the same triangle is:

- (A) $(2 + \sqrt{2})p^2$ sq. unit
(B) $(2 - \sqrt{2})p^2$ sq. unit
(C) $(3 - \sqrt{2})p^2$ sq. unit
(D) $(3 - 2\sqrt{2})p^2$ sq. unit



114. If G is the centroid of ΔABC and $AG = BC$, then $\angle BGC$ is:

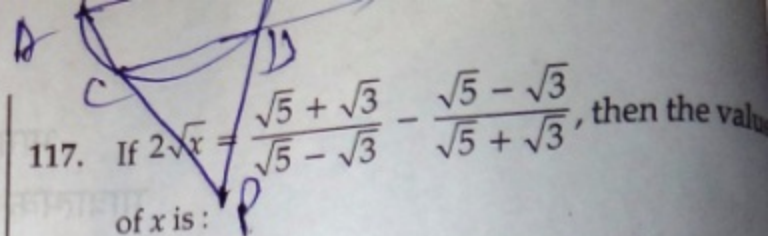
- (A) 45° (B) 90°
(C) 60° (D) 75°

115. Prabhat took a certain amount as a loan from a bank at the rate of 8% p.a. simple interest and gave the same amount to Ashish as a loan at the rate of 12% p.a. If at the end of 12 years, he made a profit of ₹ 960 in the deal, then the original amount was:

- (A) ₹ 1000 (B) ₹ 2000
(C) ₹ 3000 (D) ₹ 3356

116. In a right-angled triangle ABC, $\angle B$ is the right angle and $AC = 2\sqrt{5}$ cm. If $AB - BC = 2$ cm, then the value of $(\cos^2 A - \cos^2 C)$ is:

- (A) $3/5$ (B) $6/5$
(C) $3/10$ (D) $2/5$



117. If $2\sqrt{x} = \frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}} - \frac{\sqrt{5} - \sqrt{3}}{\sqrt{5} + \sqrt{3}}$, then the value of x is:

- (A) 30 (B) $\sqrt{15}$
(C) 15 (D) 6

118. If $\tan(x+y)\tan(x-y) = 1$, then the value of $\tan x$ is:

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

119. If $ax + by = 6$, $bx - ay = 2$ and $x^2 + y^2 = 4$, then the value of $(a^2 + b^2)$ would be:

- (A) 2 (B) 4
(C) 5 (D) 10

120. The perimeters of two similar triangles ΔABC and ΔPQR are 36 cm and 24 cm respectively. If $PQ = 10$ cm, then AB is:

- (A) 10 cm (B) 15 cm
(C) 20 cm (D) 25 cm

121. P is a point outside a circle and is 13 cm away from its centre. A secant drawn from the point P intersects the circle at points A and B in such a way that $PA = 9$ cm and $AB = 7$ cm. The radius of the circle is:

- (A) 5 cm (B) 4 cm
(C) 4.5 cm (D) 5.5 cm

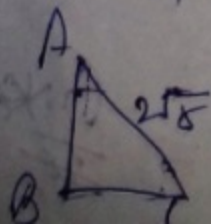
122. The next term of the series

$-1, 6, 25, 62, 123, 214, \dots$ is:

- (A) 143 (B) 341
(C) 343 (D) 345

SPACE FOR ROUGH WORK

$$2a + \sqrt{2}a = \sqrt{2}a(1 + \sqrt{2}) = 2p \Rightarrow a = \frac{2p}{2 + \sqrt{2}} \cdot \frac{1}{\sqrt{2}}$$



$$x^2 + y^2 = 20$$

$$x - y = 2$$

$$\frac{1}{\sqrt{2}} \times \frac{2}{(2 + \sqrt{2})} \times \frac{2}{(2 + \sqrt{2})}$$

123. $\frac{1 + 876542 \times 876544}{876543 \times 876543}$ is equal to
 (A) 0 (B) 1
 (C) 2 (D) 3
124. The greatest no. that will divide 19, 35 and 59 to leave the same remainder in each case is :
 (A) 6 (B) 7
 (C) 8 (D) 9
125. If $\cot A + \operatorname{cosec} A = 3$ and A is an acute angle, then the value of $\cos A$ is :
 (A) 1 (B) $1/2$
 (C) $3/4$ (D) $4/5$
126. The area of the largest triangle that can be inscribed in a semi circle of radius x in square unit is :
 (A) x^2 (B) $2x^2$
 (C) $3x^2$ (D) $4x^2$
127. If $a = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$, $b = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$, then the value of $\frac{a^2}{b} + \frac{b^2}{a}$ is :
 (A) 970 (B) 1030
 (C) 930 (D) 900
128. If $a + \frac{1}{a+2} = 0$, then the value of $(a+2)^3 + \frac{1}{(a+2)^3}$ is :
 (A) 6 (B) 4
 (C) 3 (D) 2
129. The simplified value of $1 - \frac{\sin^2 A}{1 + \cos A} + \frac{1 + \cos A}{\sin A} - \frac{\sin A}{1 - \cos A}$ is :
 (A) 0 (B) 1
 (C) $\sin A$ (D) $\cos A$

130. If $x = 2 + \sqrt{3}$, then the value of $\sqrt{x} + \frac{1}{\sqrt{x}}$ is :
 (A) $\sqrt{6}$ (B) $2\sqrt{6}$
 (C) 6 (D) $\sqrt{3}$
131. A jar contains a mixture of two liquids A and B in the ratio 4 : 1. When 10 lt of the mixture is replaced with liquid B, the ratio becomes 2 : 3. The volume of liquid A present in the jar earlier was :
 (A) 10 lt (B) 16 lt
 (C) 15 lt (D) 20 lt
132. Area of the triangle formed by the graph of the line $2x - 3y + 6 = 0$ along with the coordinate axes is :
 (A) $3/2$ sq. units (B) 3 sq. units
 (C) 6 sq. units (D) $1/2$ sq. units
133. If α is a positive acute angle and $2\sin \alpha + 15\cos^2 \alpha = 7$, then the value of $\cot \alpha$ is :
 (A) $4/3$ (B) $\frac{\sqrt{5}}{2}$
 (C) $\frac{2}{\sqrt{5}}$ (D) $3/4$
134. A three-digit number $4a3$ is added to another three-digit number 984 to give the four digit number $13b7$ which is divisible by 11. Then the value of $(a+b)$ is :
 (A) 12 (B) 9
 (C) 10

135. In a partnership business, A invests $\frac{1}{6}$ th of the capital for $\frac{1}{6}$ of the total time, B invests $\frac{1}{4}$ of the capital for $\frac{1}{4}$ of the total time and C, the rest of the capital for the whole time. Out of a profit of ₹ 19,400, B's share is :

- (A) ₹ 1200 (B) ₹ 1600
(C) ₹ 1800 (D) ₹ 2000

136. Area of the trapezium formed by x -axis; y -axis and the lines $3x + 4y = 12$ and $6x + 8y = 60$ is :

- (A) 31.5 sq. unit (B) 48 sq. unit
(C) 36.5 sq. unit (D) 37.5 sq. unit

137. A train overtakes two persons who are walking in the same direction in which the train is running, at the rate of 2 kmph and 4 kmph and passes them completely in 9 and 10 seconds respectively. The length of the train (in metres) is :

- (A) 45 (B) 54
(C) 50 (D) 72

138. $\triangle ABC$ and $\triangle DEF$ are similar and their areas be respectively 64 cm^2 and 121 cm^2 . If $EF = 15.4 \text{ cm}$, BC is :

- (A) 11.2 cm (B) 12.1 cm
(C) 11.0 cm (D) 12.3 cm

139. If 12 men or 18 women can reap a field in 14 days, then working at the same rate, 8 men and 16 women can reap the same field in :

- (A) 5 days (B) 7 days
(C) 8 days (D) 9 days

140. If $a^3 - b^3 = 56$ and $a - b = 2$, then the value of $(a^2 + b^2)$ is :

- (A) -12 (B) 20
(C) 18 (D) -10

141. If $\tan\theta - \cot\theta = a$ and $\cos\theta - \sin\theta = b$, then the value of $(a^2 + 4)(b^2 - 1)^2$ is :

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

142. If $a + \frac{1}{a} = 1$, then the value of a^3 is : $\frac{2+1}{2}$

- (A) 2 (B) -1
(C) 4 (D) -2

143. D and E are the mid-points of AB and AC of $\triangle ABC$; BC is produced to any point P; DE, DP and EP are joined. Then,

- (A) $\triangle PED = \triangle BEC$
(B) $\triangle ADE = \triangle BEC$
(C) $\triangle BDE = \triangle BEC$
(D) $\triangle PED = \frac{1}{4} \triangle ABC$

144. The length of the common chord of two circles of radii 15 cm and 20 cm whose centres are 25 cm apart is (in cm) :

- (A) 24 (B) 25
(C) 15 (D) 20

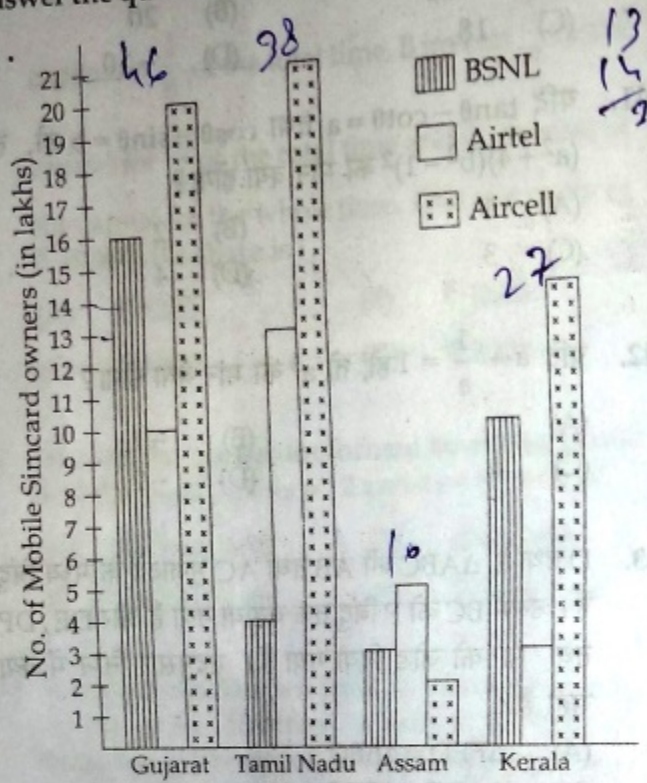
145. If $(a^2 - b^2) \sin\theta + 2ab \cos\theta = a^2 + b^2$, then the value of $\tan\theta$ is

- (A) $\frac{1}{2}(a^2 - b^2)$ (B) $\frac{1}{2ab}(a^2 - b^2)$
(C) $\frac{1}{2}(a^2 + b^2)$ (D) $\frac{1}{2ab}(a^2 + b^2)$

SPACE FOR ROUGH WORK

$12m + 16w = \frac{1}{14}$

The number of mobile simcards in 4 states are given in multiple bar diagrams. Study the diagram and answer the questions 146 to 150.



146. The range of BSNL simcard sold in the 4 states in lakhs is :

- (A) 15 (B) 14
 (C) 13 (D) 12

147. In Assam, the ratio of Aircell simcard and Airtel simcard sold is :

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

148. In which state are there the largest number of owners of Airtel simcard ?

- (A) Gujarat (B) Kerala
 (C) Assam (D) Tamilnadu

149. Average of simcard sold in the four states in lakhs is
 (A) 40.5 (B) 35
 (C) 33.75 (D) 30.25

150. Of all the simcards sold in all the four states, the number of simcards sold in Gujarat is (approx)
 (A) 38% (B) 35%
 (C) 42% (D) 40%

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146. An arc of a circle of radius 42 cm subtends an angle of 15° at the centre. Taking $\pi = 22/7$, the length of the arc is :

- (A) 11 cm (B) 12 cm
 (C) $44/5$ cm (D) $88/5$ cm

147. In a school, 10% of the boys are same in number as $1/4^{\text{th}}$ of the girls. What is the ratio of boys to girls in that school ?

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

148. Train A of length 180 m and speed 72 km/hour crosses train B of length 120 m and speed 108 km/hour moving in the opposite direction in :

- (A) 24 seconds (B) 12 seconds
 (C) 6 seconds (D) 30 seconds

149. Vinodh purchased a Maruti van for ₹ 1,96,000

and the rate of depreciation is $14\frac{2}{7}\%$. The value of the van after two years is :

- (A) ₹ 1,44,000 (B) ₹ 1,40,000
 (C) ₹ 1,68,000 (D) ₹ 1,70,000

150. By selling an article for ₹ 220, Neeta's gain was 10%. For how much she has to sell it so as to gain 30% ?

- (A) ₹ 200 (B) ₹ 230
 (C) ₹ 260 (D) ₹ 280

PART - D

ENGLISH COMPREHENSION

Directions : In question 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. Indian scientists are in no way / inferior than /
 (A) any other scientist in the world / (B) No Error
 (C) (D)
152. Belgiun chocolate is considered /
 (A) by many to be finer /
 (B) than any others in the World / (C) no error
 (D)
153. My grandfather owns / fifty acre / of wet land /
 (A) (B) (C)
No error
 (D)
154. Our history can be seen as a long evolutionary
dialectical development /
 (A) in which there have been /
 (B) a painstaking forging of rational and moral self /
 (C) No error
 (D)
155. Our knowledge of history does not come to /
 (A) Our help and some times we even fail to /
 remember who invented America / No Error.
 (C) (D)

Directions : In question 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. We didn't _____ the programme to be such a huge success.
 (A) accept (B) except
 (C) expect (D) access
157. I suffer from no _____ about my capabilities.
 (A) illusions (B) doubts
 (C) hallucinations (D) imaginations
158. The government, in a bid to make Bihar, a preferred investment destination, has _____ major schemes to create infrastructure at different stages.
 (A) launched (B) opposed
 (C) opened (D) pushed
159. The student's aren't prepared _____ the examination.
 (A) to give (B) to listen
 (C) to work (D) to take
160. We should _____ opportunities as they arise.
 (A) seize (B) cease
 (C) size (D) sneeze

Directions : In question 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. Duplicity
 (A) repetition (B) artlessness
 (C) deceit (D) cleverness
162. Vanguard
 (A) Race driver (B) Officer
 (C) Flag bearer (D) Pioneer
163. Fortitude
 (A) Similarity (B) Courage
 (C) Protection (D) Safety

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

181. One indifferent to art and literature is
(A) aromatic (B) critic
(C) philistine (D) scholar
182. "Open to injury or Criticism".
(A) Invincible (B) Vulnerable
(C) Naive (D) Sensitive
183. Government by a small group of all powerful persons
(A) Oligarchy (B) Monarchy
(C) democracy (D) Anarchy
184. A narrow piece of land connecting two large masses of land
(A) peninsula (B) isthmus
(C) continent (D) gulf
185. One who collects coins as a hobby
(A) philatelist (B) ornithologist
(C) statistician (D) numismatist

Directions : In question 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) beneficial (B) beneficil
(C) beneficial (D) benifical
187. (A) uniquely (B) internaly
(C) coldly (D) fortunetely
188. (A) apprehenson (B) apprehension
(C) apprihension (D) aprihension
189. (A) affactionately
(B) affectionately
(C) afectionately
(D) affectionnality
190. (A) averisious (B) avericious
(C) avaricious (D) avarisious

Directions : In question no. 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 Question No. 191-195

If this is so, if to read a book as it should be read calls for the rarest Qualities of imagination, insight and judgement. You may perhaps conclude that literature is a very complex art and that it is unlikely that we shall be able, even after a life time of reading, to make any valuable contribution to its criticism. We must remain readers, we shall not put on the further glory that belongs to those rare beings who are also critics.

191. What are the Qualities required for reading a book?
(A) proper judgement
(B) imagination
(C) imagination, insight and judgement
(D) none of the above
192. According to the author
(A) Most of the people can contribute to criticism of literature
(B) It is not possible for most of us to contribute anything for criticism
(C) It is possible to do something
(D) It is not even easy to understand literature
193. What is the opinion of most of the people about literature?
(A) That it is very easy to understand
(B) That it is not an easy one to contribute anything
(C) That it is to some extent difficult to understand
(D) That no contribution is necessary for literature
194. The antonym of conclude is
(A) include (B) commence
(C) exclude (D) end
195. The author feels that we cannot have the greatness of
(A) readers (B) writers
(C) critics (D) publishers

Page - II Question No. 196-200

These days not even many politicians deny that the oceans are ill. Protecting the health of coastal waters is now a matter of national policy in dozens of countries including the U.S., and world leaders are beginning to prescribe a revolutionary remedy that conservationists have been promoting for years: marine planning and zoning.

The idea is a natural extension of management policies that have guided the development of cities and landscapes for nearly a century. Zoning advocates envision a mosaic of regional maps in which every watery space on the planet is designated for a particular purpose. Drilling and mining would be allowed only in certain parts of the ocean; fishing in others. The most critically threatened areas would be virtually off-limits.

Whereas people can easily find maps telling them what they can do where on land, the marine realm is a hodge-podge of rules emanating from an army of agencies, each one managing a single use or symptom.

196. Seazoning is all about _____.
- (A) dividing watery space for specific purposes
 - (B) drilling and sea mining
 - (C) conserving the environment
 - (D) banning fishing in the sea
197. Marine planning and zoning is a _____ to protect the coastal waters.
- (A) national policy of the US
 - (B) conservationists' discovery
 - (C) marine project
 - (D) revolutionary remedy
198. 'Marine realm' is a hodge-podge of rules means _____.
- (A) coastal areas are not being looked after properly.
 - (B) seas need to be cleaned
 - (C) there are no uniform laws governing the seas.
 - (D) there is total anarchy

199. These days _____ that the oceans are not in good health.

- (A) everybody agrees
- (B) most of the politicians agree
- (C) all politicians agree
- (D) nobody agrees

200. 'Conservationist' means _____.

- (A) a proficient speaker
- (B) a marine engineer
- (C) one who looks after others
- (D) one who prevents something from destruction

- o o o -

48
40
17
44

146
