

NTSE STAGE – I (DELHI STATE)
05 – A (2019 – 20)
(For Class – X)
MENTAL ABILITY TEST (MAT)

QUESTION PAPER

1. What is sum of all positive factors of 256.
1. 526
2. 511
3. 625
4. 562
2. Value of $\frac{X}{X+1} + \frac{X+1}{X} - \frac{1}{X(X+1)}$ will be?
1. X^2
2. 1
3. X
4. 2
3. Sum of sequence $5+6+7+8+\dots+19$ will be?
1. 180
2. 175
3. 185
4. 190
4. If three Numbers are in Ratio $\frac{1}{2} : \frac{2}{3} : \frac{3}{4}$, Difference between largest and smallest is 27 then numbers are
1. 54, 72, 81
2. 24, 45, 51
3. 64, 72, 91
4. 54, 65, 81
5. Which of the following number will completely divide the value of $(3^{25} + 3^{26} + 3^{27} + 3^{28})$?
1. 35
2. 40
3. 50
4. 45
6. Rohan's score on the mid term exam was 75, and his score on the final exam was 90. If the weight of the final exam is twice that of mid term, what is Rohan's final score in the course?
1. 82.5
2. 80
3. 85.5
4. 85
7. A grandmother, mother and daughter wish to arrange themselves in a row in order to be photographed. How many different ways can they arrange themselves?
1. 6
2. 3
3. 18
4. 9
8. At the time of marriage a man was 6 year older than his wife, but 12 year after the marriage his age was $\frac{6}{5}$ times the age of his wife. Their ages (in years) at the time of the marriage were?
1. 26, 20
2. 24, 18
3. 27, 21
4. 30, 24
9. If we throw a dice, what is the probability of obtaining a result that is less than 4. If we know that the result obtained was an even number?
1. $\frac{1}{2}$
2. $\frac{2}{3}$

3. $\frac{1}{3}$
4. $\frac{4}{5}$
10. There are 10 balls in a box, 5 white and 5 black. Two balls are removed randomly from the box, one after another. The first ball that is removed is black and it is not returned to the box. What is the probability that the second ball that is removed is also black?
1. $\frac{5}{9}$
2. $\frac{4}{9}$
3. $\frac{3}{9}$
4. $\frac{1}{2}$
11. Some equations are based on the basis of a certain system. Using the same pattern solve the unsolved equation. If $10 - 3 = 12, 12 - 4 = 13, 14 - 5 = 14$ what is $16 - 6 = ?$
1. 10
2. 15
3. 16
4. 18
12. Excluding stoppages, the speed of a bus is 54 kmph and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?
1. 9
2. 10
3. 12
4. 20
13. If $40\% \text{ of } 1620 + 30\% \text{ of } 960 = ?\% \text{ of } 5200$
1. 12
2. 24
3. 5
4. 18
14. In a row, 25 trees are planted at equal distance from each other. The distance between 1st and 25th tree is 30m. What is the distance between 3rd and 15th tree?
1. 8m
2. 15m
3. 16m
4. 18m
15. In a school, the bell is rung once after each half an hour. The school starts at 8:00 AM and close at 1:30PM. The bell is rung 3 times continuously, at the time beginning, at the time of lunch break at 10:00 and 10:30 AM and at the end. How many times is the bell rung every day?
1. 21
2. 22
3. 19
4. 20
16. If $80\% \text{ of } A = 50\% \text{ of } B$ and $B = x\% \text{ of } A$ then value of x will be?
1. 145
2. 170
3. 150
4. 160
17. The mean of five consecutive number is 7. Which is the highest number?
1. 10
2. 7
3. 9
4. 8
18. Find the value of $x^3 + y^3 + z^3 - 3xyz$. If $x + y + z = 15$ and $x^2 + y^2 + z^2 = 51$
1. 540
2. -540
3. -225
4. 765
19. If area of any triangle is 384 cm^2 and its sides are in Ratio 3:4:5 then perimeter of triangle will be?
1. 60cm
2. 48cm
3. 64cm
4. 96cm

20. $\frac{13}{48}$ is equal to

1. $\frac{1}{3 + \frac{1}{1 + \frac{1}{16}}}$

2. $\frac{1}{3 + \frac{1}{1 + \frac{1}{1 + \frac{1}{8}}}}$

3. $\frac{1}{3 + \frac{1}{1 + \frac{1}{2 + \frac{1}{4}}}}$

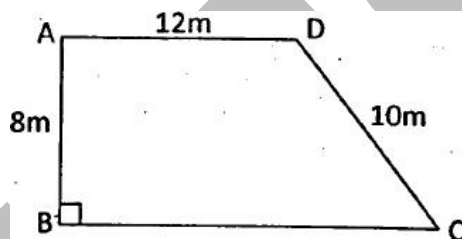
4. $\frac{1}{3 + \frac{1}{1 + \frac{1}{8}}}$

21. If for any two numbers a and b, the operation \$ is defined as follow:
 $a\$b = a \times (a + b)$ then $(2\$0)\1 ?

1. 12
3. 20

2. 10
4. 4

22. The accompanying figure shows a right + trapezoid ($AD \parallel BC$) Based on this information and the information in the figure, the area of the trapezoid (in m^2) is



1. 150
3. 108

2. 120
4. 96

Directions (23 to 25) find the missing numbers in the number series.

23. 4, 8, 28, ?, 244

1. 69
3. 80

2. 75
4. 90

24. 4, 7, 12, 19, 28, 39, ?

1. 48
3. 55

2. 52
4. 58

25. 10080, 1680, ?, 84, 28, 14

1. 840
3. 108

2. 168
4. 336

26. The compound interest on Rs. 30, 000 at 7% per annum is Rs. 4, 347. The period (in year) is

1. 1
3. 3

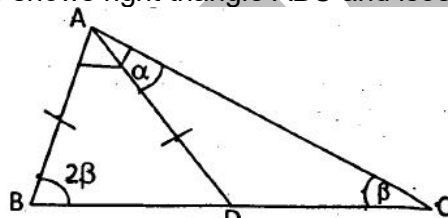
2. 2
4. 3.5

27. Among the numbers $\sqrt{2}, \sqrt[3]{9}, \sqrt[4]{16}, \sqrt[5]{32}$ the greatest one is:

1. $\sqrt{2}$
3. $\sqrt[4]{16}$

2. $\sqrt[3]{9}$
4. $\sqrt[5]{32}$

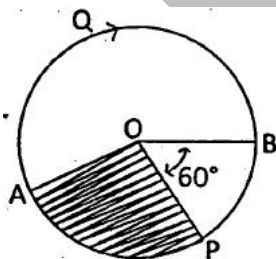
28. If $x + \frac{1}{x} = 2$ and x is real, then the value of $x^{17} + \frac{1}{x^{19}}$ is
1. 1
 2. 0
 3. 2
 4. -2
29. To win a 20 over match, the run rate is required 7.2. If in the end of 15th over, the run rate is 6. Then to win the match the required run rate is?
1. 1.2
 2. 13.2
 3. 10.8
 4. 12
30. If P and Q are HCF and LCF of two Algebraic expression respectively and $P + Q = x + y$ then what will be value of $P^3 + Q^3$?
1. $x^3 + y^3$
 2. $x^3 - y^3$
 3. $x + y$
 4. $x - y$
31. Pipe A and B can fill a tank in 12 minutes and 16 minutes respectively. Both pipe are kept open for x minutes and then B is closed and A fills the rest of tank in 5 minutes. The value of x will be
1. 4 minutes
 2. 6 minutes
 3. 5 minutes
 4. 7 minutes
32. The accompanying figure shows right triangle ABC and isosceles triangle ABD ($AB = AD$)



Based on this information and the information in the figure, the value of angle α is

1. 60°
2. 45°
3. 30°
4. 25°

33.



The accompanying figure shows a circle whose centre is O and radius is 10cm. The shaded sector equal $\frac{1}{6}$ of the area of the circle. Based on this information and the information in figure the length (in cm) of the arc AQB is

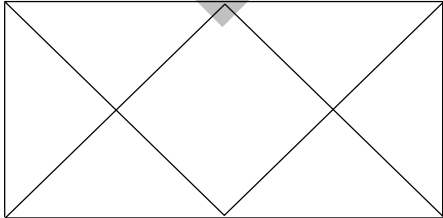
1. 30π
 2. $\frac{40}{3}\pi$
 3. $\frac{20}{3}\pi$
 4. 20π
34. If length of a Rectangle is increased by 25% and its width decreased by 20% then of the following which change in the Area of Rectangle occur.
1. 10% increase
 2. 16% increase

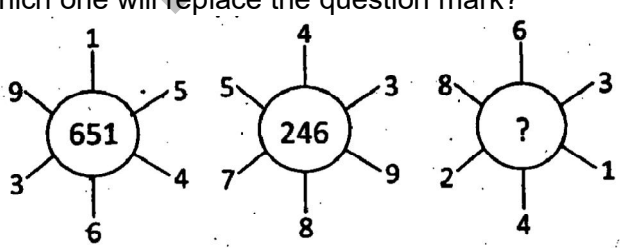
3. 5% decrease
4. No change
35. An official meeting is attended by 130 department employees of them 66 drink tea, 56 drink coffee and 63 drink juice, 27 can drink either tea or coffee, 25 can drink coffee or juice and 23 can drink juice and tea. 5 employees can drink any of the three. How many drink only tea.
1. 21
2. 22
3. 18
4. 20
36. Of the three number, the sum of first two is 55, third is 65, and sum of third with thrice of the first is 110. The third number is?
1. 25
2. 30
3. 35
4. 28

Directions : (37 to 40) Study the following table and answer questions given below:

EMPLOYEES SOURCE OF INCOME (Rs)					
	K	L	M	N	O
Salary	12000	6000	21000	9000	12000
Bonus	2400	1200	4500	2400	3000
Overtime	5400	2100	6000	5100	6000
Arrers	6000	5400	12000	4200	7500
Miscellaneous	1200	300	1500	300	1500
Total	27000	15000	45000	21000	30000

37. The employee who has minimum ratio of income from arrear to income from salary is
1. K
2. L
3. M
4. N
38. The employee who earns maximum bonus in comparison to his total income?
1. M
2. N
3. L
4. K
39. The employee who has maximum percentage of his salary out of the income?
1. K
2. L
3. M
4. O
40. The income from overtime is what percentage of the income from the arrears in case of employee in category O?
1. 80
2. 75
3. 25
4. 20
41. The ratio of the present ages of Mohan and Suresh is 4:5. Five year ago, the ratio of their ages was 7:9. Their present ages (in year) are:
1. 40, 50
2. 18, 25
3. 40, 60
4. 20, 25
42. For a business lunch in a certain restaurant, you may choose one of 3 different first courses and one of 4 different main course. In addition to first course and the main courses, you have a choice of a soup or dessert. How many different combinations of three course business lunch does this restaurant offer?
1. 12
2. 14
3. 18
4. 24
43. If the length of a rectangular plot of land is increased by $12\frac{1}{2}\%$ and the breadth is decreased by 10%, its area is --
1. Decreased by 1.25%
2. Decreased by 2.5%
3. Increased by 2.5%
4. Increased by 1.25%

44. K is an even number and P is an odd number. Which of the following statement is not correct?
1. $P - K - 1$ is an odd number
 2. $P + K + 1$ is an even number
 3. $P \times K + P$ is an odd number
 4. $P^2 + K^2 + 1$ is an even number
45. All of the liquid filling a cuboidal container that measures 2cm x 10cm x 20cm is poured into a cylindrical container with a base radius of 5cm. What height (in cm) will the surface of the liquid reach in the cylindrical container?
1. $\frac{16}{\pi}$
 2. $\frac{40}{\pi}$
 3. 8π
 4. 8
46. ($0 < \theta < 90$)
If $\tan \theta + \cot \theta = 2$ then what will be value of $\tan^{100} \theta + \cot^{100} \theta$?
1. 2
 2. $2\sqrt{3}$
 3. 1
 4. $\frac{1}{\sqrt{3}}$
47. What is the coefficient of a^2b^2 in the expansion of $(a + b)^4$?
1. 1
 2. 6
 3. 2
 4. 3
48. In a class composed of x girls, y boys. What part of the class is composed of girls?
1. $y(x + y)$
 2. $\frac{x}{xy}$
 3. $\frac{x}{(x + y)}$
 4. $\frac{y}{xy}$
49. The expression $2^{6n} - 4^{2n}$, where n is a natural number is always divisible by --
1. 15
 2. 18
 3. 36
 4. 48
50. If $x = 2 - 2^{1/3} + 2^{2/3}$ then the value of $x^3 - 6x^2 + 18x + 18$ is --
1. 22
 2. 33
 3. 40
 4. 45
51. In this given figure how many triangle are there?
- 
1. 12
 2. 10
 3. 14
 4. 8
52. If Amit's father is Ketan's father's only son and Ketan has neither a brother nor a daughter. What is the relation between Ketan and Amit?
1. Uncle-Nephew
 2. Father-Daughter
 3. Father-Son
 4. Cousin

53. In a certain code language 'si po re' means 'book is thick', 'ti na re' means 'bag is heavy', 'ka si' means 'interesting book' and 'de ti' means 'that bag' what should stand for 'that bag is interesting' in that code language?
1. ka re na ti
 2. de si re ka
 3. ti po ka na
 4. de ti re ka
54. In a certain language 'PRINCIPAL' is written as 'MBOQSOMVW' and 'TEACHER' is written as 'FDVSZDB'. Then how is 'CAPITAL' written in that code?
1. SVMOFVW
 2. SVMODVW
 3. BVMODVM
 4. SVMIDVW
55. In a certain language ROPE is written as %57\$, DOUBT is written as 35#8* and LIVE is written as @24\$. How is TROUBLE is written in that code?
1. *%5#8@\$
 2. *%#58@\$
 3. *%5#8@4
 4. *%58\$@
56. If \$ means 'Plus(+)', # means 'minus(-)', @ means multiplied (\times), and * means 'divided (\div)' then what is the value of $16\$4@5\#72^*8$
1. 29
 2. 25
 3. 27
 4. 36
57. In the number '5321648' how many digit will be as far away from the beginning of the number if digit arranged in ascending order as they are in the number?
1. None
 2. One
 3. Two
 4. Three
58. In a class of 35 students Kunal is placed seventh from the bottom. Where as Sonali is placed ninth from top. Pulkit is placed exactly in between the two. What is Kunal's position from Pulkit?
1. 9th
 2. 10th
 3. 11th
 4. 12th
59. In a row of girls facing north, Reena is 10th to the left of Pallavi. Who is 21st from the right end. If malini, who is 17th from the left end is fourth to the right of Reena, how many girls are there in a row?
1. 37
 2. 43
 3. 44
 4. Data Inadequate
60. Anupriya was born on 29th Nov, 1970, which was Sunday. When her next birthday will fall on Sunday?
1. 1975
 2. 1976
 3. 1981
 4. 1982
61. Which one will replace the question mark?
- 
1. 262
 2. 622
 3. 631
 4. 824
62. If + means \div , - means \times , \times means + and \div means - then, $4 + 6 \times 9 \div 6 - 2 \times 5$
1. $\frac{4}{6}$
 2. $\frac{8}{3}$

Direction (63 to 66): In the question given below piece of paper folded and cut as shown below in question paper, from the given answer figure.

63. **Question figure**

Answer figure

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

64. **Question figure**

Answer figure

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

65. **Question figure**

Answer figure

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

66. **Question figure**

Answer figure

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

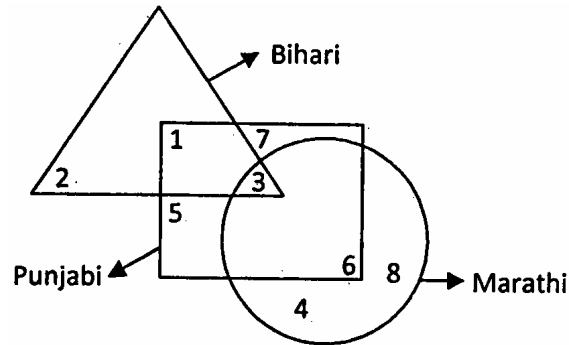
67. In the matrix below, the numbers in the cells follow some rules. Identify the number which when substituted for? Maintaining the same rule?

4	1	2
13	11	6
153	120	?

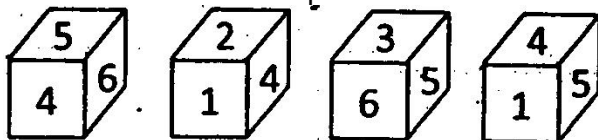
1. 32

2. 45

Direction (68 – 72). The venn diagram given below is about a small circle is Marathi and triangle is Bihari square is Pubjabi.



68. What is the total number of Biharis?
 1. 5
 2. 6
 3. 7
 4. 8
69. What is the total number of Punjabis?
 1. 22
 2. 28
 3. 29
 4. 35
70. What is the total number of Marathis?
 1. 20
 2. 15
 3. 22
 4. 21
71. How many Bihari which are not Pubjabi?
 1. 1
 2. 2
 3. 3
 4. 4
72. How many Punjabi which are not Marathi.
 1. 10
 2. 11
 3. 12
 4. 13
73. India became a republic on 26th January, 1950. Which day of the week was it?
 1. Monday
 2. Tuesday
 3. Thursday
 4. Saturday
74. At what angle (larger) are two hands of a clock inclined at 48 minute past 12?
 1. 264°
 2. 263°
 3. 265°
 4. 266°
75. A clock is set right at 4 am. The clock loses 20 minutes in 24 hours. What will be the time, when the clock indicate 3 am on 4th day?
 1. 5 am
 2. 4 am
 3. 3 am
 4. 4 pm
76. A dice has four different positions. Find the number on the face opposite to 3.



1. 1
 2. 2
 3. 4
 4. 6

Direction (77 to 79) are based on given information: A solid cube is painted red on all faces. The side of the cube is 8 cm. It is cut into smaller cubes of side 2 cm. Answer the following question.

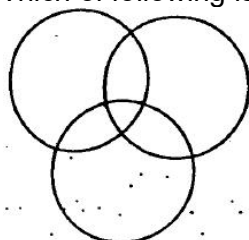
77. How many cubes have three faces coloured?
 1. 4
 2. 6
 3. 8
 4. 12
78. How many cubes have two faces coloured?
 1. 8
 2. 16
 3. 36
 4. 24
79. How many cubes have only one face coloured?
 1. 16
 2. 24
 3. 32
 4. 36

80. Choose the correct option to complete the matrix?

4C	2B	3A
28A	10C	45B
7C	?	15B

1. 15A
 2. 12B
 3. 5A
 4. 8C

81. Which of following is the best represented in diagram?



1. Chair, Table, Furniture
 2. Doctor, Social Person, Honest Person
 3. Family, Parents, Children
 4. Gold Jewellery, Silver Jewellery, Ornaments

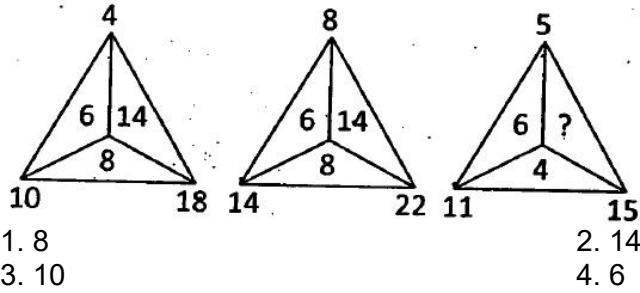
Direction: (82 to 84): Study the letter series given below and answer the questions that follows.
 H D Y S M W N B Q P O C R T B L Z V E G U F

82. Which two neighbours in the given arrangement are farthest in the alphabetical order?
 1. B and Q
 2. D and Y
 3. U and F
 4. V and E
83. Which letter has the same neighbours as in the alphabetical order through they have change places?
 1. M
 2. N
 3. O
 4. F
84. Which three letters have the same distance as they have in the alphabetical order through they have changed places?
 1. HMP
 2. NQZ
 3. QOE
 4. YLF
85. A and B are sisters. R and S are brothers. Daughter of A is she sister of R. Then which relation between B and S.
 1. Aunt
 2. Grand Mother
 3. Sister
 4. Mother
86. Abhay is the husband of Neena and Sunita is the mother of Abhay. Sohan is the uncle of Neeraj. Who is the relation between Sohan and Neena?

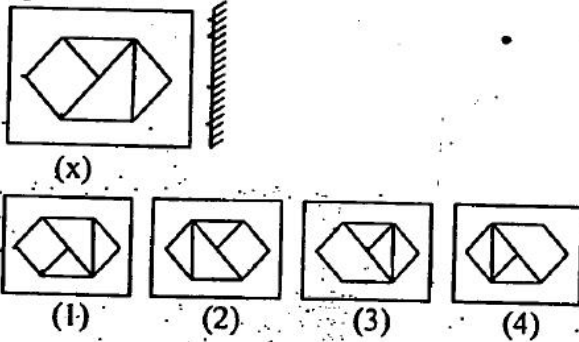
1. Jeth
3. Bhatija

2. Devar
4. Jeth/Devar

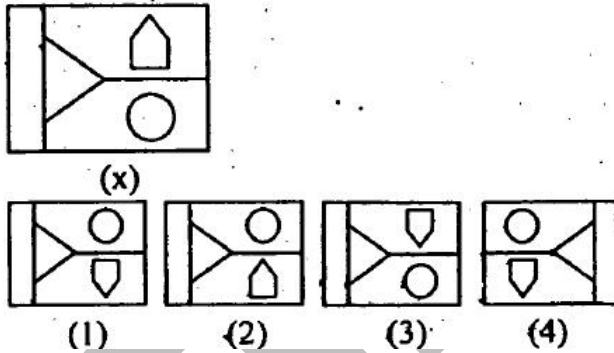
87. Which one will replace the question mark?



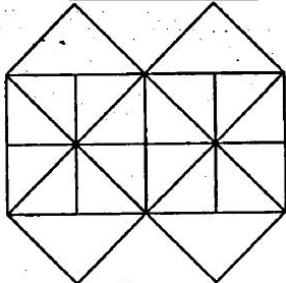
88. Choose the correct mirror image of figure (X) from given alternatives:



89. Choose the correct water image of figure (x) from given alternatives:



90. Which is the minimum number of straight lines needed to construct the following figure?



1. 13
2. 15
3. 16
4. 17

Direction (91 to 95): A cube is coloured red on all of its faces. It is then cut into 64 smaller cube of equal size. The smaller cube so obtained are now separated.

91. How many smaller cubes have no surface coloured?

1. 24
2. 16
3. 8
4. 10

92. How many smaller cubes will have atleast two surfaces painted with red coloured?
1. 4
2. 18
3. 32
4. 24
93. How many smaller cubes have two surfaces painted with red coloured?
1. 24
2. 8
3. 12
4. 20
94. How many smaller cubes have only three surfaces painted with red coloured?
1. 0
2. 12
3. 24
4. 6
95. A 6 cm cube is cut into 2 cm smaller cube. How many smaller cubes can be obtained from their:
1. 108
2. 156
3. 27
4. 64

Direction (96 to 100): Read the following informations and answer the questions which follows:

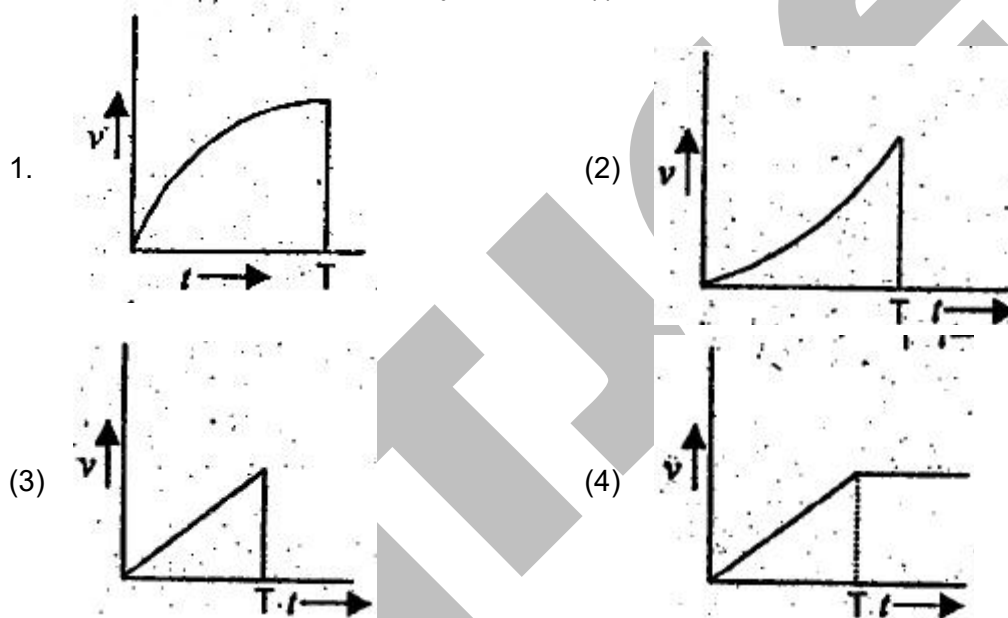
1. 'A × B' means 'A' is father of 'B'
 2. 'A + B' means 'A' is daughter of 'B'
 3. 'A ÷ B' means 'A' is mother of 'B'
 4. 'A – B' means 'A' is brother of 'B'
96. If $P + Q - R \div T$, How is T related to P?
1. Aunt
2. Brother
3. Father
4. Cousin
97. Which of the following means that R is the wife of P?
1. $P \times R - Q - T$
2. $P \div T + R - Q$
3. $P \div R - Q + T$
4. $P \times T - Q + R$
98. If ' $P \times T \div Q + R$ ', how is R related to P?
1. Daughter
2. Husband
3. Son in law
4. Daughter in law
99. If $P \div R - Q \times T$. How is P related to T?
1. Grandmother
2. Mother in law
3. Sister
4. Grandfather
100. If $P \div Q + R \times T$, How Q is related to T?
1. Aunt
2. Sister
3. Brother
4. None of these

NTSE STAGE – I (DELHI STATE)
05 – A (2019 – 20)
(For Class – X)
SCHOLASTIC APTITUDE TEST

QUESTION PAPER

101. A bomb of Mass 30 kg at rest explodes into two pieces of masses 18 kg and 12 kg. The velocity of 18 kg mass is 6 m/s. The kinetic energy of the other mass is.
- (1) 324 J (2) 486 J
(3) 256 J (4) 524 J

102. A body initially at rest start moving when a constant external force F is applied on it. The force F is applied for time $t = 0$ to time $t = T$. Which of the following graph represents the variation of the speed (v) of the body with time (t)

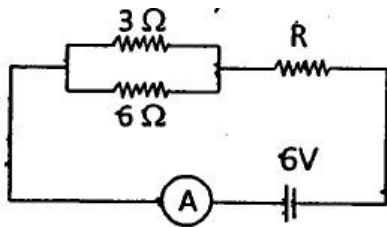


103. A person can not clearly see objects at a distance more than 40 cm. He is advised to use lens of power
- (1) $-2.5D$ (2) $2.5D$
(3) $-1.5D$ (4) $1.5D$

104. Gravitational force is essentially required for
- (1) Stirring in liquid (2) Convection
(3) Conduction (4) Radiation

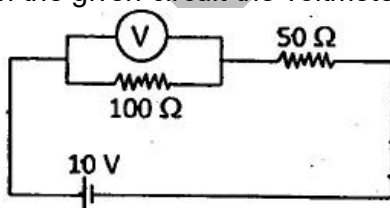
105. An observer moves towards a stationary plane mirror at a speed of 4 m/s the speed with which his image move towards him?
- (1) 2 m/s (2) 4 m/s
(3) 8 m/s (4) Image will stay at rest

106. If the ammeter in the given circuit reads 2 A, What is the value of resistance R (the resistance of ammeter is negligible).



- (1) $1\ \Omega$ (2) $2\ \Omega$
 (3) $3\ \Omega$ (4) $4\ \Omega$

107. A particle starts its motion from rest under the action of a constant force. If the distance covered in first 10 seconds is S_1 and that covered in next 10 seconds is S_2 then
 (1) $S_2 = 6 S_1$ (2) $S_2 = 2 S_1$
 (3) $S_2 = 8 S_1$ (4) $S_2 = 3 S_1$
108. Two planets of radii r_1 and r_2 are made from the same material having same density. The ratio of acceleration due to gravity $g_1|g_2$ at the surfaces of the planets is
 (1) $r_1|r_2$ (2) $r_2|r_1$
 (3) $(r_1|r_2)^2$ (4) $(r_2|r_1)^2$
109. A concave mirror of focal length 15cm forms an image. The position of the object when the image is virtual and linear magnification is 2 is.
 (1) 22.5 cm (2) 7.5 cm
 (3) 30 cm (4) 45 cm
110. A body on an inclined plane slides down $\frac{1}{4}$ th of distance in 2 seconds. It will slide down the complete distance along the plane in (the inclined plane have zero friction) –
 (1) 4 s (2) 5 s
 (3) 2 s (4) 3 s
111. When four equal resistors are connected in series with a battery they dissipate power of 10W. The power dissipated through any of them if connected across the same battery will be-
 (1) 40 W (2) $10/3$ W
 (3) 90 W (4) 10 W
112. An electron move with velocity v in a uniform magnetic field B . The magnetic force experienced by the electron is
 (1) always zero (2) Never zero
 (3) zero if v is perpendicular to B (4) zero if v is parallel to B
113. In the given circuit the voltmeter reads 5V. The resistance of the voltmeter in Ohm is.



- (1) 200 (2) 100
 (3) 10 (4) 50

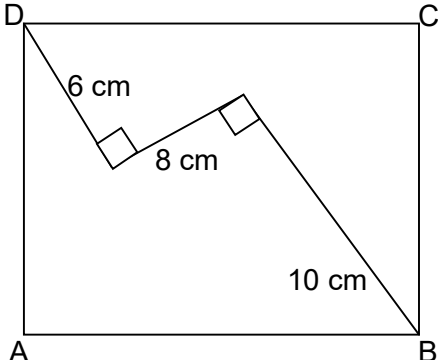
114. Which of the following contain seven molecules of water of crystallization?
 (1) Epsom salt (2) Green vitriol
 (3) Blue vitriol (4) White vitriol
115. Which elements are used for galvanization?

- (1) Zn and Sn
(3) Cu and Fe
- (2) Na and K
(4) Ca and Mg
116. Ramesh dropped a metal piece 'A' in the solution of another metal 'M'. After some time a new colourless compound 'N' is formed. A, M, N respectively can be
(1) Mg, NaCl, MgCl₂
(2) Fe, ZnSO₄, FeSO₄
(3) Zn, CuSO₄, ZnSO₄
(4) Cu, ZnSO₄, CuSO₄
117. Which fuel has highest calorific value?
(1) LPG
(2) Petrol
(3) CNG
(4) Hydrogen
118. The pH of acid rain is
(1) less than 5.6
(2) more than 5.6
(3) equal to 5.6
(4) more than 6.6
119. IUPAC name of the following compound will be

$$\begin{array}{c} \text{O} \\ || \\ \text{CH}_3 - \text{C} - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{COOH} \end{array}$$
 (1) 2-Keto hexan – 6 oic acid
(2) 5 – Keto hexanoic acid
(3) Methyl Ketone butanoic acid
(4) 5 – Aldo hexanoic acid
120. Products obtained on electrolysis of brine are
(1) NaHCO₃, H₂, Cl₂
(2) H₂, NaOH, NaHCO₃
(3) Cl₂, NaOH, Na₂O₂
(4) NaOH, H₂, Cl₂
121. In balanced chemical equation

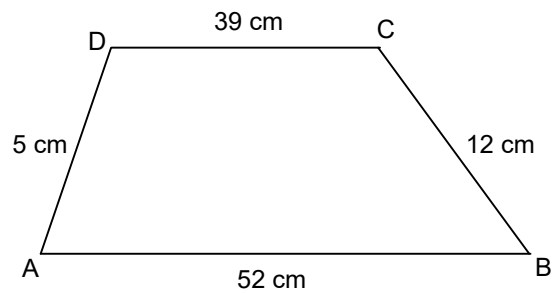
$$a\text{KMnO}_4 + b\text{H}_2\text{SO}_4 \longrightarrow c\text{K}_2\text{SO}_4 + d\text{MnSO}_4 + e\text{H}_2\text{O} + f[\text{O}]$$
 Which of the following alternative are correct?
 (1) a = 2, b = 3, c = 1, d = 2, e = 3, f = 5
(2) a = 1, b = 2, c = 1, d = 3, e = 2, f = 3
(3) a = 2, b = 3, c = 2, d = 3, e = 2, f = 5
(4) a = 3, b = 1, c = 3, d = 3, e = 1, f = 3
122. Benzene(C₆H₆) have
(1) 12 covalent bonds
(2) 15 covalent bonds
(3) 18 covalent bonds
(4) 9 covalent bonds
123. 1.0 Kg of Iron(Fe), having atomic mass equal to 56 g mol⁻¹ contains
(1) 2.88 × 10²⁴ atoms
(2) 6.93 × 10²³ atoms
(3) 6.93 × 10²¹ atoms
(4) 1.075 × 10²⁵ atoms
124. Aqueous solution of CsO₂ is
(1) Basic
(2) Neutral
(3) Acidic
(4) Amphoteric
125. A student added a drop of universal indicator to 1.00 mL of given solution and found that a green colour is produced, The pH value of the solution will be
(1) 7 – 9
(2) 0 – 3
(3) 10 – 12
(4) 4 – 6
126. Elements present in any group have the same number of
(1) valence electrons
(2) neutrons
(3) protons
(4) none of the above

127. Which of the following reactions takes place during break down of molecules in the respiration in our body?
 (1) Oxidation (2) Reduction
 (3) Oxidation-reduction (4) Photo-oxidation
128. Lactic acid is produced when pyruvate is broken down.
 (1) in presence of oxygen in mitochondria (2) in absence of oxygen in mitochondria
 (3) in presence of oxygen in muscle cells (4) in absence of oxygen in muscle cells
129. Separation of oxygenated and deoxygenated blood.
 I. Fulfils energy requirement of the body
 II. Ensures the effect transfer of oxygen in the body
 (1) Both statements are true
 (2) Statement I is true but statement II is false
 (3) Statement I is false but statement II is true
 (4) Both the statements are false
130. Root pressure is effective way transporting water in xylem. This pressure is generated
 (1) in bright sunlight (2) during night
 (3) at very low temperature (4) in high trees
131. Choose the correct option to complete 'A', 'B', 'C' and 'D' in the following table.
- | Hormone | Function |
|---------|--|
| A | Stimulates growth in all organs |
| B | Stimulates pituitary to release growth hormone |
| C | Controls blood sugar level |
| D | Regulates carbohydrate metabolism |
- (1) A – Insulin, B – Thyroxine, C – Growth hormone, D – Growth hormone release factor
 (2) A – Growth hormone, B – Insulin, C – Thyroxine, D – Growth hormone release factor
 (3) A – Thyroxine, B – Insulin, C – Growth hormone, D – Growth hormone release factor
 (4) A – Growth hormone, B – Growth hormone release factor, C – Insulin, D – Thyroxine
132. If a pea plant with wrinkled seeds and heterozygous tall plants were self pollinated, what will be the phenotypes of plants of F₂ generation.
 (1) 75% plants will be tall and have wrinkled seeds and other 25% will be dwarf with wrinkled seeds.
 (2) 50% plants will be tall and have wrinkled seeds and other 50% will be dwarf with wrinkled seeds.
 (3) 50% plants will be tall and have wrinkled seed and other 50% will be dwarf with round seeds.
 (4) 25% plants will be tall and have wrinkled seed and other 75% will be dwarf with wrinkled seeds.
133. Two similar pea plants are growing in two different islands separated by a vast ocean. The phenomenon of geographical isolation will
 (1) not be seen as the plants get self pollinated
 (2) be seen as the plants are growing in isolated regions
 (3) not be seen as the plants get pollinated by ocean water currents
 (4) be seen as the plants do not get pollinated and reproduces asexually
134. DDT is non-biodegradable chemical when it enters food chain it gets accumulated in each tropical level. The phenomenon is called as
 (1) Eutrophication (2) Chemical amplification
 (3) Biomagnification (4) Chemical magnification

135. Presence of _____ is an indicator of pollution level in water
 (1) Colour (2) Coliform bacteria
 (3) Rhizo bacteria (4) Spiral bacteria
136. Leaves of tendu are the source of income of large number of people of India. These leaves are used to make
 (1) thatched roofs (2) bidis
 (3) leaf plates (4) teetch cleaning agent
137. Maximum number of trophic levels supported in any ecosystem is
 (1) one (2) two
 (3) three (4) four
138. Correct sequence of reflex arc is
 (1) Receptor → Motor Neuron → Sensory Neuron → Effector organ → Relay Neuron
 (2) Receptor → Sensory Neuron → Motor Neuron → Effector organ → Relay Neuron
 (3) Receptor → Sensory Neuron → Motor Neuron → Relay Neuron → Effector organ
 (4) Receptor → Sensory Neuron → Relay Neuron → Motor Neuron → Effector organ
139. Tricuspid valve is present in
 (1) right atria and right ventricle (2) left atria and left ventricle
 (3) wall of atrium (4) wall of ventricle
140. BCG vaccine provide protection against
 (1) measles (2) T.B
 (3) cholera (4) small pox
141. Find the area of the square ABCD.
 (1) 160 m² (2) 140 m²
 (3) 125 m² (4) 120 m²
- 
142. If $(2^x - 4)^3 + (4^x - 2)^3 = (4^x + 2^x - 6)^3$, then the sum of all real values of x is
 (1) 0.5 (2) 1.5
 (3) 2.5 (4) 3.5
143. If $2019^x + 2019^{-x} = 3$, then the value of $\sqrt{\frac{2019^{6x} - 2019^{-6x}}{2019^x - 2019^{-x}}}$ is:
 (1) 3 (2) 6
 (3) 9 (4) 12
144. Let 'p' be a root of the equation $x^2 - 5x + 7 = 0$, then the area of circle with centre at (p, p) and passing through point (1, 4) is
 (1) 3π sq. units (2) 5π sq. units
 (3) 7π sq. units (4) None of these

145. If $\frac{1}{x+y} = \frac{1}{x} + \frac{1}{y}$, then the value of $\left(\frac{x}{y}\right)^6 + \left(\frac{x}{y}\right)^3$ is
- (1) 0 (2) $\frac{1}{2}$
 (3) 1 (4) 2
146. Let a, b and c are the roots of the polynomial equation $x^3 - 597x - 5236 = 0$ then the value of $(a^3 + b^3 + c^3)$ is
- (1) 597 (2) 15708
 (3) 5236 (4) 10472
147. If $\operatorname{cosec} x + \cot x = a$, then the value of $\cos x$ is
- (1) $a^2 + \frac{1}{a^2}$ (2) $\frac{a^2 + 1}{a^2 - 1}$
 (3) $\frac{a^2 - 1}{a^2 + 1}$ (4) $\frac{a^2 + 1}{2a}$
148. In an AP 2, 5, 8, 11,.....452. The mean of 15th, 16th, 136th and 137th terms is
- (1) 120 (2) 227
 (3) 220 (4) 454
149. The minimum value of $\tan^2 x + \cot^2 x$ is:
- (1) 1 (2) 0
 (3) 2 (4) 3
150. If $f(x) = x^4 + ax^3 + bx^2 + cx + d$ is a polynomial such that $f(1) = 5, f(2) = 10, f(3) = 15, f(4) = 20$, find the value of $\frac{f(12) + f(-8)}{100}$
- (1) 198 (2) 198.4
 (3) 198.6 (4) 199.2
151. The product of two 2 digits numbers is 2160 and their H.C. F is 12. Then sum of the number is
- (1) 72 (2) 84
 (3) 96 (4) 60
152. The angles of a pentagon are in arithmetic progression. The sum of the smallest and largest angle is
- (1) 172° (2) 108°
 (3) 180° (4) 216°
153. If $\sqrt{p} - \sqrt{q} = 20$, then the maximum value of $\left(\frac{p-5q}{100}\right)$ is:
- (1) 5 (2) 10
 (3) 15 (4) 25

154. The area of trapezium ABCD where AB = 52 cm, BC = 12 cm, CD = 39 cm and DA = 5 cm and AB || CD, is
 (1) 210 sq. cm.
 (2) 234 sq. cm.
 (3) 260 sq. cm.
 (4) 280 sq. cm.



155. The difference between area of a triangle of largest area inscribed in a circle of radius 'r' units and a triangle of largest area inscribed in a semicircle of radius 'r' units is

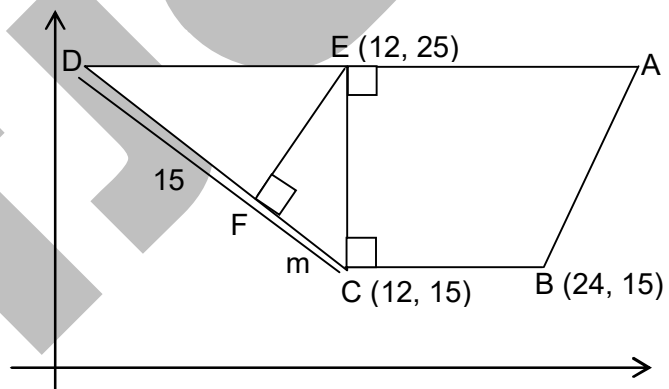
- (1) $\left(\frac{2\sqrt{3}-1}{4}\right)r^2$ Sq. units
 (2) $\left(\frac{4-2\sqrt{3}}{4}\right)r^2$ Sq. units
 (3) $\left(\frac{3\sqrt{3}+4}{4}\right)r^2$ Sq. units
 (4) $\left(\frac{3\sqrt{3}-4}{4}\right)r^2$ Sq. units

156. If p, q, r and s are distinct prime numbers such that p + q + r = 72, p + r + s = 74, q + r + s = 89. The largest of these p, q, r and s is

- (1) r = 53
 (2) q = 53
 (3) s = 53
 (4) s = 49

157. In the given figure, the value of m is

- (1) 5
 (2) 10
 (3) 7
 (4) 12



158. Find the sum of all real values of x which satisfy

$$\frac{1}{x^2 - 10x - 45} + \frac{1}{x^2 - 10x - 29} = \frac{2}{x^2 - 10x - 69}$$

(1) 7
 (2) 10
 (3) 13
 (4) -3

159. If $N = \sqrt[3]{4} + \sqrt[3]{2} + 1$, then the value of $\frac{1}{N^3} + \frac{3}{N^2} + \frac{3}{N}$ is:

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

160. In a class average height of all students is 'p' cm. Among them, average height of 10 students is 'q' cm and the average height of the remaining students is 'r' cm. The number of students in the class is:

- (1) $\frac{p(q-r)}{(p-r)}$
 (2) $\frac{q-r}{p-r}$
 (3) $\frac{q-r}{10(p-r)}$
 (4) $\frac{10(q-r)}{(p-r)}$

161. What are the National colours of France?
 (1) Blue-Green-Red (2) Green-White-Red
 (3) Green-Yellow-Red (4) Blue-White-Red
162. Which was not included in Lenin's April theses?
 (1) Formation of Duma (2) Bank be Nationalised
 (3) Land be transferred to peasant (4) War be brought to a close
163. Hitler assigned the responsibility of Economic recovery to
 (1) Herbert Spancer (2) Hyalmar Schacht
 (3) W Shirer (4) Robert Lay
164. Which of these had worked as indentured Labourer?
 (1) Shaukat Ali (2) Alluri Sita Ram Raju
 (3) Jawahar Lal Nehru (4) Baba Ramchandra
165. Who wrote the Book "Hind Swaraj"?
 (1) Subhash Chandra Bose (2) J. L. Nehru
 (3) Kamla Nehru (4) Mahatma Gandhi
166. Which country was known as 'Siam'
 (1) England (2) Thailand
 (3) Holand (4) Swaziland
167. Which of the following Prime Minister Constituted "Simon Commission"?
 (1) Robert Walpole (2) Stanley Baldwin
 (3) Ramsay Mac Donald (4) Winston Churchil
168. Dr. B. R. Ambedkar formed the 'Depressed Classes Association in
 (1) 1928 (2) 1929
 (3) 1930 (4) 1931
169. Jeevita Samaram' is the autobiography of
 (1) C. Kesavan (2) Saudamini
 (3) Mankojee (4) R. C. Dutt
170. Who established the Vietnamese Communist Party?
 (1) Phu So (2) Mao Zedong
 (3) Ho Chi Minh (4) Phan Boi
171. "When France sneezes, the rest of Europe catches cold" who remarked this?
 (1) Mazzini (2) Metternich
 (3) Gottfried (4) John Lock
172. Which one of the following is the main cause of land degradation in Punjab.
 (1) Intensive Cultivation (2) Deforestation
 (3) Over Irrigation (4) Over Grazing
173. Traditional rain water harvesting is called in Rajasthan.
 (1) Tank (2) Tanka
 (3) Pond (4) Lake
174. Which of the state has most sugar mills in India?
 (1) Haryana (2) Punjab
 (3) Maharashtra (4) Bihar
175. In which industry Bauxite is used as raw material?
 (1) Steel (2) Cement

- (3) Aluminium (4) Jute
176. Roof top rain water harvesting is the most common practice in which of the following cities :-
 (1) Shillong (2) Imphal
 (3) Guwahati (4) Patna
177. Which of the following groups constitute the basic rock from :-
 (1) Sandy, Igneous, Metamorphic (2) Igneous, Sedimentary, Metamorphic
 (3) Lignite, Volcanic, Sedimentary (4) Sandy, Volcanic, Igneous
178. Mango showers occur in which one of the following group of two states :-
 (1) Bihar & West Bengal (2) Tamil Nadu & Andhra Pradesh
 (3) Karnataka & Kerala (4) Maharashtra & Andhra Pradesh
179. Tropic of Cancer does not pass through
 (1) Chattisgarh (2) Odisha
 (3) Rajasthan (4) Tripura
180. AMUL milk scheme is an example of which type of industry :-
 (1) Basic Industry (2) Agrobased Industry
 (3) Joint Industry (4) Co-operative Industry
181. Which one of the figures represents the working age groups of the population
 (1) 15 – 65 years (2) 15 – 66 years
 (3) 15 – 59 years (4) 15 – 64 years
182. Chemical Industries usually are located near :-
 (1) Iron & steel Industries (2) Thermal Power Plant
 (3) Oil refineries (4) Automobile Industry
183. BAMCEF means –
 (1) Backward and minority community employees federation.
 (2) Backward and mining community employees federation.
 (3) Backward and majority community employees federation.
 (4) Backward and malabar coastal employees federation.
184. General Election are called as :-
 (1) On death of any member.
 (2) Election before specific time in whole country and states.
 (3) On completing five years.
 (4) Empty seat due to any reason.
185. In 44th Amendment which fundamental right has been removed from the list of fundamental rights.
 (1) Freedom to speech (2) Freedom to make groups
 (3) Right to work (4) Right to property
186. Which of the following statement is correct?
 (1) Union list – 66 subjects; state list – 97 subjects; Concurrent list – 47 subjects.
 (2) Union list – 47 subjects; state list – 97 subjects; Concurrent list – 66 subjects.
 (3) Union list – 97 subjects; state list – 47 subjects; Concurrent list – 66 subjects.
 (4) Union list – 97 subjects; state list – 66 subjects; Concurrent list – 47 subjects.
187. A person who is not a member of any house of Parliament, if he is appointed as minister. He has to get elected to the one of the house of Parliament with in
 (1) A month (2) Six month
 (3) Three month (4) Stipulated time is fixedly the President

188. Why is "Power sharing" regarded as good?
 (1) Reduces poverty (2) Maximizes wealth
 (3) Provides employment (4) Reduces social conflict
189. Main feature of 'Pressure Groups' is :
 (1) Direct control on political power.
 (2) Try to influence the politics of Government
 (3) Lax organization
 (4) Direct participation in political powers.
190. Among the following which are/is the main aim of starting civil rights movements in America:-
 (1) Adult franchise (2) Vote to right for women
 (3) Abolishing social discrimination (4) Fan direct election of Congress
191. President can declare emergency :-
 (1) Prime Minister advises him to do so.
 (2) Parliament advises him to declare emergency.
 (3) The council of minister, in writing, advises him to do so.
 (4) Home Minister asks him to do so.
192. Amnesty International is an international organization which works for :-
 (1) Work peace (2) Justice
 (3) Restoration of democracy (4) Human Rights
193. In which year 'Universal Adult Franchise' was implemented in India?
 (1) 1947 (2) 1950
 (3) 1919 (4) 1935
194. In which year, consumer protection act was enacted?
 (1) 1986 (2) 1988
 (3) 1985 (4) 1987
195. Which among the following is considered to be most liquid assets?
 (1) Gold (2) Demand Deposits
 (3) Land (4) Money
196. Food security is ensured in a country only if –
 (1) Enough food is available for all the person
 (2) All persons have the capacity to buy food of acceptable quality
 (3) There is no barrier on access to food
 (4) All above
197. The headquarter of world trade organization is situated in
 (1) New York (2) China
 (3) Japan (4) Geneva
198. Under National Rural Employment Guarantee Act (2005), how many days of work are Guaranteed in a year?
 (1) 80 days (2) 100 days
 (3) 200 days (4) 300 days
199. Who is the founder of Grameen Bank of Bangladesh
 (1) Abdul Rehman (2) M. Yunis
 (3) Mujibur Rehman (4) Amartya Sen
200. From the following in which state of India the use of chemical fertilizer is highest?
 (1) Punjab (2) Haryana
 (3) Rajasthan (4) Himachal Pradesh