

STATE COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING (S.C.E.R.T), PUNJAB, MOHALI

National Talent Search Examination – 2017

State Level Test – 2017

Class – X

MENTAL ABILITY AND SCHOLASTIC APTITUDE TEST

Time: 3 Hours

Max. Marks: 200

Instructions for candidates:-

- This exam is in two parts.
- Part-I is related to Mental Ability Test.
- Part-II relates to Scholastic Aptitude Test. It consists of nine subjects, details of which are given below:-

i) Physics	ii) Chemistry
iii) Biology	iv) Mathematics
v) History	vi) Geography
vii) Civics	viii) Economics
ix) English	
- Each question carries one mark. All questions are compulsory.
- You have been provided with a answer sheet (OMR) for this question paper. Darken the correct option of each question in the answer sheet (OMR) with black/blue ink.
- Rough work may be done on the blank space provided.
- There is no negative marking in this question paper.
- Do not use white fluid on OMR Answer Sheet.

ਉਮੀਦਵਾਰਾਂ ਲਈ ਹਦਾਇਤਾਂ :

- ਇਹ ਪ੍ਰੀਖਿਆ ਦੋ ਭਾਗਾਂ ਵਿੱਚ ਹੈ।
- ਪਹਿਲਾ ਭਾਗ ਮਾਨਸਿਕ ਯੋਗਤਾ ਨਾਲ ਸੰਬੰਧਤ ਹੈ।
- ਦੂਜਾ ਭਾਗ ਵਿਸ਼ਿਆਂ ਦੀ ਯੋਗਤਾ ਨਾਲ ਸੰਬੰਧਤ ਹੈ। ਇਸ ਵਿੱਚ ਨੌਂ ਵਿਸ਼ੇ ਹਨ, ਜਿਨ੍ਹਾਂ ਦਾ ਵੇਰਵਾ ਹੇਠ ਦਿੱਤਾ ਹੈ-

i) ਭੌਤਿਕ ਵਿਗਿਆਨ	ii) ਰਸਾਇਣ ਵਿਗਿਆਨ
iii) ਜੀਵ ਵਿਗਿਆਨ	iv) ਗਣਿਤ
v) ਇਤਿਹਾਸ	vi) ਭੂਗੋਲ
vii) ਨਾਗਰਿਕ ਸ਼ਾਸਤਰ	viii) ਅਰਥ ਸ਼ਾਸਤਰ
ix) ਅੰਗ੍ਰੇਜ਼ੀ	
- ਹਰ ਇੱਕ ਪ੍ਰਸ਼ਨ ਦਾ ਇੱਕ ਐਂਗ ਹੈ। ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਜ਼ਰੂਰੀ ਹਨ।
- ਤੁਹਾਨੂੰ ਇਸ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਲਈ ਉੱਤਰ ਸ਼ੀਟ ਦਿੱਤੀ ਗਈ ਹੈ। ਉੱਤਰ ਸ਼ੀਟ (ਓ ਐਮ ਆਰ) ਵਿੱਚ ਪ੍ਰਸ਼ਨ ਦੇ ਸਹੀ ਉੱਤਰ ਨੂੰ ਕਾਲੀ/ਨੀਲੀ ਸਿਆਹੀ ਨਾਲ ਭਰ ਕੇ ਦਰਸਾਓ।
- ਕੱਚਾ ਕੰਮ ਦਿੱਤੀ ਗਈ ਖਾਲੀ ਥਾਂ ਤੇ ਕਰਨਾ ਹੈ।
- ਇਸ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਰਿਣਾਤਮਕ (ਨੈਗੇਟਿਵ) ਮਾਰਕਿੰਗ ਨਹੀਂ ਹੈ।
- ਉੱਤਰ ਸ਼ੀਟ (ਓ ਐਮ ਆਰ) ਉਪਰ ਵਾਸੀਟ ਫਲਿਊਡ ਦੀ ਵਰਤੋਂ ਨਾ ਕੀਤੀ ਜਾਵੇ।

Mental Ability

Direction Question (1 – 4) There is a number series following a pattern one place is left blank. Find the answer among the options.

1. 87, 56, 30,
 (A) 26 (B) 20
 (C) 12 (D) 0
2. 4, 5, 12, 39, 160,
 (A) 805 (B) 790
 (C) 695 (D) 225
3. 2, 12, 36, 80, 150,
 (A) 210 (B) 258
 (C) 252 (D) 194
4. 124, 139, 127, 142, 130, 145,
 (A) 127 (B) 132
 (C) 133 (D) 149

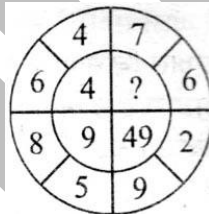
Direction Questions (5 – 6) Find the missing term in place of question mark.

5.

38	22	69
34	23	27
28	14	?

- (A) 46 (B) 29
(C) 23 (D) 99

6.



- (A) 121 (B) 64
(C) 3 (D) 1

7. In a certain language 'NAME' is written as 'OYPA' then how will 'TEAM' be coded in that language?
 (A) UCDF (B) UCDH
 (C) UCDN (D) UC DI
8. If MINERAL is written as QRSTUVW and SOUND is written as ABCSD, the how will READER be written in same code?
 (A) QDZCDQ (B) SBF EFS
 (C) UTVDTU (D) TUDVUT
9. On 26 January, 1947 is SUNDAY, then which day on 2 September, 1947?
 (A) MONDAY (B) TUESDAY
 (C) WEDNESDAY (D) SUNDAY

10. What will be the angle between the minute hand and hour hand of a clock at 7:35?
 (A) $22\frac{1}{2}^\circ$ (B) $17\frac{1}{2}^\circ$
 (C) $12\frac{1}{2}^\circ$ (D) 0°
11. A is son of C, C and B are sisters, D is the mother of B, E is the son of D, which one of the following is correct?
 (A) E is the maternal uncle of A (B) B is the grandfather of A
 (C) C and E are sisters (D) E and A are brothers
12. In a row of children Teena is 5th from the left & Meena is 6th from the right. If they interchange their places then Teena becomes 13th from the left. Now what place will be occupied by Meena from the right.
 (A) 4 (B) 14
 (C) 15 (D) 18

Direction Question (13 –14): Study the letter series and answer the following questions.

13.bca.....cca.....ca.....b.....c
 (A) aaaaa (B) aabaa
 (C) bbabb (D) bbbab
14.cb.....ca.....bacb.....ca.....bac.....d
 (A) bddddb (B) addddb
 (C) bbbddd (D) addbbb
15. If a man facing east rotates in clockwise direction 45° & then, anti clockwise 270° then clockwise 180° which direction is he facing now?
 (A) South – East (B) West
 (C) North – East (D) South

Direction Question (16 –17) Question six faces of a cube are painted in such a way that no two adjacent faces are of same colour. The three colours used are Red, Blue & Green. The cube is then cut into 32 smaller and 4 big cubes in such a way that big cube has no red face. Answer the following Questions.

16. How many cubes are coloured on three faces?
 (A) 0 (B) 8
 (C) 16 (D) 32
17. How many cubes have exactly two faces painted?
 (A) 16 (B) 20
 (C) 32 (D) 36

Direction (18 – 19) Questions match the numbers in Column I with the Rules in Column II.

Column I		Column II	
(A)	17	(P)	$2x^3 + 3$
(B)	18	(Q)	$2x^2 - 1$
(C)	57	(R)	$x^2 + 2x$
(D)	28	(S)	$x^2 - 3x$
(E)	15	(T)	$3x^2 + 1$

18. Which rule the number 28 follows?
 (A) $2x^2 - 1$ (B) $3x^2 + 1$
 (C) $x^2 - 3x$ (D) $x^2 + 2x$
19. Which number follows the rule $2x^3 + 3$?
 (A) 15 (B) 17
 (C) 18 (D) 57
20. Which of the following words cannot be made from the word "COMMUNICATION".
 (A) UNION (B) ACTION
 (C) MUSIC (D) CAUTION
21. Arrange the following words according to dictionary arrangement.
 (a) WOUND (b) WRITER
 (c) WHITER (d) WORST
 (e) WORKED
 (A) caedb (B) adceb
 (C) dcbae (D) cedab
22. Select the combination of numbers so that the letters arranged accordingly will form a meaningful word.
 J C O P T E R
 1 2 3 4 5 6 7
 (A) 2645137 (B) 1345672
 (C) 7645132 (D) 4731625

Six friends A, B, C, D, E, F are sitting in a closed circle facing centre. Direction (23 – 24) Questions.

E is to the Left of D

C is between A and B

F is between A and E

23. Who is to the Left of B?
 (A) A (B) C
 (C) D (D) E
24. Who is the right of C?
 (A) A (B) B
 (C) E (D) F
25. A man is performing yoga with his head down and legs up. His face is towards the west. In which direction will his left hand be?
 (A) North (B) South
 (C) East (D) West

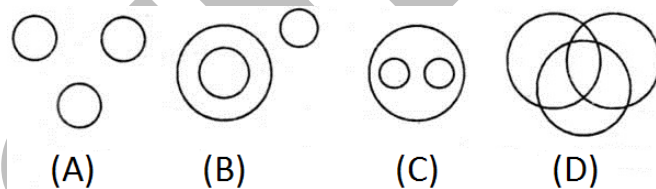
Direction (26 – 27) are based upon the sum of addition, Each letter has unique value and for unique value there is unique letter? Given $E = 4$

26. Find the value of O?
 (A) 3 (B) 1
 (C) 0 (D) 2
27. Find the value of S?
 (A) 8 (B) 6
 (C) 4 (D) 2

28. A printer numbers the pages of a book starting with 1 and uses 3193 digits in all. How many pages does the book have?
- (A) 1074 (B) 1075
(C) 1076 (D) 1077

Direction (29 – 30) Questions. A carpenter has the five wooden articles A, B, C, D, E having different weight.

- (A) A weights twice as B
(B) B weights four & half time as much as C
(C) C weights half as much as D
(D) D weights half as much as E
(E) E weights less than A but more than C
29. Which of the following is lightest in weight?
(A) D (B) C
(C) B (D) A
30. Which of the following article is heaviest in weight?
(A) E (B) D
(C) A (D) C
31. Find odd one out
(A) SEPTEMBER (B) JULY
(C) MAY (D) APRIL
32. Determine the Relationship.
CLOSE: DNRWJ:: OPEN:
(A) RZWR (B) RPJB
(C) PRHR (D) PRJQ
33. TEACHER, COLLEGE, STUDENT, which figure represented it?



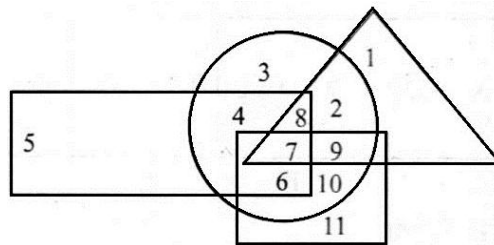
34. If 'green' is called 'red', 'red' is called 'blue', 'blue' is called 'white', 'white' is called 'yellow', 'yellow' is called 'violet' then what is the colour of grass.
(A) Green (B) Red
(C) Yellow (D) Violet
35. In a certain code language "Sue Re NIK" means "She is brave". "Pi sor Re NIK" means "She is always smiling" and "Sor Re Zhi" means "is always cheerful". What is the code used for word "smiling"?
(A) Sor (B) NIK
(C) Re (D) Pi

36. In the following sequence of Instructions, 1 stands for RUN, 2 stands for STOP, 3 stands for GO, 4 stands for SIT and 5 stands for WAIT, If the sequence were to continue, which instruction with come next?

4 4 5 4 3 4 5 3 1 4 5 3 1 2 4 5 4 5 3 4 5 3

- (A) Wait (B) Sit
(C) Run (D) Stop

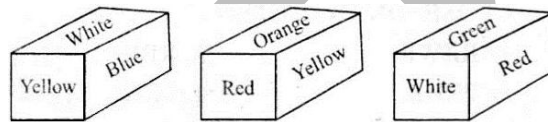
In the following figure, rectangle, square, circle and triangle represent the regions of wheat, gram, maize and rice cultivations, respectively. Give the answer.



37. Which area is cultivated by rice and maize and nothing else?

- (A) 9 (B) 8
(C) 7 (D) 2

Observe the colours and answer the following

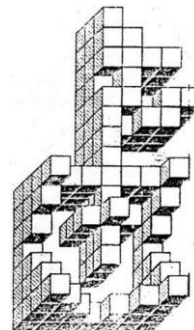


38. Which coloured surface is opposite to yellow colour.

- (A) Green (B) Orange
(C) Red (D) White

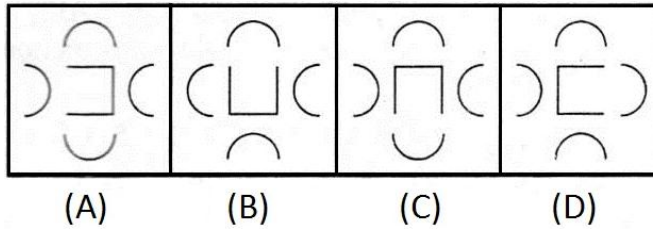
39. How many cubes are there in the given figures?

- (A) 132
(B) 138
(C) 140
(D) 142



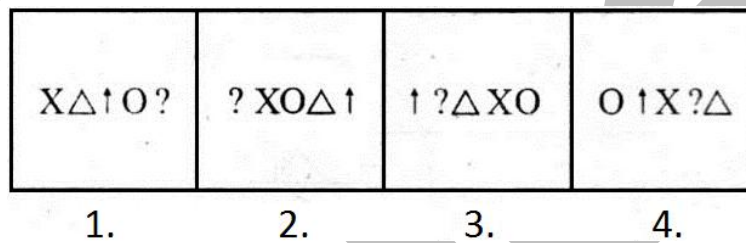
Direction Question (40). Given four figures three figures are similar in ascertain manner. Choose the different one. (Odd one out)

40.

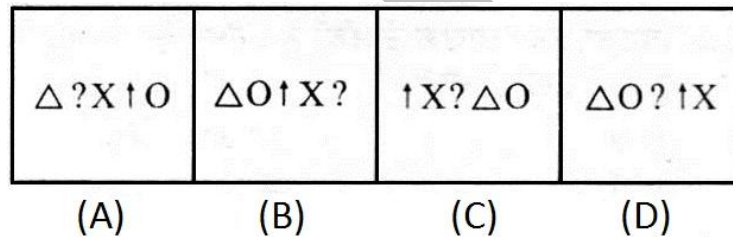


Direction Question (41). The following question consists of four problem fig. 1234 and four answer figures Marked (A), (B), (C), (D) select the gif. From amongst the answer figures which will continue the serial.

41. **Problem Figure**

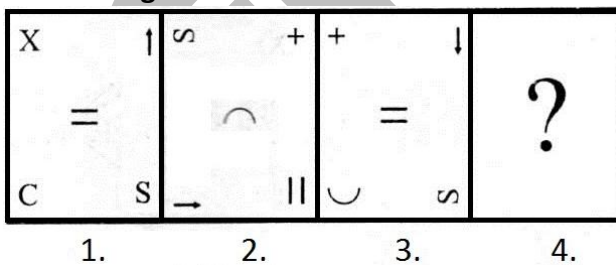


Answer Figure

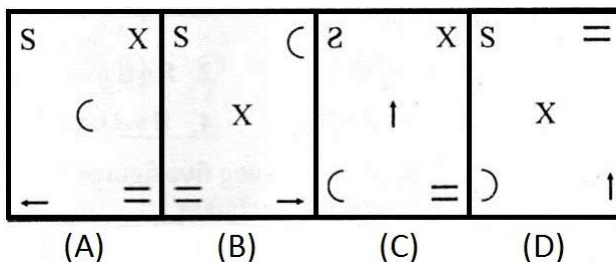


42. Fig. A and B are related in some way. According to same relationship among C and D. Choose the correct alternate.

Problem Figure

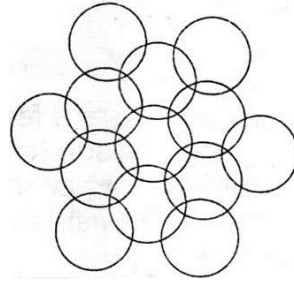


Answer Figure



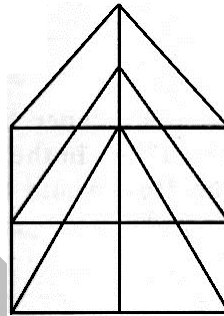
43. What is the minimum number of different colours required to paint the given figure such that no. two adjacent regions have the same colour?

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

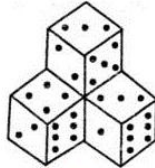


44. How many triangles and parallelograms are there in the following figure?

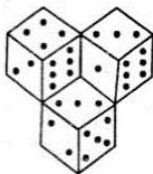
- (A) 21, 17
- (B) 19, 13
- (C) 21, 15
- (D) 19, 17



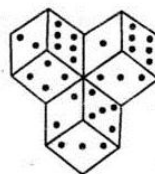
45. Find the water image of figure 'X'.



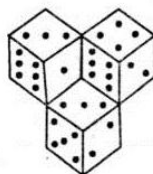
(X)



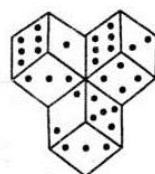
(A)



(B)



(C)



(D)

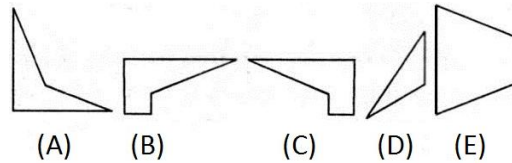
46. Find the mirror image of the following.

NTSEscoLeR

- (A) R e L o c s e T S E N T
- (C) R e L o c s E S N T

- (B) R e L o c s E 2 T N
- (D) R e L o c e R N T S E s c o L e R

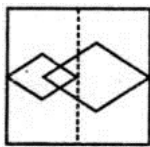
47. Which three figures among five figures A, B, C, D & E will forms a complete square.



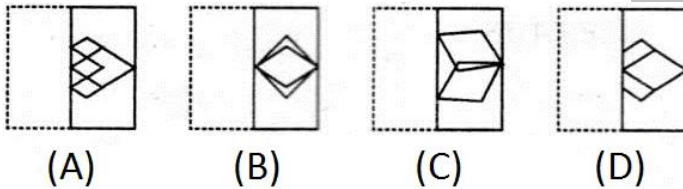
- (A) ABC (B) BCD
(C) CDE (D) BCE

48. A square transparent sheet with a pattern is given. Figure out from amongst the four alternative as to how the pattern would appear when the transparent sheet is folded at the dotted line.

Transparent Sheet.

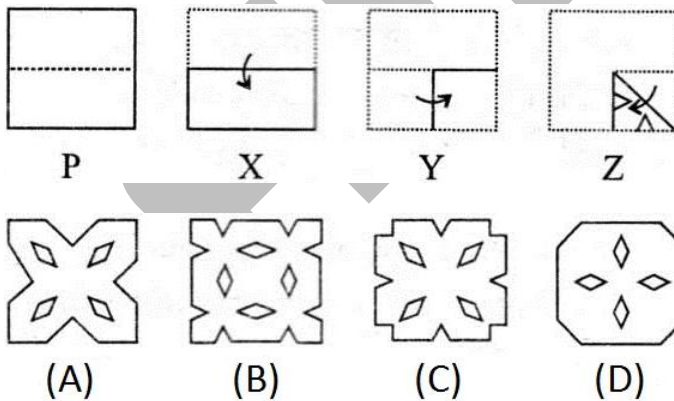


Response Sheet.

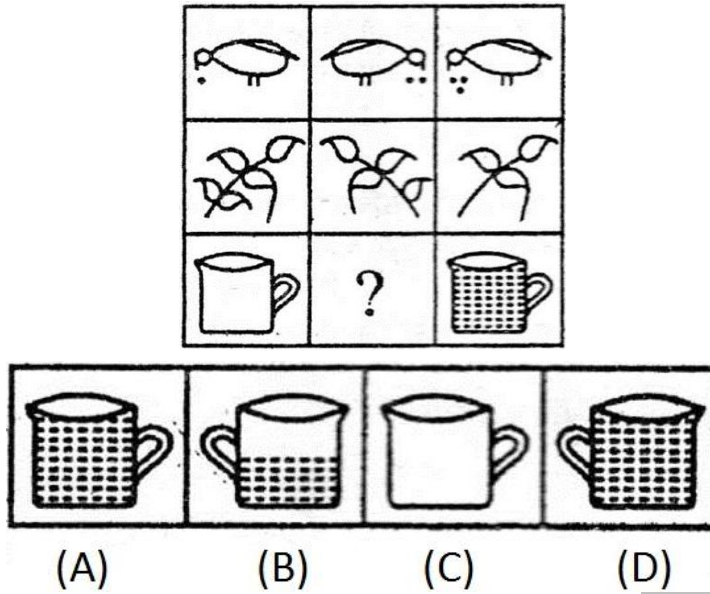


Direction Question (49). Paper has been folded as shown with the dotted lines in the given figure. PXYZ & paper has been cut. How would the paper look like when unfolded.

49.



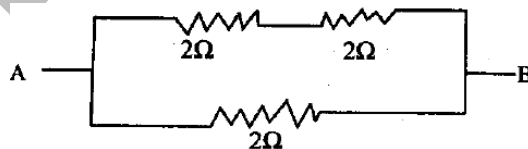
50. Select among four alternatives which complete the given Matrix.



SCHOLASTIC APTITUDE

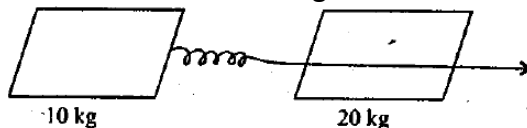
Physics

51. A body of mass 1 kg initially at rest is moved by a horizontal force of 0.5 N on a smooth frictionless table. The work done by force in 10 sec. is
 (A) 10.5J (B) 12.5 J
 (C) 20 J (D) 22J
52. A boy hears an echo of his own voice from a distant hill after 2 seconds. The speed of sound in air is 350 m/s. The distance of the hill from the boy is
 (A) 175 m (B) 200 m
 (C) 350 m (D) 250 m
53. An electric heater consists of 20m length of manganin wire of 0.23m^2 crosssectional area. Wattage of heater when potential difference across the heater is 200 V is
 (A) 10^6W (B) 100 W
 (C) 10^9W (D) 10^3W
54. A beam of white light when passes through a glass prism, a spectrum is observed. But when same beam of light passes through hollow glass prism then
 (A) Spectrum is same (B) Spectrum becomes brighter
 (C) There will be no spectrum (D) Colours of spectrum reversed
55. When a current carrying conductor is placed in a direction parallel to the magnetic field, force on conductor is
 (A) Zero (B) 100 N
 (C) 10 N (D) 1000 N
56. An object of size 4 cm placed perpendicular to the principal axis of concave mirror. The distance of the object from the mirror equals radius of curvature. The size of the image will be:
 (A) 1 m (B) 2 m
 (C) 3.5 m (D) 4 cm
57. The most important safety method used for protecting home appliances from short circuiting or overloading is
 (A) Earthing (B) Use of use
 (C) Use of stabilizer (D) Use of electric meter
58. The equivalent resistance between the points A and B in the circuit as shown in the figure given below is



- (A) 1 ohm (B) less than 1 ohm
 (C) more than 1 ohm (D) 8 ohm

59. The masses of 10 kg and 20 kg respectively are connected by massless spring. A force of 200 N acts on the 20 kg mass. At the instant shown the 10 kg mass has an acceleration of 12m/sec^2 . What is the acceleration of 20 kg mass?



- (A) 12m/sec^2 (B) 4m/sec^2
 (C) 20m/sec^2 (D) 5m/sec^2
60. A bullet of mass 0.1 kg is fired with a speed of 100m/sec , the mass of gun is 50 kg. The velocity of recoil is
 (A) 0.2m/sec (B) 0.1m/sec
 (C) 0.5m/sec (D) 0.05m/sec
61. Which of the following frequency of sound can be generated by a vibrating simple pendulum as well as by the vibrating vocal cords of a rhinoceros?
 (A) 8 Hz (B) 25 Hz
 (C) 10 Hz (D) 15000 Hz
62. Which of the following is not an example of biomass energy source?
 (A) Wood (B) Garbage
 (C) Atomic energy (D) Coal
63. A needle placed 45 cm from a lens forms an image on a screen placed 90 cm on the other side of lens, focal length and type of lens is
 (A) +10cm, Convex lens (B) +30cm, Convex lens
 (C) +30cm, Concave lens (D) +10cm, Concave lens

Chemistry

64. If 1.5 moles of oxygen gas combines with solid Aluminium to form Al_2O_3 . What is the mass of Aluminium used in the reaction?
 (A) 27 gm (B) 54gm
 (C) 40.5gm (D) 81gm
65. A student test the pH of distilled water and found that the colour of pH paper changed to green. He checked the pH again after dissolving a pinch of common salt in water. The colour of pH paper this time will be:
 (A) Green (B) Yellow
 (C) Red (D) Blue
66. On electrolysis of brine solution the products formed are:
 (A) Na and Cl_2 (B) H_2 , O_2 and Cl_2
 (C) H_2 , Cl_2 , and NaOH (D) NaOH, Cl_2 and O_2
67. What is the valancy of an element having atomic number 18.
 (A) 2 (B) 8
 (C) Zero (D) 6

68. Numbers of molecules present in 18g and 18U of water respectively
(A) 6.023×10^{23} and 1 (B) 6.023×10^{23} and 18
(C) 18 and 6.023×10^{23} (D) 1 and 6.023×10^{23}
69. By adding acetic acid to solid "X" a colorless and odourless gas "Y" is evolved. The gas "Y" turns lime water milky. What are X and Y.
(A) X is Sodium carbonate and Y is CO_2 .
(B) X is Sodium hydro – oxide and Y is CO_2 .
(C) X is Sodium acetate and Y is CO_2 .
(D) X is Sodium bicarbonate and Y is CO_2 .
70. High melting point of a compound indicates
(A) Strong Intermolecular forces.
(B) Kinetic Energy of molecules is more.
(C) Speed of molecules is more.
(D) Compound can diffuse easily
71. A metal on heating in presence of air gives compound which is soluble in water and have high melting point. The metal is:
(A) Calcium (B) Carbon
(C) Silicon (D) Iron
72. An element which is essential constituent of all organic compounds belongs to which group in Periodic Table.
(A) Group 2 (B) Group 14
(C) Group 16 (D) Group 17
73. How many covalent bonds are present in Pentane?
(A) 8 (B) 10
(C) 16 (D) 14
74. Which one of the following is not an isoelectronic with Neon atom
(A) ${}_8\text{O}^{-2}$ (B) ${}_n\text{Na}^{+1}$
(C) ${}_9\text{F}^{-1}$ (D) ${}_{12}\text{Mg}^{+1}$
75. The formula of sulphate of element X is $\text{X}_2(\text{SO}_4)_3$. The formula of nitride of elements X is.
(A) X_2N (B) XN_2
(C) XN (D) X_2N_3
76. Three test tubes containing:
Test Tube X: 5ml of HCl
Test Tube Y; 5ml of HNO_3
Test Tube Z: 15 ml of HCl+5ml of HNO_3
A small piece of metal was added in all the three test tubes. It dissolves only in Test Tube Z. The metal is:
(A) Al (B) Au
(C) Cu (D) Ag

Biology

77. Match the column I with the column II.

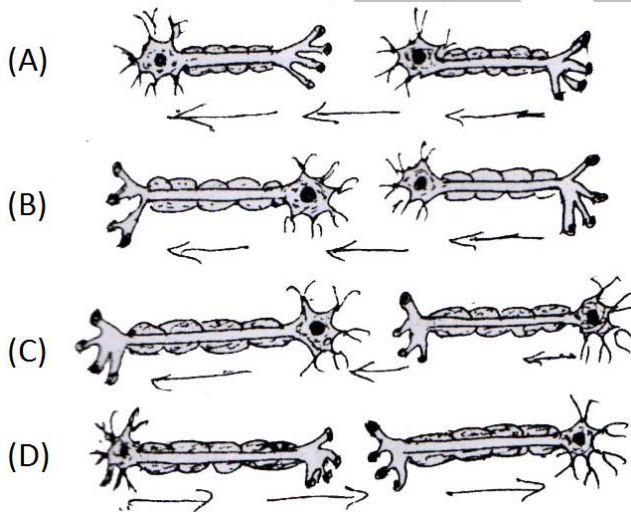
Column I		Column II	
(A)	Renal artery	(P)	It stores the urine until it is released through the Urethra
(B)	Kidney	(Q)	It passes urine from kidney to urinary bladder.
(C)	Ureter	(R)	It filters the blood and forms urine.
(D)	Urinary bladder	(S)	It bring blood to the kidney for filtering waste.

- (A) A-S, B-R, C-Q, D-P
 (B) A-P, B-Q, C-R, D-S
 (C) A-Q, B-P, C-S, D-R
 (D) A-R, B-Q, C-P, D-S
78. Which one of the following is the function of the enzymes of Pancreatic Juice?
 (A) Trypsin digests protein and lipase digests carbohydrates
 (B) Trypsin digests emulsified fats and lipase digests proteins
 (C) Trypsin and lipase digest fats
 (D) Trypsin digests proteins and lipase digests emulsified fats
79. Which of the following is not a correct pair:

Column I		Column II	
(A)	Adrenaline	(P)	Pituitary gland
(B)	Testosterone	(Q)	Testes
(C)	Estrogen	(R)	Ovary
(D)	Thyroxine	(S)	Thyroid gland

80. Pine and Deodar are the example of
 (A) Gymnosperms (B) Pteridophyta
 (C) Thallophyta (D) Bryophyta
81. Khadins, Bundhis and Ahars are ancient structures that are example of
 (A) Grain storage (B) Wood storage
 (C) Water harvesting (D) Soil conservation

82. Read the following statements and select the correct option
 Statement I : Snails and Mussels are Molluscs.
 Statement II: Sea Urchins and Scorpions are echinodermates
 (A) Only statement I is true
 (B) Only statement II is true
 (C) Both statement I and II are true
 (D) Both statement I and II are true
83. in Eukaryotes is separated from the cytoplasm by double layered membrane and it directs the life process of the cell.
 (A) Golgi Apparatus (B) Nucleus
 (C) Lysosome (D) Ribosome
84. A feature that is common in yeast, amoeba, paramecium is
 (A) They all multi cellular (B) They all reproduce by budding
 (C) They all reproduce by binary fission (D) They all are eunicellular
85. Which blood constituent makes up more of the volume of blood
 (A) Red blood cells (B) Plasma
 (C) Blood protein (D) White blood cells
86. Homologous organs are
 (A) Dissimilar in origin, similar in function
 (B) Dissimilar in origin and dissimilar in functions
 (C) Similar in origin and similar in function.
 (D) Similar in origin and dissimilar in function.
87. What is the correct direction of flow of electrical impulses in nerve cells?



88. You observed a slide of animal tissue and observed (i) long cylindrical and unbranched cells (ii) They had dark and light bands. The tissue could be of
 (A) Unstriated muscle fibres (B) Neurons
 (C) Striated muscle fibres (D) cardiac muscle fibres
89. Which organ is infected when a person suffers from Jaundice?
 (A) Bones (B) Liver
 (C) Lungs (D) Nervous system

90. The animals having jointed legs belongs to phylum
 (A) Annelida (B) Arthropoda
 (C) Mollusca (D) Nematoda

Mathematics

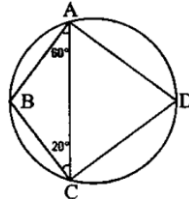
91. If $p+q+r=0$ then the value of $\frac{2p^2(q+r)+2q^2(p+r)+2r^2(p+q)}{pqr}$ will be
 (A) $3pqr$ (B) $\frac{1}{pqr}$
 (C) 6 (D) -6
92. A circle is inscribed in a square of side 2.5 cm. Another circle is circumscribing this square. The ratio of areas of outer circle and inner circle is
 (A) $1:\sqrt{2}$ (B) $\sqrt{2}:1$
 (C) $2:1$ (D) $\sqrt{3}:1$
93. If $x = \frac{1}{\sqrt{3}-1}$ then find the value of $4x^3 + 2x^2 - 8x - 3$.
 (A) 0 (B) 2
 (C) -2 (D) $\sqrt{2}$
94. How many revolutions will a circular wheel of radius r units will make to cover a distance of 100 times its diameter?
 (A) $\frac{100}{\pi}$ (B) 100π
 (C) $\frac{\pi}{100}$ (D) $\frac{50}{\pi}$
95. If $\tan\phi + \cot\phi = 1$ then the value of $\sin\phi + \cos\phi$ will be equal to (where ϕ is an acute angle)
 (A) 0 (B) $\sqrt{2}$
 (C) $\sqrt{3}$ (D) 1
96. If p th term of an AP is q and q th term is p then m th term of this AP will be
 (A) $p+q+m$ (B) $p+q-m$
 (C) $p-q-m$ (D) $p-q+m$
97. Two dice are thrown. Find the probability that sum of numbers of both up sides of both dice is a perfect square
 (A) $\frac{1}{6}$ (B) $\frac{7}{36}$
 (C) $\frac{5}{36}$ (D) 0

98. From the top of a tower of h m high, the angles of depression of two objects, which are in line with the foot of the tower are α and β ($\beta > \alpha$). Find the difference between two objectives.
- (A) $h(\tan\alpha - \tan\beta)$ (B) $h(\cot\alpha - \tan\beta)$
 (C) $h(\cot\alpha - \cot\beta)$ (D) $h(\cot\alpha + \cot\beta)$
99. If the distance between the points $(4, q)$ and $(1, 0)$ is 5 units then the value of q is
- (A) 4 (B) -4
 (C) ± 4 (D) 0
100. The area of an equilateral triangle is $49\sqrt{3}$ cm². Taking each vertex as centre, circles are described with radius equal to half the length of the side of the triangle. Find the area of the triangle. Find the area of the part of the triangle which is not included in these circles.
 $\left(\sqrt{3} = 1.73, \pi = \frac{22}{7}\right)$
- (A) 84cm² (B) 77.7cm²
 (C) 7.77cm² (D) 70.7cm²
101. If $\sqrt{(0.04 \times 0.4x)} = 0.4 \times 0.04\sqrt{y}$. Then the value of $\frac{x}{y}$ is
- (A) 0.0016 (B) 0.16
 (C) 0.016 (D) 1.6
102. One litre of water weighs 1 kg. How many cubic millimetres of water weigh 0.1 gm?
- (A) 100 (B) 10
 (C) 1 (D) 0.1
103. If $x = \sqrt[3]{2\frac{93}{125}}$, then the value of x is
- (A) $2\frac{1}{5}$ (B) $1\frac{2}{5}$
 (C) $3\frac{4}{5}$ (D) $4\frac{1}{5}$
104. If x men can do a piece of work in 8 days and $(x + 4)$ men can do the same work in 6 days then x is equal to
- (A) 10 (B) 6
 (C) 12 (D) 24
105. If $x^2 + y^2 + z^2 = r^2$ where $x = r \sin A \cos B, y = r \sin A \sin B$ then Z has one of the following values:
- (A) $r \sin B$ (B) $r \cos A$
 (C) $r \tan A \cos B$ (D) $r \tan A \tan B$

106. Find the solutions for 'x' in equation

$$\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$$

- (A) $-a, b$ (B) $-a, -b$
 (C) $a, -b$ (D) a, b
107. In the given figure, ABCD is a cyclic quadrilateral. If $\angle BAC = 60^\circ$, $\angle BCA = 20^\circ$ then find the value of $\angle ADC$?



- (A) 15°
 (B) 50°
 (C) 80°
 (D) 40°
108. A copper wire when bent in the form of a square, enclose an area of 484cm^2 . If the same wire is bent in the form of circle, the area enclosed by it is:
- (A) 210 cm^2 (B) 616 cm^2
 (C) 512 cm^2 (D) 54 cm^2
109. The mean temperature of Monday to Wednesday was 37°C and of Tuesday to Thursday was 34°C . If the temperature on Thursday was $\frac{4}{5}$ that of Monday. Then the temperature of Thursday was:
- (A) 35.5°C (B) 34°C
 (C) 36.5°C (D) 36°C
110. In a box containing 100 bulbs, 10 are defective. What is the probability that out of a sample of 5 bulbs none is defective.
- (A) 10^{-5} (B) $\left(\frac{1}{2}\right)^5$
 (C) $\left(\frac{9}{10}\right)^{-5}$ (D) $\left(\frac{9}{10}\right)^5$

History

111. In IMF and World Bank, the decisions are taken by-
- (A) Developing nations
 (B) a joint council of developed and developing countries
 (C) Western industrial powers
 (D) least developed nations
112. What led to town planning of the city of Bombay in 1880?
- (A) The social tension (B) Poverty
 (C) Fear of plague epidemics (D) Riots
113. Which of the following novel deals with caste oppression?
- (A) Sultana's Dream (B) Indulekha
 (C) Saraswati Vijayam (D) Padmarag
114. Who described Mazzini as the most dangerous enemy of our social order?
- (A) Victor Emmanuel II (B) Duke Metterinich
 (C) Johann Gottfried (D) Lord Byron

115. Why was the Vietnam war called the first television war?
 (A) Brought home, stories from soldiers
 (B) Led to increased sale of television sets
 (C) Battle scenes were shown on daily news
 (D) Television was invented
116. Who said, "printing is the ultimate gift of God and the greatest one?"
 (A) Charles Dickens (B) J.V. Schely
 (C) Mahatma Gandhi (D) Martin Luther
117. Which of the following combination correctly indicates the three flows of international economic exchange:-
 (A) Capital goods, raw material (B) Goods, metal, labour
 (C) Goods, labour, capital (D) Labour, capital, food grains
118. The slogan 'Jai Hind' was given by
 (A) Lal Bahadur Shastri (B) Subhash Chandra Bose
 (C) Jawahar Lal Nehru (D) Ras Behari Bose
119. What was the relationship of Guru Amardas Ji with Guru Ramdas Ji?
 (A) Father (B) Son
 (C) Brother (D) Father-in-law
120. Name the treaty signed on 26th December, 1846 after First Anglo Sikh War?
 (A) Treaty of Paris (B) Treaty of Lahore
 (C) Treaty of Bhayrowal (D) Tripartite Treaty
121. Who established Dal khalsa?
 (A) Nawab Kapoor Singh (B) Banda Bahadur
 (C) Ranjit Singh (D) Guru Gobind Singh Ji

Geography

122. 'Relief', 'Cyclonic' and Convectional' are types of which of the following?
 (A) Soil (B) Water
 (C) Rainfall (D) Forests
123. To which of the following, the study of 'Seismology' is related?
 (A) Atmosphere (B) Floods
 (C) Tides (D) Earthquakes
124. What is the area of Chandigarh?
 (A) 114 sq. kilometre (B) 1014 sq. kilometre
 (C) 10140 sq. kilometre (D) 50362 sq. kilometre
125. Which latitude passes approximately through the middle of India?
 (A) Equator (B) Tropic of Cancer
 (C) Tropic of Capricorn (D) Prime Meridian
126. With which agent the features like "Stalactite" and "Stalagmite" are related?
 (A) Air (B) Sea
 (C) Underground water (D) Glacier (River of Ice)

127. In which state of India the “Kandla Port” is situated?
 (A) Punjab (B) West Bengal
 (C) Andhra Pradesh (D) Gujarat
128. Which of the following states has the least “population density”?
 (A) Bihar (B) Uttar Pradesh
 (C) Himachal Pradesh (D) Arunachal Pradesh
129. Which state of India has the maximum area under forests?
 (A) Haryana (B) Tripura
 (C) Rajasthan (D) Karnataka
130. From which language the word “Monsoon” has been derived?
 (A) Hindi (B) Arabic
 (C) German (D) English
131. For what mineral, the mining region of “Kolar” and “Ramgiri” in Indian are famous for?
 (A) Gold (B) Silver
 (C) Copper (D) Bauxite
132. Which state of India is connected to China (Tibet Region) through Nathula pass?
 (A) Meghalaya (B) Assam
 (C) Sikkim (D) Arunachal Pradesh

Civics

133. Who was the Chairman of Drafting Committee of Indian Constitution :
 (A) Moti Lal Nehru (B) Jawahar Lal Nehru
 (C) B.R. Ambedkar (D) Rajender Prasad
134. Which of the following is a big challenge to democracy?
 (A) Leaders (B) Political Parties
 (C) Elections (D) Illiterate Citizens
135. Which of the following is not the quality of ideal citizens :
 (A) Good health (B) Patriotism
 (C) Tolerance (D) Illiteracy
136. Seats are reserved for women in :
 (A) Parliament (B) Panchayati Raj Institutions
 (C) State Legislature (D) Rajya Sabha
137. Which type of government is a federal governments :
 (A) Centre and State Government (B) Govt. of two States
 (C) Centre and two State Government (D) Centre and three State Government
138. How many state governments are functioning in India :
 (A) 7 (B) 28
 (C) 13 (D) 29
139. An ordinary bill is represented in
 (A) Rajya Sabha (B) Lok Sabha
 (C) Any house of Parliament (D) Rajya Vidhan Sabha
140. Who is the constitutional head of India?
 (A) King (B) Queen
 (C) Prime Minister (D) President

141. Which of the following is not the National Flag:
 (A) Shiromany Akali Dal (B) Bhartiya Janta Party
 (C) Indian National Congress (D) Bahujan Samaj Party
142. India is a federal state because:
 (A) Dual judiciary (B) Written constitution
 (C) Dual citizenship (D) Share of power between centre and state

Economics

143. GDP can be written as
 (A) General Domestic Product (B) Gross Domestic Product
 (C) Gross Development Product (D) General Development Product
144. Foreign Trade
 (A) Increases choice of goods (B) Decreases price of goods
 (C) Increases competition in the market (D) Decreases earnings.
145. COPRA full form is
 (A) Co-ordination Protection Act (B) Co-education Protection Act
 (C) Co-operative Protection Act (D) Consumer Protection Act
146. Which of these notes are issued by finance department of Govt. of India.
 (A) ₹ 500 (B) ₹ 100
 (C) ₹ 2000 (D) ₹ 1
147. What is the impact of Green Revolution.
 (A) Forest area increased (B) Air Pollution decreased
 (C) Wheat Production Increased (D) Milk Production Increased
148. Globalisation was stimulated by
 (A) Money (B) Transportation
 (C) Population (D) Computers
149. A consumer
 (A) Sells goods and services (B) Buy goods and services
 (C) Produces goods and services (D) Delivers goods and services
150. What is the time-period of 12th five year plan?
 (A) 2002-07 (B) 2007-12
 (C) 2012-17 (D) 2017-22

LANGUAGE TEST
English

Question: (151-153) Read the following passage carefully and answer the questions that follow:

Some people think you need a kitchen to cook dinner. But you can make easy, delicious meals outside over a campfire.

One easy campfire meal is baked potato. You wrap the potato in tin foil and put it under the flames in the hot ashes. After an hour, the heat from the fire will cook the potato. Open up the tin foil package and you have a baked potato!

It is also easy to roast food over a campfire. You can put hot dogs or sausages on sticks and hold them in the fire. The flames will cook the meat. For desert, you can roast marshmallows on sticks. Hold them near the fire until they turn golden and begin to melt. But do not leave anything in the fire too long, or it will turn completely black and taste like ashes.

There are many nice things about campfire meals. To make these meals, you do not even need to know anything about cooking. Some people also say that food tastes better when cooked and eaten outside. But the best part of these campfire meals is there are no dishes to wash afterwards.

151. As used in paragraph 2, which is an example of a package?
 (A) French fries are served on a tray in the cafeteria.
 (B) A new toy comes wrapped up in a plastic box.
 (C) Cookies are easy to remove when there is tin foil on the cookie sheet.
 (D) You can use a knife to cut open an orange instead of peeling it.
152. The author warns that if you leave anything in the fire too long, it
 (A) Can get burned (B) Can be dangerous
 (C) Will melt (D) Will fall off the stick
153. Which sentence from the passage best describes why campfire meals are easy to make?
 (A) "But you can make easy, delicious meals outside over a campfire."
 (B) "You wrap the potato in tin foil and put it under the flames in the hot ashes."
 (C) "It is also easy to roast food over a campfire."
 (D) "To make these meals, you do not even need to know anything about cooking."
154. After reading the passage, we can conclude that
 (A) You do not need much to cook a campfire meal.
 (B) Cooking over a campfire is more fun than in a kitchen.
 (C) Roasting food on a stick or wrapping it in tin foil is the only way to cook a campfire meal.
 (D) If you do not cook in a kitchen, you do not have any dishes to wash.
155. According to the author, the best part of these campfire meals is that they
 (A) Are easy (B) Are delicious
 (C) Taste better outside (D) Use no dishes

Question: (156-160) Read the comprehension passage carefully and answer the following questions:-

What needs to be set right is our approach to work. It is a common sight in our country of employees reporting for duty on time and at the same time doing little work. If an assessment is made of time they spent in gossiping, drinking tea, eating “pan” and smoking cigarettes, it will be shocking to know that the time devoted to actual work is negligible. The problem is the standard which the leadership in administration sets for the staff. The ministers mix politics and administration. What do top bureaucrats do? What do the below down officials do? The administration set up remains weak mainly because the employees do not have the right example to follow and they are more concerned about being in the good books of the bosses than doing work.

156. The employees in our country
 (A) Are quite punctual but not duty conscious.
 (B) Are not punctual but somehow manage to complete their work.
 (C) Are somewhat lazy but good natured.
 (D) Are not highly qualified.
157. According to the writer, the administration in India.
 (A) Is by and large effective (B) Is strict and firm
 (C) Is effected by red tape (D) Is more or less ineffective.
158. The word assessment means
 (A) Enquiry (B) Report
 (C) Evaluation (D) Summary
159. The leadership in an administration
 (A) Sets a fine example to the employees (B) Is of a reasonably high standard
 (C) Is composed of idealists (D) Is of a very poor standard
160. The central idea of the passage could be best expressed by the following:
 (A) The employer’s outlook towards work is justified.
 (B) The employee must change their outlook towards work.
 (C) The employees would never change their work culture.
 (D) The employer employee relation is far from healthy.

Question: (161-164): The 1st and the last parts of the sentence are numbered 1 and 6. The rest of the sentence is split into four parts and named P, Q R & S. These four parts are not given in their proper order. Read the sentence and find out which of the four combinations is correct.

161. 1. : A dictionary
 P. : arranged words
 Q. : about which information
 R. : containing alphabetically
 S. : is a book
 6. : is given
 (A) RPQS (B) QRPS
 (C) SRPQ (D) SPRQ

162. 1. : The pigeons were used
 P. : as messengers
 Q. : which were tied
 R. : in the olden days
 S. : to carry messages
 6. : to their feet
 (A) PQRS (B) SPRQ
 (C) PRSQ (D) PRQS
163. 1. : Socrates
 P. : never to make
 Q. : a great Greek Philosopher
 R. : and had resolved
 S. : tried hard to central himself
 6. : a show of his temper
 (A) SRPQ (B) QSRP
 (C) QSPR (D) PQRS
164. 1. The important thing
 P. : winning
 Q. : is not
 R. : but
 S. : taking part
 6. : in the Olympic games
 (A) PQRS (B) QPRS
 (C) SRPQ (D) QSPR

Question: (165-168): The following questions has the second sentence is missing. Choose the appropriate sentence from the given options to complete it.

165. A. A gentleman who lived alone always had two plates placed on the table at dinner time.
 B. _____
 C. he used to give the cat a piece of meat from his own plate.
 (A) One plate was for himself and other was for his eat.
 (B) She drooped a mouse into her own plate and another into her master plate.
 (C) In this way the cat showed her gratitude to her master.
 (D) The cat was nice to the master.
166. A. Satyajit Ray made many films for children.
 B. _____
 C. Ray, was a pioneer in this field.
 (A) Later, film makers have followed his lead.
 (B) Today, other nations are making children's films in a big way.
 (C) This was at a time when no director considered children as potential audience.
 (D) But today few think of ray as a maker of children's films.

167. A. Villages are usually thought as the places of peace and solitude.
 B. _____
 C. Life in a village is not as fast as in the city.
 (A) There are fewer distractions for the villagers.
 (B) A common bond of brotherhood exists in the villagers of one another.
 (C) Just like life in a city, a village has its own attractions and revulsions.
 (D) _____ villagers are a home away from the busy life in cities.
168. A. A computer is an electric device.
 B. _____
 C. The computer helps us create programmes, communicate and help us to earn.
 (A) Information is stored and managed by computers.
 (B) We have really arrived into an era of global world.
 (C) The internet is complicated web of satellites.
 (D) That helps in boosting our efficiency.

Question: (169-170): Choose the word which best fills the blank from the four options given:

169. The President of India called upon the people to _____ their religious differences and strengthen secularism in the country.
 (A) Abolish (B) Exhort
 (C) Sink (D) Condemn
170. My father _____ of severe pain in his chest.
 (A) Questioned (B) Complained
 (C) Afraid (D) Expressed

Question: (171-173): In the questions below, out of four alternatives, choose the one which can be substituted for the given words:

171. Government by a king or queen,
 (A) Theocracy (B) Monarchy
 (C) Democracy (D) Republic
172. Child of unusual or remarkable talent.
 (A) Talented (B) Distinguished
 (C) Reputed (D) Prodigy
173. Scarcity of rain or water
 (A) Drought (B) Draught
 (C) Tide (D) Barren

Question: (174-181): Select this meaning of the given phrases/idioms.

174. She was remarkably _____ is singing and dancing.
 (A) Conductive (B) Reluctant
 (C) Arrogant (D) Accomplished
175. A technology starved customer would only be _____ to be presented with a new project.
 (A) Thriving (B) Declarative
 (C) Imitable (D) Thrilled
176. The song in the play cannot be deleted as it is _____ to the story.
 (A) Intervened (B) Innate
 (C) Integral (D) Exact

177. She remained a _____ all her life.
 (A) Spinster (B) Bachelor
 (C) Unmarried (D) Single
178. Do not stay in grasslands after dark as some animals become _____ when they see humans.
 (A) Provoked (B) Alerted
 (C) Aggressive (D) Juvenile
179. Out and out
 (A) Complaining (B) Out of game
 (C) Thoroughly (D) Decline
180. Odds and ends
 (A) Needless (B) Watchful
 (C) Stray articles (D) Declining
181. Fire and sword:
 (A) Energy (B) Destruction
 (C) Shining (D) Brave

Question: (182-185): Change the voice:

182. Who beat you?
 (A) By whom were you beaten? (B) Whom were you beaten?
 (C) Why were you beaten? (D) Whom do you beaten?
183. This news alarmed me,
 (A) I have been alarmed at this news.
 (B) I was alarmed at this news
 (C) I was alarmed by him
 (D) I had been alarmed at this news.
184. Sit down,
 (A) You were ordered to sit down.
 (B) You had ordered to sit down.
 (C) You are ordered to sit down.
 (D) You have been ordered to sit down.
185. May I see you pen?
 (A) May you pen will be seen by me?
 (B) May pen be seen by me?
 (C) May your pen be seen by me?
 (D) May I see my pen through you?

Question: (186-188): Change the narration of the following:

186. "Call the police, " said someone.
 (A) Some one suggested that police must be called.
 (B) Some one suggested that police will be called by me.
 (C) Some one told that the police will be called.
 (D) Some one suggested that the police should be called.

187. She said to Tom, "Open your mouth."
 (A) She warned Tom to open mouth.
 (B) She ordered Tom to open his mouth.
 (C) She asked Tom to open mouth.
 (D) She told Tom to open mouth.
188. He said to me, "Where do you live?"
 (A) He told to me where I should live.
 (B) He told to me where I live.
 (C) He asked to where I was lived.
 (D) He asked me where I lived.

Question: (189-196): In the following passage, there are some numbered blanks. Fill in the blanks by selecting the most appropriate word for each blank from the given options:

Animals have played a major role in human's lives throughout history. Today, scientific research is trying to (189) _____ the positive aspects of living with companion animals. Animals have been used as an (190) _____ form of treatment for many years. More recently it has been discovered that owning a pet can help lower people's blood pressure, (191) _____ the chances of living after a heart attack, keep people more active and provide more (192) _____ with life. It is (193) _____ that this happens because pets help people become more (194), provide a means to give and receive (195) _____, and help connect us with the (196) _____ world.

- | | |
|-----------------------|----------------|
| 189. (A) Evolve | (B) Discover |
| (C) Provide | (D) Impart |
| 190. (A) Alternative | (B) Secondary |
| (C) Mandatory | (D) Obligatory |
| 191. (A) Elaborate | (B) Elucidate |
| (C) Enhance | (D) Eradicate |
| 192. (A) Satisfaction | (B) Lethargy |
| (C) Discomfort | (D) Energy |
| 193. (A) Practiced | (B) Supposed |
| (C) Accepted | (D) Theorized |
| 194. (A) Boring | (B) Workaholic |
| (C) Social | (D) Recluse |
| 195. (A) Affection | (B) Hatred |
| (C) Isolation | (D) Precious |
| 196. (A) Artificial | (B) Amiable |
| (C) Natural | (D) Political |

Question: (197-200): Select the word which means the opposite of the underlined word:

197. On these tablets, they have inscribed writing which they wished to preserve.
 (A) Ruin (B) Conceal
 (C) Hide (D) Protect
198. The earliest books were not books in the modern sense of the word.
 (A) New (B) Ancient
 (C) Current (D) Latest

199. The soldier was reprimanded for ruining his immaculate uniform.
(A) Shining (B) Dirty
(C) Useless (D) Worthy
200. We should have cordial relations with our neighbour.
(A) Smooth (B) Friendly
(C) Sophisticated (D) Reserved.

FIITJEE