

PART - I
GENERAL INTELLIGENCE AND REASONING

Directions (1-8) : In the following questions, find the odd word/letters/number pair from the given alternatives.

1. (a) DPOU (b) HPSW
 (c) KMPT (d) CFIM
2. (a) MSY (b) LXX
 (c) INU (d) AGM
3. (a) 286 (b) 156
 (c) 495 (d) 583

4. (a) Wing Commander

- (b) Air Marshal
 (c) Captain
 (d) Group Captain

5. (a) 243 - 132 (b) 183 - 54

- (c) 108 - 97 (d) 99 - 63

6. (a) Kite (b) Rhombus

- (c) Square (d) Rectangle

7. A square sheet of paper has been folded and punched as shown by the question figures. You have to figure out from amongst the four answer figures how it will appear when unfolded.

Question Figures :



Answer Figures :



8. Mona is 5 years younger to her husband and he is 5 times as old as his daughter Rina. If Rina was 5 years old 3 years back, what is the present age of Mona ?

- (a) 34 (b) 35
 (c) 40 (d) 30

Directions (9-10) : In the following questions, if a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure ?

9. **Question Figure :**



Answer Figures :



10. **Question Figure :**



Answer Figures :



Directions (11-14) : In the following questions, which answer figure will complete the pattern in the question figures ?

11. **Question Figure :**



Answer Figures :



12. **Question Figure :**



Answer Figures :



13. Sanjith faces towards north turning to his right, he walks 10 m. He then turns to left and walks 30 m. He moves 25 m to his right and again to right through 50 m. Finally he turns to right and moves 40 m. In which direction is he now from his starting point ?

- (a) North-East
 (b) South-East
 (c) South-West
 (d) North-West

14. The information collected through a survey conducted among the public is represented in the Venn diagram given below. Study the diagram and answer the question. Which of the following represents Govt. servants who are not papers, but are neither females nor graduates ?





- (a) 5 (b) 7
 (c) 12 (d) 6

Directions (15-21) : In the following questions, select the related word/letter/number from the given alternatives.

15. Narcise : Neglect :: Denigrate : ?
 (a) Esteem (b) Reveal
 (c) Recognise (d) Reply
16. ASQG : ZYWT :: BCEH : ?
 (a) YXTS (b) QPRU
 (c) SVOY (d) YXVS
17. Modesty : Arrogance :: ?
 (a) Deceit : Strength
 (b) Grease : Fat
 (c) Ship : Fleet
 (d) Speak : Lecture
18. 43 : 57 :: 111 : ?
 (a) 135 (b) 133
 (c) 134 (d) 136
19. AZBY : CKDW :: EYRU : ?
 (a) GTHS (b) RUVS
 (c) ZYEU (d) SXWD
20. 23 : 0827 :: 45 : ?
 (a) 12125 (b) 84125
 (c) 12025 (d) 08125
21. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it ?
 _ a p q _ r q _ p r q _ r s _
 (a) r p q r
 (b) p q r r
 (c) r p q r
 (d) r p q r

Directions (22-25) : In the following questions, select the missing number from the given responses.

22. 
 (a) 27 (b) 18
 (c) 24 (d) 9
23. 
 (a) 128 (b) 131
 (c) 130 (d) 129
24.

144	25	13
196	39	15
324	?	19

 (a) 41 (b) 39
 (c) 37 (d) 29

25. 16 25 48 8
 2 5 3 4
 8 25 36 16
 4 5 4 7
 (a) 3 (b) 8
 (c) 12 (d) 6

26. Four positions of a dice are given below. Identify the number at the bottom when top is 5.



- (a) 2 (b) 4
 (c) 3 (d) 1

Directions (27-28) : In the following questions, a series is given, with one term missing. Choose the correct alternative from the given options that will complete the series.

27. 3, 17, 45, 87, ?
 (a) 143 (b) 153
 (c) 163 (d) 123
28. AZWD : CRUF, ? : GTQJ
 (a) EVSH (b) EUTH
 (c) EUSH (d) EVVH
29. A is elder to B while C and D are elder to E who lies between A and C. If C is elder to B, who is the youngest ?
 (a) A (b) C
 (c) B (d) D

30. A 7 m long piece of cloth is cut into smaller pieces. How long is the longest of the three pieces ? Given that

Statements :

- I. One piece is 3.70 m long.
 II. One piece is 1.50 m longer than another piece and the remaining piece is 90 cm long.
 (a) Statement I alone but not Statement II alone is sufficient to answer the problem.
 (b) Statement I and II both are needed to answer the problem.
 (c) Statement II alone but Statement I alone is sufficient to answer the problem.
 (d) Statement I alone sufficient and also Statement II alone sufficient to answer the problem.
31. In a certain language, GAMBLE is coded as FRLCRF, how is FLOWER coded in that code ?
 (a) GMPVCS
 (b) GQPVFG
 (c) EBNVDS
 (d) EKNVDC
32. Which one of the given responses would be a meaningful order of the following ?

1. estimate
 2. contract
 3. concept
 4. plan
 5. execute

- (a) 1, 4, 3, 5, 2
 (b) 5, 2, 4, 3, 1
 (c) 3, 4, 1, 2, 5
 (d) 3, 1, 2, 4, 5

Directions (33-34) : In the following questions, from the given alternative words, select the word which cannot be formed using the letters of the given word.

33. PERAMBULATOR

- (a) MARBLE
 (b) LABOUR
 (c) RAMBLE
 (d) RAMPANT

34. ORGANISATION

- (a) NATION
 (b) ORGAN
 (c) ORGANISE
 (d) ORATION

35. Grouping of words are given. Choose the odd words in the series from the given options.

AFGHAN, INDEFINITELY, SYNOPSIS, STUPENDOUS, BURST

- (a) RESCRIPT
 (b) COMPANION
 (c) HILUCKER
 (d) GLACIAL

36. 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, follow from the given statements.

Statements :

1. All pens are erasers.
 2. All erasers are pencils.

Conclusions :

- I. All pencils are pens.
 II. All pens are pencils.
 (a) Both conclusions I and II follow.
 (b) Only conclusion II follows.
 (c) Neither conclusion I nor II follows.
 (d) Only conclusion I follows.

37. If $678 - 83, 476 - 75$ and $567 - 80$, what is $309 - ?$
 (a) 18 (b) 40
 (c) 72 (d) 99

Directions (38-39) : In the following questions, from the given answer figures, select the one in which the question figure is hidden/embedded.

38. Question Figure :



Answer Figures :



(a)

(b)

(c)

(d)

39. Question Figure :



Answer Figures :



(a)

(b)

(c)

(d)

Directions (40-41) : In the following questions, 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., 'W' can be represented by 03, 44, etc., and 'Q' can be represented by 55, 78 etc. Similarly, you have to identify the set for the word given in questions.

40. RETAIL

Matrix-I

	0	1	2	3	4
0	M	O	R	A	L
1	O	R	A	L	M
2	R	A	L	M	O
3	A	L	M	O	R
4	L	M	O	R	A

(a) 00, 05, 11, 21, 31, 44
(c) 20, 77, 85, 21, 13, 57

Matrix-II

	5	6	7	8	9
5	O	U	I	E	T
6	U	I	E	T	O
7	I	E	T	O	U
8	E	T	O	U	I
9	T	O	U	I	E

(b) 77, 23, 26, 85, 87, 13
(d) 77, 85, 21, 13, 57, 47

41. BIRDS

Matrix-I

	0	1	2	3	4
0	S	P	A	R	E
1	P	A	R	E	S
2	A	R	E	S	P
3	R	E	S	P	A
4	R	E	S	P	A

(a) 87, 75, 12, 68, 23
(c) 86, 12, 75, 23, 68

Matrix-II

	5	6	7	8	9
5	B	U	I	L	D
6	U	I	L	D	B
7	I	L	D	B	U
8	L	D	B	U	I
9	D	B	U	I	L

(b) 23, 75, 12, 87, 23
(d) 87, 12, 75, 68, 23

42. In a peculiar mathematical operation, plus means multiplication, minus means plus, divided means minus and multiplication means sum of digits of two numbers. Follow these rules and solve the following example.
(6 × 7) - (8 × 9) - (10 × 10) = ?

(a) 04
(c) 224

(b) 52
(d) 33

43. A circular piece of paper is folded and punched as shown in the question figure. How will it appear when opened ?

Question Figures :



Answer Figures :



(a)

(b)

(c)

(d)

44. X is sister of Y. Y is brother of Z. Z is husband of P. O is father of Y. How is P related to O ?

- (a) Sister (b) Daughter
(c) Uncle (d) Daughter-in-law

45. Which numbers complete the series ?

3 1 5 3 _ 5 9 _ 11

- (a) 8, 7 (b) 7, 6 (c) 6, 6 (d) 7, 7

46. The structure shown in the figure is made of small cubes. First, third and fifth layers are made of black cubes and the others are white cubes. How many cubes are there in the structure ?



- (a) 25 (b) 45 (c) 75 (d) 95

47. Indu starts travelling towards east and stops after 35 km and turns right and walks another 15 km and again turns right and walks 15 km and then stops. What is the minimum distance Indu has to walk to reach the starting point ?

- (a) 35 km (b) 30 km (c) 20 km (d) 25 km

48. Which of the following diagrams represents the correct relationship between Doctors, Specialist Doctors and Patients ?

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

49. If BHASHA is coded as 154764, BRAIN is coded as 191000. AHNBA will be coded as :

- (a) 459074 (b) 405847 (c) 450847 (d) 450874

50. Triangle represents school teachers. Square represents married persons. Circle represents persons living in joint families. Married persons living in joint families but not working as school teachers are represented by :



- (a) D
(c) A

- (b) F
(d) C

PART-II : GENERAL KNOWLEDGE AND GENERAL AWARENESS

51. Which one of the following pacts sought to be resolved the Hindu-Muslim differences ?
(a) Lucknow Pact
(b) Lahore Pact
(c) Gandhi-Irwin Pact
(d) Poona Pact
52. Political Science is a science of :
(a) Economic Engineering
(b) Cultural Engineering
(c) Social Engineering
(d) Political Engineering
53. Basic problems of an economy is/are :
(a) Providing social security and employment to all
(b) Elimination of poverty and reduction of inequalities of income and wealth
(c) Providing basic requirements of life to all
(d) Decide as to what, how and for whom to produce
54. The book "Globalization, Democratization and Distributive Justice" has been authored by :
(a) Mool Chand Sharma
(b) Karan Rajaj
(c) Salomon Rushdie
(d) Anita Nay
55. If the pressure in a closed vessel is reduced by drawing out some gas, the mean free path of the gas molecules will :
(a) decrease
(b) increase
(c) remain unchanged
(d) increase or decrease depending on the nature of the gas
56. In terms of value, India's exports in descending order are :
(a) Engineering goods, Gems and Jewellery, Textiles
(b) Textiles, Gems and Jewellery, Engineering goods
(c) Textiles, Engineering goods, Gems and Jewellery
(d) Gems and Jewellery, Textiles, Engineering goods
57. In which of the following year the Gandhi-Irwin Pact was signed ?
(a) 1932 (b) 1935
(c) 1931 (d) 1929
58. Comptroller and Auditor General of India is not responsible for :
(a) Issue of money from the Consolidated Fund
(b) Making payments to the States

- (c) Accounting of States and UTs, and Auditing of all Government Institutions
(d) Regulating Reserve Bank of India
59. Which of the following has become the first airport in the world to fully operational on Solar Power ?
(a) Lokpriya Gopinath Bardoloi International Airport
(b) Aenitair International Airport
(c) Netaji Subhash Chandra Bose International Airport
(d) Cochin International Airport Ltd. (Kerala)
60. U-235 belongs to which member of the series ?
(a) Thorium series
(b) Actinium series
(c) Uranium series
(d) Neptunium series
61. One strategy of allocating kernel memory is known as
(a) frames allocation
(b) register allocation
(c) slab allocation
(d) resource allocation
62. The Vedic literature was composed between :
(a) 3500 B.C and 1000 B.C.
(b) 2500 B.C and 500 B.C.
(c) 3000 B.C and 1000 B.C.
(d) 3500 B.C and 2500 B.C.
63. Which of the following Football teams won UEFA Super Cup of Georgia on August 12, 2015 ?
(a) Sevilla
(b) Real Madrid
(c) Atletico Madrid
(d) Barcelona
64. The capsule of *Anthracis* differs from *Fusaria* in that in the latter :
(a) columella is present
(b) columella is absent
(c) spores are present
(d) spores are absent
65. The directive principles of state policy of the Indian Constitution is an idea borrowed from the Constitution of :
(a) America (b) Australia
(c) Russia (d) Ireland
66. Who among the following was the Prime Minister of England when India was given independence ?
(a) Mountbatten (b) Churchill
(c) Attlee (d) Wavel
67. Which type of molecular motion does not contribute towards internal energy ?
(a) None of these
(b) Vibrational
(c) Rotational
(d) Translational

68. The original jurisdiction of the Supreme Court covers.....
(a) Disputes between different units of the Indian Union
(b) National Integrity of India
(c) Civil and Criminal cases
(d) Terrorism related cases
69. In a single Keynesian model equilibrium is characterized by the equality of :
(a) planned saving and planned investment
(b) realized saving and planned investment
(c) realized saving and realized investment
(d) planned saving and realized investment
70. Professor Ramesh Chand has been appointed as new full time member of National Institution for Transforming India (NITI Aayog). He is a :
(a) None of these
(b) Renowned English Professor
(c) Renowned Physicist Professor
(d) Renowned Agriculture Expert
71. An organic compound which produces bluish green coloured flame on heating in presence of copper is :
(a) Chlorobenzene
(b) Benzaldehyde
(c) Aniline
(d) Benzole Acid
72. In the absence of the President and Vice-President, who discharges the functions of the President ?
(a) Advocate General
(b) Comptroller and Auditor General
(c) Chief Justice of India
(d) Attorney General
73. If the selling price of a product under perfect competition is ₹ 25/-, the Marginal Revenue will be :
(a) zero
(b) equal to ₹ 25/-
(c) more than ₹ 25/-
(d) less than ₹ 25/-
74. A plant with green leaves placed in red light will appear :
(a) Green
(b) Violet
(c) Red
(d) Black
75. A closed vessel containing some gas at atmospheric pressure and room temperature is placed in a fast moving train. The temperature of the gas will :
(a) remain unchanged
(b) increase or decrease depending on the chemical composition of the gas
(c) decrease
(d) increase

76. How many times did Babur invade India before 1526 A.D. ?
 (a) None of these
 (b) Four times
 (c) Five times
 (d) Twice
77. A new molecule Heat Shock Protein 90 (HSP90) was discovered in 2014 by the Didier Picard. The new discovery could help in effective treatment of
 (a) TB
 (b) AIDS
 (c) Malaria
 (d) None of these
78. Demand curve is indeterminate under :
 (a) Duopoly
 (b) Monopoly
 (c) Pure competition
 (d) Oligopoly
79. Antigen presenting cells are specialized cells present in all of the following, except :
 (a) Skin
 (b) Lymph node
 (c) Kidney
 (d) Spleen
80. Which of the following determines whether a group of organisms that is from the same genus and species arise from a common source or from different sources ?
 (a) Biotyping
 (b) DNA hybridization
 (c) Serotyping
 (d) Phage typing
81. The method of age determination called "radioactive uranium dating" cannot be used to determine the age of :
 (a) the earth
 (b) rocks
 (c) minerals on earth
 (d) fossils and plant bodies
82. Marginal Revenue is :
 (a) Revenue realized on the sale of an extra unit
 (b) Revenue realized from the sale of all units
 (c) The average revenue of a firm
 (d) Revenue realized on every unit sold
83. Starch is insoluble in water but still it is stored in large quantity in potato because :
 (a) soil microorganisms deposit it in the tuber
 (b) It is synthesized in potato root
 (c) It is useful for human
 (d) It is translocated in the form of sugar from leaves
84. Which of the following countries has become the first country in the world to receive funds from United Nations for its fast growing Solar Home Systems ?
 (a) Afghanistan
 (b) Burma
 (c) Bangladesh
 (d) Switzerland
85. Viruses that infect bacteria are called :
 (a) Basal body
 (b) Basidiospores
 (c) Bacteriophages
 (d) Basophils
86. Which of the following is not the essential element of the State ?
 (a) Government
 (b) Sovereignty
 (c) Population
 (d) Institutions
87. Who among the following Indian writers have been long listed among the 13 International authors for 'The Man Booker Prize' of 2015 ?
 (a) Amitav Ghosh and Armita Prater
 (b) Arvind Adiga and Shashi Tharoor
 (c) Anuradha Roy and Sanjeev Sahota
 (d) Chetan Bhagat and Jhumpa Lahiri
88. *Altoicumulus* clouds occur at altitude of :
 (a) 10000 m - 12000 m
 (b) 6000 m - 10000 m
 (c) 1000 m - 1800 m
 (d) 2000 m - 6000 m
89. In which type of vulnerability, an unauthorized host pretends to be authorized host by meeting some authorization criterion ?
 (a) Spoofing
 (b) Keystroke logger
 (c) Phishing
 (d) Tunnel
90. The minor irrigation schemes have Cultural Command Area (CCA) upto :
 (a) 3000 hectares
 (b) 2500 hectares
 (c) 1500 hectares
 (d) 2000 hectares
91. Which of the following islands is under direct threat of rising sea levels due to climate change has appealed for help from European leaders ?
 (a) Palau
 (b) Tuvalu Islands
 (c) Marshall Islands
 (d) Niuru
92. Parliamentary Government is a form of Constitutional democracy in which :
 (a) the legislature emerge from and is responsible to the executive.
 (b) the executive emerge from and is responsible to the judiciary.
 (c) the executive emerge from and is responsible to the legislature.
 (d) the legislature emerge from and is responsible to the judiciary.
93. The concept of Liberty, Equality and Fraternity enshrined in the Indian Constitution is inspired from :
 (a) US Constitution
 (b) Irish Constitution
 (c) French Constitution
 (d) UK Constitution
94. A dispersion indicates :
 (a) the value of standard deviation
 (b) spread of data around central measure
 (c) the value of mean
 (d) the value of mode
95. The Rath temples at Mahabalipuram were built by
 (a) Pallaves
 (b) Cholas
 (c) Chedis
 (d) Chalukyas
96. The principle involved in the absorption of water by soil is :
 (a) Suction action
 (b) Condensation
 (c) Capillary action
 (d) Principle of absorption
97. Which of the following is present in maximum amount in acid rain ?
 (a) HNO_3
 (b) H_2SO_4
 (c) H_2CO_3
 (d) HCl
98. The lethal dose required to kill 50% of the lab animals tested under standard is referred as :
 (a) MLD
 (b) ED_{50}
 (c) LD_{50}
 (d) ID
99. In Indian architecture 'Sukhi' was introduced by :
 (a) Mughals
 (b) Kushans
 (c) Guptas
 (d) Sultanate Sultans
100. Who of the following is not one of the recipients of Arjuna Award 2015 ?
 (a) Anoop Singh (Wrestling)
 (b) Dipsa Karmakar (Gymnastics)
 (c) Jitu Rai (Shooting)
 (d) P. R. Sreejesh (Hockey)

PART - III
QUANTITATIVE APTITUDE

101. PQRS is a cyclic quadrilateral, such that ratio of measures of $\angle P$, $\angle Q$ and $\angle R$ is 1 : 3 : 4 then the measure of $\angle S$ is :

- (a) 36° (b) 108°
(c) 54° (d) 72°

Directions (102-106) : Study the following table which shows the amount of money invested (₹ in crore) in the core infrastructure areas of two districts, A and B of a State, and answer the below questions.

Core Area	District A		District B	
	1992	1996	1995	1996
Electricity	815.2	1054.3	2045.8	2369.1
Chemical	389.5	476.7	745.3	586.4
Thermal	632.4	545.9	1232.7	1026.3
Solar	468.1	589.6	1368.5	1792.1
Nuclear	617.3	803.1	1674.9	2182.1
Total	2923.1	3489.5	7081.6	8362.0

102. By approximately what percent was the total investment in the two districts A and B more in 1996 as compared to 1995 ?

- (a) 19% (b) 14%
(c) 21% (d) 24%

103. The total investment in electricity and thermal energy in 1995, in these two districts A and B formed approximately what percent of the total investment made in that year ?

- (a) 55% (b) 41%
(c) 52% (d) 47%

104. In district B, the investment in which area in 1996 did show the highest percentage increase over the investment in that area in 1995 ?

- (a) Nuclear (b) Electricity
(c) Chemical (d) Solar

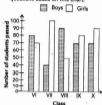
105. Approximately how many times was the total investment in 1995 and 1996 in district B was that of total investment of district A in the same year ?

- (a) 1.7 (b) 2.8
(c) 2.4 (d) 1.9

106. If the total investment in district B shows the same rate of increase in 1997, as it had shown from 1995 to 1996, what approximately would be the total investment in B in 1997 ?

- (a) ₹ 9850 crore (b) ₹ 10020 crore
(c) ₹ 8540 crore (d) ₹ 9170 crore

Directions (107-110) : The bar graph shows the results of an annual examination in a secondary school in a certain year. Answer the following questions based on this chart.



107. The ratio of the total number of boys passed to the total number of girls passed in the three classes VII, VIII and IX is :

- (a) 20 : 23 (b) 18 : 21
(c) 21 : 26 (d) 19 : 25

108. The average number of boys passed per class is :

- (a) 75 (b) 78 (c) 70 (d) 72

109. The class having the highest number of passed students, is :

- (a) IX (b) X
(c) VII (d) VI

110. The class in which the number of boys passed is nearest to the average number of girls passed per class, is :

- (a) VII (b) X (c) VI (d) IX

111. A sum of money placed at compound interest double itself at 2 years. The year it will take to amount 4 times (itself) is :

- (a) 6 (b) 4 (c) 8 (d) 3

112. If $\frac{1}{a + \frac{1}{b + \frac{1}{c}}} = \frac{16}{23}$, then the value of $a + b + c$ is :

(a) 6 (b) 3 (c) 9 (d) 12

113. Let a be a positive integer. When 89 and 125 are divided by a , the remainders are 4 and 6 respectively. Then the value of a is :

- (a) 9 (b) 7 (c) 15 (d) 17

114. A sum of ₹ x was put at simple interest at a certain rate for 2 years. Had it been put at 2% higher rate, it would have fetched ₹ 300/- more. The value of $4x$ is :

- (a) ₹ 16,000/- (b) ₹ 20,000/-
(c) ₹ 26,000/- (d) ₹ 24,000/-

115. A can is full of a mixture of two liquids A and B in the ratio of 7 : 5. When 9 litre

of mixture are drawn off from the can and replaced by the same quantity of liquid B, the ratio of A and B in the can becomes 7 : 9. The capacity of the can is :

- (a) 10 litre (b) 21 litre
(c) 20 litre (d) 26 litre

116. If $x + 1 = \sqrt{y + 3}$, $y > 0$ then the value of $\frac{1}{2} \left(\frac{x^2 - 6x^2 - 12x - 8}{\sqrt{y}} \right)$

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

117. The sides of a triangle are 7 cm, 8 cm, 9 cm, then the area of the triangle (in cm^2) is :

- (a) $30\sqrt{5}$ (b) $24\sqrt{5}$
(c) $4\sqrt{5}$ (d) $12\sqrt{5}$

118. The value of $(\sqrt{6} + \sqrt{10} - \sqrt{3}) - \sqrt{35} + \sqrt{6} - \sqrt{10} + \sqrt{3} - \sqrt{35}$ is :

- (a) 18 (b) 40
(c) 27 (d) 10

119. A chord of length 24 cm is at a distance of 5 cm from the centre of a circle. The length of the chord of the same circle which is at a distance of 12 cm from the centre is :

- (a) 10 cm (b) 17 cm
(c) 12 cm (d) 11 cm

120. A man sells an article at 5% above the cost price. If he had bought it at 5% less than what he paid for it and sold it for ₹ 2 less, he would have gained 10%. The cost price of the article is :

- (a) ₹ 200/- (b) ₹ 400/-
(c) ₹ 350/- (d) ₹ 200/-

121. If $\sin^2 \theta = 9$, $\tan \theta + \sin \theta = m$ and $\tan \theta - \sin \theta = n$, where $m > n$, then the value of $m^2 - n^2$ is :

- (a) $2(\sqrt{m^2 + n^2})$
(b) $4\sqrt{mn}$
(c) 4 mn
(d) $2(\tan^2 \theta + \sin^2 \theta)$

122. The curved surface area of a cylinder with its height equal to the radius, is equal to the curved surface area of a sphere. The ratio of volume of the cylinder to that of the sphere is :

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

123. If $0^\circ < A < 90^\circ$, then the value of

$$\frac{1}{\cos A} \left[\frac{1 + \sec A - \tan A}{\sec A + \tan A - \sec A} \right] =$$

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

124. A number is increased by 15% and then decreased by 25% and the number becomes 22 less than the original number. The original number is :

(a) 120 (b) 140
(c) 100 (d) 160

125. The value of $\sin^2 2^\circ + \sin^2 4^\circ + \sin^2 6^\circ + \dots + \sin^2 90^\circ$ is :

(a) 0 (b) 22
(c) 23 (d) 44

126. The radii of the base of a cylinder and a cone are equal and their volumes are also equal. Then the ratio of their heights is :

(a) 2 : 1 (b) 1 : 2
(c) 1 : 3 (d) 1 : 4

127. Points A and B are 100 km apart on a Highway. One car starts from A and another from B at the same time. If the cars travel in the same direction, they meet in 5 hours. If the cars travel towards each other, they meet in 1 hour. What is the speed of the faster car ?

(a) 70 km/h (b) 40 km/h
(c) 60 km/h (d) 80 km/h

128. A trader lists his article 20% above the cost price and allows a discount of 10% on cash payment. His gain percent is :

(a) 6% (b) 10%
(c) 5% (d) 8%

129. By selling an article at $\frac{3}{4}$ of selling price, a trader incurred a loss of 10%. The profit/loss percentage, when it is sold at the original selling price, is :

(a) 120% profit (b) 32.5% loss
(c) 20% loss (d) 20% profit

130. A and B can separately finish a piece of work in 20 days and 15 days respectively. They worked together for 6 days, after which B was replaced by C. If the work was finished in next 4 days, then the number of days in which C alone could do the work is :

(a) 50 days (b) 30 days
(c) 40 days (d) 60 days

131. If 4 men and 6 women can complete a work in 8 days, while 3 men and 7 women can complete it in 10 days, then 10 women complete it in :

(a) 40 days (b) 45 days
(c) 35 days (d) 50 days

132. A merchant purchases a wrist watch for ₹ 1,200/- and fixes its list price in such a way that after allowing a discount of 10%, he earns a profit of 20%. The list price of the watch is :

(a) ₹ 1,600/-
(b) ₹ 1,300/-
(c) ₹ 1,400/-
(d) ₹ 1,800/-

133. If p, q, r are all real numbers, then $(p - q)^2 + (q - r)^2 + (r - p)^2$ is equal to :

(a) 0
(b) $3(p - q)(q - r)(r - p)$
(c) $(p - q)(q - r)(r - p)$
(d) 1

134. If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f}$, then each of them is equal to :

(a) $\frac{a + 3c - 5e}{b + 3d - 5f}$ (b) $\frac{a - c - e}{b + d - f}$
(c) $\frac{a + 3c + 5e}{b + d - f}$ (d) $\frac{3a + 3c - 5e}{b + 3d - f}$

135. If $2^{x+y} = 81$ and $81^{x-y} = 3$, then the value of $\frac{x}{y}$ is :

(a) $\frac{15}{34}$ (b) $\frac{15}{17}$
(c) $\frac{17}{15}$ (d) $\frac{17}{30}$

136. If a person spends 40% of his income on food, 20% on house rent and 70% of the remaining on children's education, then the percentage of his income left is :

(a) 8% (b) 10%
(c) 6% (d) 12%

137. In a ΔABC , a straight line parallel to BC intersects the sides AB and AC at P and Q respectively such that $AP : PB = 3 : 2$, then the ratio of the area of $\Delta APQ : \Delta ABC$ is :

(a) 25 : 4 (b) 9 : 4
(c) 4 : 9 (d) 9 : 25

138. The average monthly income of A and B is ₹ 15,050/-, the average monthly income of B and C is ₹ 15,350/- and the average income of A and C is ₹ 15,200/-. The monthly income of A is :

(a) ₹ 15,900/- (b) ₹ 15,200/-
(c) ₹ 14,900/- (d) ₹ 15,550/-

139. The length of the diagonal BD of the parallelogram ABCD is 12 cm, P and Q are the centroids of the ΔABC and ΔADC respectively. The length (in cm) of the line segment PQ is :

(a) 6 (b) 5
(c) 4 (d) 3

140. A cylindrical rod of radius 30 cm and length 40 cm is melted and made into spherical balls of radius 1 cm. The number of spherical balls is :

(a) 36000 (b) 27000
(c) 70000 (d) 40000

141. The value of $\frac{(0.011)^2 + 0.000000343}{(0.011)^2 - 0.000091 + 0.000049}$ is :

(a) 0.04 (b) 0.02
(c) 0.01 (d) 0.03

142. If $x = 1 + \sqrt{2} + \sqrt{3}$ and $y = 1 + \sqrt{2} - \sqrt{3}$,

then the value of $\frac{x^2 + 4xy + y^2}{x + y}$ is :

(a) 1 (b) $2\sqrt{2}$
(c) 6 (d) $2(1 + \sqrt{2})$

143. From the top and bottom of a straight hill, the angle of depression and elevation of the top of a pillar of 10 m height are observed to be 60° and 30° respectively. The height (in metres) of the hill is :

(a) 40 (b) 30
(c) 80 (d) 60

144. If $\tan \theta + \sec \theta = 2$, then the value of $\tan \theta$ is :

(a) $\frac{2}{3}$ (b) $\frac{3}{5}$
(c) $\frac{3}{4}$ (d) $\frac{5}{4}$

145. If $x + \frac{1}{x} = 3$, where $x \neq 0$, then the

value of $\frac{x^4 + 3x^3 + 9x^2 + 3x + 1}{x^4 + 1}$ is :

(a) 5 (b) 7
(c) 2 (d) 3

146. A man travelled a distance of 72 km in 12 hours. He travelled partly on foot at 5 km/h and partly on bicycle at 10 km/h. The distance travelled on foot is :

(a) 46 km (b) 52 km
(c) 50 km (d) 48 km

147. The sum of two numbers is $15\frac{1}{3}$ and

their difference is $4\frac{2}{3}$. The product of

the numbers is :

(a) 50 (b) $48\frac{2}{3}$

(c) $53\frac{1}{3}$ (d) 60

148. The ratio of the radii of two cylinders is 2 : 1 and their heights are in the ratio 3 : 2. Then their volumes are in the ratio :

(a) 3 : 1 (b) 4 : 3
(c) 4 : 5 (d) 6 : 1

149. The average of a class is 15.8 years. The average age of the boys in the class is 16.4 years while that of the girls is 15.4 years. The ratio of boys to girls in the class is :
- (a) 3 : 5 (b) 2 : 3
(c) 2 : 4 (d) 1 : 2

150. AB and AC are two chords of a circle. The tangents at B and C meet at P. If $\angle BAC = 54^\circ$, then the measure of $\angle BPC$ is :
- (a) 36° (b) 54°
(c) 72° (d) 108°

PART - IV

ENGLISH COMPREHENSION

Directions (151-155) : Read the passage carefully and choose the best answer to each question out of the four alternatives and mark it in the Answer Sheet.

Flattery means 'praising insincerely in order to please'. Every flatterer says words in which he himself does not believe. While flattering he is insincere to the man he is praising and to himself. In doing so he does not mind if he corrupts the minds of those whom he flatters.

Flattery is immoral because it stains the human conscience. It creates a world of falsehood and thus an outrage of man's sense of decency and gentlemanly behaviour.

A man who feels happy when flattered lives in a fool's paradise. Flattery is the ready weapon of the opportunist. This weapon easily conquers the weak-willed man. It works on the general weakness of human beings. We all love to be told what we are not rather than what we are. Flattery is equally bad for him who is flattered and for him who flatters.

Flattery deceives us by giving us false notions about ourselves. By falling a victim to it, we show lack of character. By accepting flattery we make ourselves small beings. It is an evil which ruins social and moral values by claiming what is not rightfully its own. It thrives on corruption and leads to human bankruptcy. It is thus the greatest of disease which can plague humanity.

151. How does flattery deceive us ?
- (a) It makes us more corrupt.
(b) It makes us feel innocent.
(c) It makes us bankrupt.
(d) It gives us false ideas about ourselves.

152. 'Thrives' in the passage means :
- (a) Prospers (b) Collects
(c) Provides (d) Fills
153. Flattery can stain the
- (a) mind
(b) human conscience
(c) heart
(d) emotion

154. Flattery means :
- (a) Inincere praise in order to please
(b) Being anti-social
(c) Claiming what is not ours
(d) Being immoral

155. How does the weapon of flattery work ?
- (a) It conquers the man with a weak will.
(b) A man feels sad.
(c) It conquers the man with a strong will.
(d) A man does not like it.

Directions (156-160) : In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word and mark it in the Answer Sheet.

156. JINX
- (a) Tour (b) Taint
(c) Spell (d) Jurisprudence
157. CONJECTURE
- (a) Gathering (b) Swift
(c) Critic (d) Guess
158. BRAZEN
- (a) Modest (b) Melodramatic
(c) Trashy (d) Shameless
159. CONTENTIOUS
- (a) Benevolent (b) Centrosocial
(c) Extravagant (d) Precocious

160. SYNOPSIS
- (a) Report (b) Discussion
(c) Summary (d) Preview
- Directions (161-165) :** Read the passage carefully and choose the best answer to each question out of the four alternatives and mark it in the Answer Sheet.

PASSAGE

The destructive process of Mountain Top Removal mining (MTR) has caused permanent damage to Appalachia. Although the law requires that mining companies restore the mountaintops after the mining has been completed, the 1.5 million acres of mountains that have already been removed cannot be re-grown, re-built, or replaced. The companies do secure the rock formations to prevent erosion and landslides, but their efforts cannot recreate the once beautiful mountain landscape. Furthermore, while companies are usually vigilant about securing the rock formations, they

seem less interested in restoring the native vegetation. MTR operations clear enormous tracts of forest. Environmental hazards are not only created in preparing a mountaintop for mining, they also continue once the coal has been extracted. After the blast, the excess mountaintop - which miners refer to as 'overburden' - is usually dumped into nearby valleys or streams. The overburden contains a variety of toxic substances, including explosive residue, silica and coal dust.

161. The word opposite in meaning to "vigilant" is :
- (a) Lenient
(b) Displeased
(c) Careless
(d) Annoyed

162. MTR operations cause environmental hazards because :
- (a) mountaintops dumped in valleys and streams contain toxic substance
(b) it destroys natural vegetation
(c) it causes explosion
(d) it causes landslides

163. In the Appalachian region MTR has caused :
- (a) Floods
(b) Widespread damage
(c) Landslides
(d) Permanent beautification

164. After the MTR operation, the mining companies :
- (a) replace the mountaintops
(b) levelly the mountains
(c) restore native vegetation
(d) secure rock formations to prevent erosion

165. The term 'overburden' means :
- (a) excess mountaintop left after the extraction of coal through the blast
(b) weeds planted by mining companies
(c) remnants of natural forests
(d) debris from landslides

Directions (166-170) : In the following questions, a sentence's part of the sentence is **bold**. Below are given alternatives to the bold part which may improve the sentence. Choose the correct alternative. In case no improvement is required, choose 'No improvement' option.

166. Try to **lower** the amount of fat in your diet.
- (a) No improvement (b) reduce
(c) cut (d) lose

167. I contradicted against him.
 (a) contradicted over
 (b) No improvement
 (c) contradicted
 (d) contradicted with

168. No sooner than it stopped raining, the children went out.

- (a) did it stop raining than
 (b) had it stopped raining than
 (c) No improvement
 (d) did it stopped raining than

169. You must accustom yourself with new ideas.

- (a) get accustom to
 (b) accustom yourself to
 (c) accustomed yourself with
 (d) No improvement

170. You should cut off on the amount of cigarettes you smoke.
 (a) cut up
 (b) cut down
 (c) No improvement
 (d) cut out

Directions (171-175) : In the following questions, four alternatives are given for the Idiom/Phrase bold. Choose the alternative which best expresses the meaning of the Idiom/Phrase and mark it in the Answer Sheet.

171. To put his foot down

- (a) Withdraw
 (b) Resist
 (c) Not to yield
 (d) Concede

172. Have a foot in the grave

- (a) Be close to death
 (b) Have no interest in life
 (c) Have an incurable disease
 (d) Be afraid to die

173. A hamlet's nest

- (a) An unpleasant situation
 (b) A dilemma
 (c) A comfortable position
 (d) Among things

174. To roll out the red carpet

- (a) To decorate the room
 (b) To give a grand welcome
 (c) To give a warning signal
 (d) To buy a gift

175. To have an axe to grind

- (a) To work for both sides
 (b) To fail to arouse interest
 (c) To criticize someone
 (d) To have a selfish end to serve

Directions (176-180) : 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 and mark corresponding to the appropriate option. If a sentence is free from error, mark corresponding to 'No error' in the Answer Sheet.

176. Three years have elapsed since I had gone to visit my aunt in the city.

- (a) visit my aunt in the city
 (b) No error
 (c) since I had gone to
 (d) Three years have elapsed

177. He needs not have shouted at me that way.

- (a) No error
 (b) at me that way
 (c) not have shouted
 (d) He needs

178. I reached two hours before he had came.

- (a) No error (b) he had came.
 (c) I reached (d) two hours before

179. The car that he is using these days is belonging to his employer.

- (a) to his employer.
 (b) these days is belonging
 (c) The car that he is using
 (d) No error

180. He assured me that he will return in an hour.

- (a) He assured me
 (b) No error
 (c) In an hour.
 (d) that he will return

Directions (181-185) : In the following questions, choose the word opposite in meaning to the given word and mark it in the Answer Sheet.

181. OSTRACIZE

- (a) Patronize (b) Shun
 (c) Crucify (d) Discard

182. UNAPPROACHABLE

- (a) Withdrawn (b) Unclear
 (c) Accessible (d) Casual

183. ABSTAIN

- (a) Repel (b) Disgrace
 (c) Indulge (d) Dismiss

184. NISANTHROPIST

- (a) Zealot (b) Pedant
 (c) Pragmatic (d) Philanthropist

185. FORTIFY

- (a) Support (b) Intensify
 (c) Undermine (d) Strengthen

Directions (186-190) : In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/ sentences and indicate it in the Answer Sheet.

186. The belief that God is in everything, including nature

- (a) Pantheism
 (b) Polytheism
 (c) Mysticism
 (d) Naturalism

187. The study of growing garden plants

- (a) Orchard
 (b) Horticulture
 (c) Nomenclature
 (d) Nursery

188. One who copies from other writers

- (a) Antagonist (b) Plagiarist
 (c) Contender (d) Offender

189. Scientific study of Earthquakes

- (a) Geography (b) Seismology
 (c) Anthropology (d) Astrology

190. Gradually advanced

- (a) Evolved (b) Enrolled
 (c) Evaded (d) Advantaged

Directions (191-195) : In these questions, four words are given in each question, out of which only one word is correctly spelt. Find the correctly spelt word and mark your answer in the Answer Sheet.

191. (a) Deastition (b) Dislamation
 (c) Dysfunction (d) Disarition

192. (a) Hillarious (b) Congrossus
 (c) Ausaculous (d) Auspiculous

193. (a) Hygeinic (b) Hygienic
 (c) Hygenic (d) Hygienic

194. (a) Concalment (b) Conliment
 (c) Containment (d) Conlignment

195. (a) Surveillance (b) Obalsance
 (c) Penserivance (d) Turbulance

Directions (196-200) : In the following questions, sentences given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four and indicate it in the Answer Sheet.

196. His profession is teaching but his is photography.

- (a) vocative (b) vocation
 (c) vocation (d) avocation

197. He quarrelled with his boss, of the consequences.

- (a) confident (b) heedless
 (c) weary (d) devoid

198. As the driver swerved violently at the turning, the wheel came off, as it was already

- (a) loos (b) loose
 (c) loon (d) loose

199. Some verbs need a to convey the full meaning.

- (a) complimen
 (b) complimentary
 (c) complement
 (d) component

200. The demonstration passed off without

- (a) coincidence
 (b) incidence
 (c) incident
 (d) accident