

## GENERAL INTELLIGENCE AND REASONING

**Directions (1-3) :** In each of the following questions, a series is given with one term missing. Choose the correct alternative from the given options that will complete the series.

1. 3, 17, 45, 87, 2

- (1) 153                      (2) 163  
(3) 123                      (4) 143

2. ASWD, CZUX, 2, GTVJ

- (1) EVSH                    (2) EUTH  
(3) EUSH                   (4) EVPI

3. 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



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

**Directions (4-5) :** In each of 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 are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, e.g., 'A' can be represented by (3, 4) etc., and 'Q' can be represented by (5, 7) etc. Similarly, you have to identify the set for the word given in questions.

### 4. 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

#### Matrix-II

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

- (1) 77, 85, 21, 13, 57, 20  
(2) 20, 85, 77, 21, 57, 13  
(3) 20, 77, 85, 21, 13, 57  
(4) 77, 21, 20, 85, 57, 13

### 5. 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	E	S	P	A	R

#### 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

- (1) 87, 75, 12, 68, 23  
(2) 87, 12, 75, 68, 23  
(3) 86, 12, 75, 23, 68  
(4) 23, 75, 12, 87, 23

**Directions (6-11) :** In each of the following questions, find the odd word/letters/number pair from the given alternatives.

6. Find the odd letters.  
(1) M S Y                    (2) A G M  
(3) I N U                    (4) L R X
7. Find the odd word.  
(1) Captain                (2) Air Marshal  
(3) Wing Commander    (4) Group Captain
8. Find the odd letters.  
(1) D P O U                (2) N P S W  
(3) K M P T                (4) D F I M
9. Find the odd number.  
(1) 495                      (2) 168  
(3) 583                      (4) 288
10. Find the odd number pair.  
(1) 243-132                (2) 108-57  
(3) 99-63                    (4) 183-54
11. Find the odd word.  
(1) Square                 (2) Kite  
(3) Rectangle             (4) Rhombus

**Directions (12-18) :** In each of the following questions, select the missing number from the given responses :

12.



- (1) 9                        (2) 18  
(3) 24                      (4) 27

13.



- (1) 131                      (2) 130  
(3) 129                      (4) 128

144	25	13
196	29	18
324	?	19

- (1) 41                      (2) 39  
(3) 37                      (4) 29

15. 16   25   48   8

2   9   3   6

8   25   36   16

4   5   4   ?

(1) 3                      (2) 12

(3) 6                      (4) 8

16. Which one of the given responses would be a meaningful order of the following?

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

(1) 3, 4, 1, 2, 5

(2) 1, 4, 3, 5, 2

(3) 3, 1, 2, 4, 5

(4) 5, 2, 4, 3, 1

**Directions (17-18) :** In each of the following questions, which answer figure will complete the pattern in the question figure?

17. **Question Figure :**



**Answer Figures :**



18. **Question Figure :**



**Answer Figures :**



**Directions (19-24) :** In each of the following questions, select the related word/letters/number from the given alternatives.

19. **ACEY : CADW :: ENPU : ?**

- (1) ZYEU    (2) BXWD  
(3) GTHS    (4) FLVE

20. **Modesty : Arrogance :: ?**

- (1) Deftly : Strength  
(2) Speak : Lecture  
(3) Obese : Fat  
(4) Ship : Fleet

21. **Nurture : Neglect :: Demigrate : ?**

- (1) Reveal    (2) Recognise  
(3) Reply    (4) Exact

22. **43 : 57 :: 111 : ?**

- (1) 133    (2) 136  
(3) 135    (4) 134

23. **ABDQ : ZYWT :: BCHE : ?**

- (1) YXVS    (2) YXTS  
(3) SVXY    (4) QPRU

24. **23 : 0827 :: 45 : ?**

- (1) 08125    (2) 12025  
(3) 64125    (4) 12125

25. A 7 metre long piece of cloth is cut into three smaller pieces. How long is the longest of the three pieces? Given that **Statements :**

1. One piece is 3.70 metre long.  
2. One piece is 1.50 metre longer than another piece and the remaining piece is 30 cm long.

(1) Statement I alone is sufficient and also Statement II alone is sufficient to answer the problem.

(2) Statement I alone but not Statement II alone is sufficient to answer the problem.

(3) Statement II alone but not Statement I alone is sufficient to answer the problem.

(4) Statement I and II both are needed to answer the problem.

**Directions (26-27) :** In each of 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?

26. **Question Figure :**



**Answer Figures :**



27. **Question Figure :**

MMMMN



**Answer Figures :**



28. X is sister of Y. Y is brother of Z. Z is husband of P. P is father of Y. How is P related to Q?

- (1) Daughter    (2) Uncle  
(3) Daughter-in-law  
(4) Sister

**Directions (29-30) :** In each of the following questions, from the given answer figures, select the one in which the question figure is hidden/embedded.

29. **Question Figure :**



**Answer Figures :**



30. **Question Figure :**



**Answer Figures :**



31. Indu starts travelling towards east and stops after 35 km and turns right and walks another 15 km and again turns right

and walk 15 km and then stop. What is the minimum distance Indu has to walk to reach the starting point?

- (1) 30 km (2) 25 km  
(3) 20 km (4) 35 km

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

- (1) South-East  
(2) North-East  
(3) North-West  
(4) South-West

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



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

34. 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 :



Directions (35-38) : In each of the following questions, from the given alternative words, select the word which cannot be formed using the letters of the given word.

35. ORGANISATION

- (1) NATION (2) ORGAN  
(3) ORATION (4) ORGANISE

36. PERAMBULATOR

- (1) LABOUR (2) RAMELE  
(3) MARBLE (4) RAMBANT

37. 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.

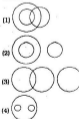
Which of the following represents Government servants who are tax payers, but are neither females nor graduates?



Government Servants

- (1) 6 (2) 12  
(3) 7 (4) 5

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



39. 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?

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

40. If 678 = 83, 476 = 75 and 557 = 80, what is 369 = ?

- (1) 99 (2) 18  
(3) 40 (4) 72

41. 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?



- (1) 75 (2) 45  
(3) 95 (4) 25

42. 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 :



43. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?

\_ qpx\_rq\_xxx\_pxx\_qp\_x

- (1) rpxpx (2) rpxpx  
(3) pxpx (4) xpxpx

44. Grouping of words are given. Choose the next words in the series from the given options. AFGHAN, INDEFINITELY, SYNOPSIS, STUPENDOUS, BURST

- (1) GLACIAL  
(2) RESCRIPT  
(3) HIJACKER  
(4) COMPANION

45. If BHASHA is coded as 154754, BRAIN is coded as 13408, AHINSA will be coded as

- (1) 450874 (2) 450847  
(3) 458074 (4) 405847

46. 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.

- (1) Neither conclusion I nor II follows.
- (2) Both conclusions I and II follow.
- (3) Only conclusion I follows.
- (4) Only conclusion II follows.

47. Which numbers complete the series?

- 3 1 5 3 \_ 5 9 \_ 11  
(1) 7, 6 (2) 6, 6  
(3) 8, 7 (4) 7, 7

48. Mona is 6 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?

- (1) 35 (2) 30
- (3) 34 (4) 40

49. 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.  
 $(6 \times 7) - (8 \times 9) - (10 \times 11) = ?$

- (1) 52 (2) 224
- (3) 04 (4) 33

50. In a certain language GAMBLE is coded as FBLCRF, how is FLOWER coded in that code?

- (1) GMPVDS (2) EMNXDS
- (3) EKNVDQ (4) GRPVQD

## GENERAL KNOWLEDGE & GENERAL AWARENESS

51. Professor Ramesh Chand has been appointed as new full time member of National Institution for Transforming India (NITI) Aayog. He is a

- (1) Renowned English Professor
- (2) None of these
- (3) Renowned Agriculture Expert
- (4) Renowned Physics Professor

52. Political Science is a science of

- (1) Economic Engineering
- (2) Social Engineering
- (3) Cultural Engineering
- (4) Political Engineering

53. 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

- (1) decrease (2) increase
- (3) increase or decrease depending on the chemical composition of the gas
- (4) remain unchanged

54. Demand curve is indeterminate under

- (1) duopoly (2) oligopoly
- (3) pure competition
- (4) monopoly

55. A dispersion indicates

- (1) the value of mean.
- (2) spread of data around central measure.
- (3) the value of standard deviation.
- (4) the value of mode.

56. Comptroller and Auditor General of India is not responsible for

- (1) Making payments to the States.
- (2) Issue of money from the Consolidated Fund.
- (3) Accounting of States & UTs, and Auditing of all Government Institutions.
- (4) Regulating Reserve Bank of India.

57. The concept of Liberty, Equality and Fraternity enshrined in

the Indian Constitution is inspired from

- (1) US Constitution
- (2) French Constitution
- (3) UK Constitution
- (4) Irish Constitution

58. Parliamentary Government is a form of Constitutional democracy in which

- (1) the executives emerge from and is responsible to the judiciary.
- (2) the legislature emerge from and is responsible to the executive.
- (3) the executive emerge from and is responsible to the legislature.
- (4) the legislatures emerge from and is responsible to the judiciary.

59. Viruses that infect bacteria are called

- (1) Bacteriophages
- (2) Bacteriophages
- (3) Basophils
- (4) Basal body

60. How many times did Babur invade India before 1526 A.D.?

- (1) Five times
- (2) Four times
- (3) None of these
- (4) Two times

61. One strategy of allocating kernel memory is known as

- (1) slab allocation
- (2) register allocation
- (3) resource allocation
- (4) frames allocation

62. 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?

- (1) Switzerland
- (2) Afghanistan
- (3) Bangladesh
- (4) Burma

63. The capsule of *Anthraceros* differs from *Puccinia* in that in the latter

- (1) columella is present
- (2) columella is absent
- (3) elaters are present
- (4) elaters are absent

64. If the pressure in a closed vessel is reduced by drawing out some gas, the mean free path of the gas molecules will
- increase or decrease depending on the nature of the gas
  - increase
  - remain unchanged
  - decrease
65. 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
- AIDS
  - None of these
  - Malaria
  - TB
66. Which of the following islands is under direct threat of rising sea levels due to climatic change has appealed for help from European leaders?
- Palau
  - Marshall Islands
  - Tuvalu Islands
  - Nauru
67. The directive principles of state policy of the Indian Constitution is an idea borrowed from the Constitution of
- Russian
  - Ireland
  - American
  - Australian
68. The book "Globalization, Democratization and Distributive Justice" has been authored by
- Saiman Roshdies
  - Karan Dajaj
  - Anita Nair
  - Mool Chand Sharma
69. In which of the following year the Gandhi-Irwin Pact was signed?
- 1931
  - 1939
  - 1935
  - 1932
70. Marginal Revenue is
- Revenue realized from the sale of all units
  - The average revenue of a firm.
  - Revenue realized on the sale of an extra units.
  - Revenue realized on every unit sold.
71. In which type of vulnerability, an unauthorized host pretends to be authorized host by meeting some authorization criterion?
- spoofing
  - tunnel
  - phishing
  - keystroke logger
72. In Indian architecture 'Surkhi' was introduced by
- Kushans
  - Mughals
  - Guptas
  - Sultanic Sultans
73. Which of the following Football teams won UEFA Super Cup of Georgia on August 13, 2015?
- Atlético Madrid
  - Real Madrid
  - Barcelona
  - Sevilla
74. In the absence of the president and Vice-President, who discharges the functions of the president?
- Comptroller and Auditor General
  - Advocate General
  - Chief Justice of India
  - Attorney General
75. Which of the following has become the first airport in the world to fully operational on Solar Power?
- Amritsar International Airport
  - Lokpya Gopinath Bardoli International Airport.
  - Netaji Subhash Chandra Bose International Airport.
  - Cochin International Airport Ltd. (Kerala).
76. U-235 belongs to which member of the series?
- Actinium series
  - Thorium series
  - Neptunium series
  - Uranium series
77. If the selling price of product under perfect competition is Rs. 25, the Marginal Revenue will be
- Zero
  - Less than Rs. 25
  - More than Rs. 25
  - Equal to Rs. 25
78. A plant with green leaves placed in red light will appear
- Red
  - Black
  - Violet
  - Green
79. In terms of value, India's exports in Descending order are
- Textiles, Gems & Jewellery, Engineering goods.
  - Textiles, Engineering goods, Gems & Jewellery.
  - Engineering goods, Gems & Jewellery, Textiles.
  - Gems & Jewellery, Textiles, Engineering goods.
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?
- Phage typing
  - DNA hybridization
  - Serotyping
  - Biotyping
81. Antigen presenting cells are specialized cells present in all of the following, except
- Kidney
  - Skin
  - Spleen
  - Lymph node
82. The original jurisdiction of the Supreme Court covers,
- Territorial related cases.
  - National Integrity of India.
  - Civil and Criminal cases.
  - Disputes between different units of the Indian Union.
83. Altimoculus clouds occur at altitude of
- 10000 m - 12000 m
  - 1000 m - 1600 m
  - 2000 m - 6000 m
  - 6000 m - 10000 m
84. Which type of molecular motion does not contribute towards internal energy?
- None of these
  - Rotational
  - Translational
  - Vibrational
85. The lethal dose required to kill 50% of the lab animals tested under standard is referred as
- LD<sub>50</sub>
  - ID
  - ID<sub>50</sub>
  - MILD
86. The method of age determination called "radioactive uranium dating" cannot be used to determine the age of

- (1) the earth  
 (2) fossils and plant bodies  
 (3) rocks  
 (4) minerals on earth
- 87.** Starch is insoluble in water but still it is stored in large quantity in potato because  
 (1) soil microorganisms deposit it in the tuber.  
 (2) it is translocated in the form of sugar from leaves.  
 (3) it is synthesized in potato root.  
 (4) it is useful for human.
- 88.** An organic compound which produces bluish green coloured flame on heating in presence of copper is  
 (1) Aniline  
 (2) Benzoic Acid  
 (3) Chlorobenzene  
 (4) Benzaldehyde
- 89.** Who among following Indian writers have been long listed among the 13 international authors for The Man Booker Prize of 2015?  
 (1) Amrutha Roy and Sanjeev Sahota  
 (2) Arvind Adiga and Shashi Tharoor  
 (3) Amitav Ghosh and Amrita Pritam  
 (4) Chetan Bhagat and Jhumpa Lahiri
- 90.** Which of the following is not the essential element of the State?  
 (1) Population  
 (2) Sovereignty  
 (3) Institutions  
 (4) Government
- 91.** The minor irrigation schemes have Cultural Command Area (CCA) upto  
 (1) 2000 hectares  
 (2) 3000 hectares  
 (3) 2500 hectares  
 (4) 1500 hectares
- 92.** Which one of the following Pacts sought to be resolved the Hindu-Muslim differences?  
 (1) Lahore Pact  
 (2) Poona Pact  
 (3) Gandhi-Irwin Pact  
 (4) Lucknow Pact
- 93.** The principle involved in the absorption of water by soil is  
 (1) Capillary action  
 (2) Principle of absorption  
 (3) Condensation  
 (4) Suction action
- 94.** In a simple Keynesian model equilibrium is characterized by the equality of  
 (1) planned saving and planned investment.  
 (2) realized saving and realized investment.  
 (3) planned saving and realized investment.  
 (4) realized saving and planned investment.
- 95.** Which of the following is present in maximum amount in acid rain?  
 (1)  $H_2CO_3$  (2) HCl  
 (3)  $HNO_3$  (4)  $H_2SO_4$
- 96.** Who of the following is not one of the recipients of Arjuna Award 2015?  
 (1) Jitu Rai (Shooting)  
 (2) P.H. Sreejesh (Hockey)  
 (3) Dipa Karmakar (Gymnastics)  
 (4) Anoop Singh (Wrestling)
- 97.** Who among the following was the Prime Minister of England when India was given independence?  
 (1) Atlee (2) Churchill  
 (3) Mountbatten  
 (4) Wavell
- 98.** The Vedic literature was composed between  
 (1) 3000 B.C and 1000 B.C  
 (2) 2500 B.C. and 500 B.C  
 (3) 3500 B.C and 2500 B.C  
 (4) 2500 B.C and 1000 B.C
- 99.** Basic problems of an economy is/are  
 (1) Elimination of poverty and reduction of inequalities of income and wealth.  
 (2) Decide as to what, how and for whom to produce.  
 (3) Providing Social Security and employment to all.  
 (4) Providing basic requirements of life to all.
- 100.** The Rath temples at Mahabalipuram were built by  
 (1) Pallavas (2) Chakrayas  
 (3) Chedis (4) Cholas

- 101.** A can is full of a mixture of two liquids A and B in the ratio of 7 : 5. When 9 litres of mixture is 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  
 (1) 21 litres (2) 30 litres  
 (3) 10 litres (4) 36 litres
- 102.** A merchant purchases a wrist watch for Rs. 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  
 (1) Rs. 1800 (2) Rs. 1200  
 (3) Rs. 1600 (4) Rs. 1400
- 103.** A and B can separately finish a piece of work in 30 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  
 (1) 50 days (2) 60 days  
 (3) 40 days (4) 30 days
- 104.** The average monthly income of A and B is Rs. 15,050, the average monthly income of B and C is Rs. 15,350 and the average income of A and C is Rs. 15,200. The monthly income of A is  
 (1) Rs. 14,900 (2) Rs. 15,300  
 (3) Rs. 15,900 (4) Rs. 15,500
- 105.** 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  
 (1)  $36^\circ$  (2)  $108^\circ$   
 (3)  $54^\circ$  (4)  $72^\circ$
- 106.** From the top and bottom of a straight hill, the angle of depression and elevation of the top of a pillar of 10m. height are observed to be  $60^\circ$  and  $30^\circ$  respectively. The height (in metres) of the hill is  
 (1) 80 (2) 40  
 (3) 30 (4) 60
- 107.** A man sells an article at 9% above the cost price. If he had

bought it at 5% less than what he paid for it and sold it for Rs. 2 less, he would have gained 10%. The cost price of the article is

- (1) Rs. 350 (2) Rs. 350  
(3) Rs. 200 (4) Rs. 400

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

- (1)  $72^\circ$  (2)  $36^\circ$   
(3)  $144^\circ$  (4)  $108^\circ$

(1)  $2\sqrt{2}$  (2) 6

(3) 1 (4)  $2(1+\sqrt{2})$

118. Let  $n$  be a positive integer. When 69 and 125 are divided by  $n$ , the remainders are 4 and 8 respectively. Then the value of  $n$  is

- (1) 17 (2) 9  
(3) 15 (4) 7

**Directions (109–113):** Study the following table which shows the amount of money invested (Rupees in crore) in the core infrastructure areas of two districts, A and B of a state and answer the questions that follow.

Core Area	District A		District B	
	1995	1996	1995	1996
Electricity	815.2	1054.3	2055.8	3565.1
Chemical	389.6	476.7	745.3	986.4
Thermal	632.4	565.9	1332.7	1026.3
Solar	468.1	589.6	1363.5	1792.1
Nuclear	817.9	803.1	1674.5	2182.1
<b>Total</b>	<b>2923.1</b>	<b>3489.6</b>	<b>7081.6</b>	<b>8362.0</b>

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

- (1) 24% (2) 21%  
(3) 14% (4) 18%

110. 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?

- (1) 52% (2) 41%  
(3) 58% (4) 47%

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

- (1) Chemical (2) Nuclear  
(3) Electricity (4) Solar

112. 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 years?

- (1) 2.8 (2) 2.4  
(3) 1.7 (4) 1.9

113. 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?

- (1) Rs. 9170 crore  
(2) Rs. 8540 crore  
(3) Rs. 10020 crore  
(4) Rs. 9850 crore

114. 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

- (1) 36000 (2) 27000  
(3) 40000 (4) 90000

115. The value of

$$\left(\sqrt{6} - \sqrt{10} - \sqrt{21} + \sqrt{35}\right)$$

$$\left(\sqrt{6} + \sqrt{10} + \sqrt{21} + \sqrt{35}\right)$$

- (1) 40 (2) 18  
(3) 10 (4) 27

116. If  $0 < \theta < 90^\circ$ ,  $\tan \theta + \sin \theta = m$  and  $\tan \theta - \sin \theta = n$ , where  $m \neq n$ , then the value of  $(m^2 - n^2)$  is

- (1)  $4mn$  (2)  $4\sqrt{mn}$

$$(3) 2(m^2 + n^2)$$

$$(4) 2(\tan^2 \theta + \sin^2 \theta)$$

117. If  $x = 1 + \sqrt{2} + \sqrt{3}$

$$\text{and } y = 1 + \sqrt{2} - \sqrt{3}$$

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

119. If  $\frac{a}{b} = \frac{c}{d} = \frac{e}{f}$  then each of

them is equal to

$$(1) \frac{a + c + e}{b + d + f}$$

$$(2) \frac{a - 3c + 5e}{b - d - f}$$

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

$$(4) \frac{a + 3c - 5e}{b + 3d - 5f}$$

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

- (1) 0 (2) 23  
(3) 22 (4) 44

121. 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

- (1) 8 : 1 (2) 3 : 1  
(3) 6 : 5 (4) 4 : 3

122. 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

- (1) 45 days (2) 50 days  
(3) 25 days (4) 40 days

123. If  $\frac{1}{a - \frac{1}{b - \frac{1}{c}}} = \frac{16}{23}$ , then

the value of  $a + b + c$  is

- (1) 6 (2) 9  
(3) 3 (4) 12

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

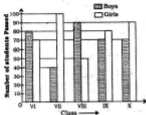
(1)  $\frac{15}{17}$

(2)  $\frac{17}{30}$

(3)  $\frac{17}{15}$

(4)  $\frac{15}{34}$

**Directions (135–138):** The bar graph shows the results of an annual examination in a secondary school in a certain year. Answer the following four questions based on this chart.



135. The class having the highest number of passed students is

- (1) X (2) VII  
(3) IX (4) VIII

136. The average number of boys who passed per class is

- (1) 78 (2) 70  
(3) 75 (4) 72

137. 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

- (1) 18 : 21 (2) 20 : 23  
(3) 19 : 25 (4) 21 : 26

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

- (1) X (2) IX  
(3) VI (4) VIII

139. In a  $\Delta ABC$ , 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  $\Delta APQ$  and  $\Delta ABC$  is

- (1) 25 : 4 (2) 9 : 25  
(3) 9 : 4 (4) 4 : 9

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

- (1) 8% (2) 6%  
(3) 9% (4) 10%

131. The sides of a triangle are 7 cm, 8 cm and 9 cm. The area of the triangle (in  $\text{cm}^2$ ) is

- (1)  $30\sqrt{5}$  (2)  $6\sqrt{5}$   
(3)  $24\sqrt{5}$  (4)  $12\sqrt{5}$

132. 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

- (1) 6% (2) 8%  
(3) 12% (4) 10%

133. If  $x + 1 = \sqrt{y} + 3$ ,  $y > 0$ , then the value of

$$\frac{1}{2} \left( \frac{x^2 - 6x^2 + 12x - 8}{\sqrt{y}} - y \right)$$

- (1)  $\frac{1}{2}$  (2) 0  
(3) -1 (4) 1

134. The length of the diagonal BD of the parallelogram ABCD is 12 cm. P and Q are the centroids of  $\Delta ABC$  and  $\Delta ADC$  respectively. The length (in cm) of the line segment PQ is

- (1) 4 (2) 3  
(3) 6 (4) 5

135. A sum of Rs. x was put at simple interest at a certain rate for 2 years. Had it been put at 5% higher rate, it would have fetched Rs. 300 more. The value of 4x is

- (1) Rs. 24,000  
(2) Rs. 30,000  
(3) Rs. 36,000  
(4) Rs. 16,000

136. The average age of the 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

- (1) 3 : 4 (2) 3 : 5  
(3) 2 : 3 (4) 1 : 2

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

- (1)  $\frac{3}{4}$  (2)  $\frac{3}{5}$   
(3)  $\frac{2}{3}$  (4)  $\frac{4}{5}$

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

$$\frac{1}{2} \cot A \left[ \frac{1 - (\sec A - \tan A)^2}{\cos A (\sec A - \tan A)} \right]^2$$

- (1) 1 (2) 2  
(3) 0 (4)  $\frac{1}{2}$

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

- (1)  $\sqrt{2} : 3$  (2)  $3 : 2\sqrt{2}$   
(3)  $2\sqrt{2} : 3$  (4)  $3 : \sqrt{2}$



140. The sum of two numbers is  $1\frac{1}{3}$  and their difference is  $4\frac{2}{3}$ . The product of the numbers is

- (1) 60                      (2)  $53\frac{1}{3}$   
(3) 50                      (4)  $48\frac{2}{3}$

141. A sum of money placed at compound interest doubles itself 2 years. The year it will take to amount 4 times of itself is in

- (1) 6                      (2) 4  
(3) 8                      (4) 3

142. The value of

- $$\frac{0.0137^2 + 0.0000000348}{(0.0137)^2 - 0.0000001 + 0.000048}$$
- (1) 0.04                      (2) 0.01  
(3) 0.03                      (4) 0.02

143. A chord of length 24 cm is at a distance of 8 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

- (1) 17 cm                      (2) 11 cm  
(3) 12 cm                      (4) 10 cm

144. 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?

- (1) 80 kmph.  
(2) 60 kmph.  
(3) 70 kmph.  
(4) 40 kmph.

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

- (1) 52 km                      (2) 48 km  
(3) 50 km                      (4) 46 km

146. 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

- (1) 120                      (2) 100  
(3) 140                      (4) 160

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

- (1)  $3(p - q)(q - r)(r - p)$   
(2)  $(p - q)(q - r)(r - p)$   
(3) 1                      (4) 0

148. 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

- (1) 2 : 1                      (2) 1 : 2  
(3) 1 : 4                      (4) 1 : 3

149. 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

- (1) 20% profit                      (2) 20% loss  
(3) 32.5% loss                      (4) 120% profit

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

$$\frac{x^4 + 3x^3 + 5x^2 + 3x + 1}{x^4 + 1}$$

- (1) 2                      (2) 7  
(3) 3                      (4) 5

### ENGLISH COMPREHENSION

**Directions (151 - 155) :** In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/sentences.

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

- (1) Pantheism                      (2) Mysticism  
(3) Naturalism                      (4) Polytheism

152. Gradually advanced

- (1) evolved  
(2) evolved  
(3) evaded  
(4) advantaged

153. The study of growing garden plants

- (1) nursery

- (2) orchard  
(3) nomenclature  
(4) horticulture

154. One who copies from other writers

- (1) Antagonist  
(2) Contender  
(3) Plagiarist  
(4) Offender

155. Scientific study of Earth-  
quakes

- (1) Seismology  
(2) Astrology  
(3) Geography  
(4) Anthropology

**Directions (156 - 160) :** In the following questions four words are given in each question, out of which only one word is correctly spelt. Find the correctly spelt word.

156. (1) Hygenic                      (2) Hygienic  
(3) Hyegenic                      (4) Hyeritic

157. (1) Auspicious  
(2) Ausicious  
(3) Hillarious  
(4) Congruous

158. (1) Diveriation  
(2) Diverston  
(3) Dysfunction  
(4) Dastitution

159. (1) Turbelance  
(2) Obesience  
(3) Perseverance  
(4) Surveilance

160. (1) Concelment  
(2) Containment  
(3) Confinment  
(4) Consignment

**Directions (161 - 165) :** In the following questions, 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 as your answer.

161. Some verbs need a \_\_\_\_\_ to convey the full meaning.

- (1) complimentary  
(2) complement  
(3) component  
(4) compliment

162. His profession is teaching but his \_\_\_\_\_ is photography.

- (1) vacation (2) vocation  
(3) vocative (4) avocation

163. The demonstration passed off without \_\_\_\_\_.

- (1) coincidence  
(2) accident  
(3) incident  
(4) incidence

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

- (1) lost (2) lost  
(3) loose (4) loss

165. He quarrelled with his boss, \_\_\_\_\_ of the consequences.

- (1) confident (2) devoid  
(3) heedless (4) weary

**Directions (166-170) :** In the following five questions, choose the word opposite in meaning to the given word.

166. Fortify

- (1) undermine (2) intensify  
(3) strengthen (4) support

167. Misanthrope

- (1) pedant  
(2) pragmatist  
(3) zealot  
(4) philanthropist

168. Abstain

- (1) dismiss (2) indulge  
(3) disgrace (4) repel

169. Ostracize

- (1) crucify (2) shun  
(3) discard (4) patronize

170. Unapproachable

- (1) unclear  
(2) accessible  
(3) withdrawn  
(4) casual

**Directions (171 - 175) :** In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.

171. JINX

- (1) taunt (2) juncture  
(3) tear (4) spell

172. CONTENTIOUS

- (1) precious  
(2) controversial  
(3) benevolent  
(4) extravagant

173. CONJECTURE

- (1) critic (2) gathering  
(3) strife (4) guess

174. BRAZEN

- (1) modest  
(2) melodramatic  
(3) shameless  
(4) trashy

175. SYNOPSIS

- (1) discussion  
(2) preview  
(3) summary  
(4) report

**Directions (176-180) :** In the following questions, read the passage carefully and choose the best answer to each question out of the four alternatives.

**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.

176. The word opposite in meaning to "vigilant" is

- (1) annoyed  
(2) lenient  
(3) careless  
(4) displeased

177. In the Appalachian region MTR has caused

- (1) permanent beautification  
(2) landslides  
(3) floods  
(4) widespread damage

178. MTR operations cause environmental hazards because

- (1) it causes landslides.  
(2) it causes explosion.  
(3) mountaintops dumped in valleys and streams contain toxic substance.  
(4) it destroys natural vegetation.

179. After the MTR operation, the mining companies

- (1) restore native vegetation.  
(2) secure rock formations to prevent erosion.  
(3) beautify the mountains.  
(4) replace the mountaintops.

180. The term "overburden" means

- (1) debris from landslides.  
(2) remnants of natural forests.  
(3) weeds planted by mining companies.  
(4) excess mountaintop left after the extraction of coal through the blast.

**Directions (181-185) :** In the following questions, a sentence/part of the sentence is printed in bold. Below are given alternatives to the bold sentence/part of the sentence which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is No Improvement.

181. I contradicted against him.

- (1) contradicted over  
(2) No improvement  
(3) contradicted  
(4) contradicted with

182. You must accustom yourself with new ideas.

- (1) accustomed yourself with  
(2) accustom yourself to  
(3) No improvement  
(4) get accustom to

183. You should **cut off** on the amount of cigarettes you smoke.

- (1) No improvement
- (2) cut up
- (3) cut down
- (4) cut out

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

- (1) did it stopped raining than
- (2) No improvement
- (3) had it stopped raining than
- (4) did it stop raining than

185. Try to **lower** the amount of fat in your diet.

- (1) Cut
- (2) No improvement
- (3) Reduce
- (4) Lose

**Directions (186-190)** : 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. The number of that part is the answer. If a sentence is free from error, your answer is No error.

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

- (1) No error
- (2) that he will return
- (3) in an hour
- (4) He assured me

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

- (1) No error
- (2) these days is belonging
- (3) The car that he is using
- (4) to his employer.

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

- (1) No error
- (2) visit my aunt in the city.
- (3) since I had gone to
- (4) Three years have elapsed

189. I reached two hours before he had came.

- (1) two hours before
- (2) No error
- (3) he had came.
- (4) I reached

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

- (1) No error
- (2) not have shouted
- (3) He needs
- (4) at me that way.

**Directions (191 - 195)** : In the following questions, read the passage carefully and choose the best answer to each question out of the four alternatives.

#### PASSAGE

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.

191. Flattery means

- (1) being anti - social
- (2) insincere praise in order to please
- (3) claiming what is not
- (4) being immoral ours

192. 'Thrive' in the passage means

- (1) fills
- (2) prospers
- (3) provides
- (4) collects

193. Flattery can stain the

- (1) heart
- (2) emotion
- (3) mind
- (4) human conscience

194. How does flattery deceive us ?

- (1) It makes us more corrupt.
- (2) It makes us feel indecent.
- (3) It makes us bankrupt.
- (4) It gives us false ideas about ourselves.

195. How does the weapon of flattery work ?

- (1) It conquers the man with a weak will.
- (2) It conquers the man with a strong will.
- (3) A man feels sad.
- (4) A man does not like it.

**Directions (196 - 200)** : In each of the following questions, four alternatives are given for the Idiom/Phrase printed in bold at the question places. Choose the alternative which best expresses the meaning of the Idiom/phrase as your answer.

196. To have an axe to grind.

- (1) to criticise someone
- (2) to fail to arouse interest
- (3) to work for both sides
- (4) to have a selfish end to serve

197. A homest's nest.

- (1) a comfortable position
- (2) an unpleasant situation
- (3) among thorns
- (4) a dilemma

198. To roll out the red carpet.

- (1) to buy a gift
- (2) to give a warning signal
- (3) to decorate the room
- (4) to give a grand welcome

199. To put his foot down.

- (1) concede
- (2) not to yield
- (3) resign
- (4) withdraw

200. Have a foot in the grave.

- (1) be afraid to die.
- (2) have no interest in life.
- (3) be close to death.
- (4) have an incurable disease.