STUDY VAULT

committed to excellence

Class – VIII

ENTRANCE TEST CUM SCHOLARSHIP (SAMPLE PAPER-2)

[Time: 3 Hours]

[Max Marks: 450]

A. General:

1. This booklet is a Question Paper containing 150 questions.

2. Blank Papers, Clipboards, Log Tables, slide rules, calculators, cellular phones and electronic gadgets in any form are not allowed to be carried inside the examination hall.

3. The answer sheet, a machine-readable optical mark recognition sheet (OMR Sheet), is provided separately.

4. DO NOT TAMPER WITH THE OMR OR THE BOOKLET.

5. Please fill your roll number correctly in the OMR sheet (answer sheet).

6. Both Question Paper and OMR Answer Sheet will be submitted after completion of this examination.

B. Question Paper Format and marking scheme:

1. The Question Paper consists of five parts (Part I: MAT, Part II: Physics, Part III: Chemistry, Part IV: Biology, Part V: Mathematics).

2. Each Question carries +3 marks for correct answer and -1 mark for incorrect answer.

Direction (1 to 4) : In the following question, there is a relationship between the number/letter/ figures on the left of the sign (: :). The same relationship exists to the right of the sign (: :) of which one is missing. Find the missing term from the alternatives.

1. EGIMP : FILQU : : FHJL : ?
   (a) GJMP   (b) GMJP   (c) JGPM   (d) HKNQ

2. Dda : aDD : : Rrb : ?
   (a) BBR   (b) bRR   (c) RRD   (d) DDR

3. RTVX : EGIK : : MOQS : ?
   (a) TUVW   (b) NJKL   (c) IKMO   (d) ABCD

4. Look at the following figure. Find the pattern for writing a number in the place of question mark.
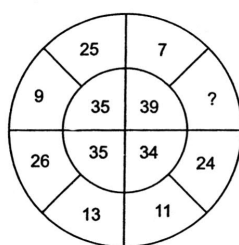
   (a) 28   (b) 36   (c) 81   (d) 49

5. Find the missing term from the following alternatives in the following question.

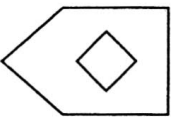| 8	128	2
4	1	64
?	32	256

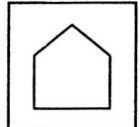   (a) 14   (b) 15   (c) 16   (d) 17

(Directions 6 to 8) : In the following, select the best option to replace the questions mark.

6. 68 : 130 : : ? : 350
   (a) 210   (b) 216   (c) 222   (d) 240

7. 42 : 56 : : 110 : ?
   (a) 18   (b) 132   (c) 136   (d) 140

8. Raju starts from a place P towards North and reaches place Q. From there he turns towards North-West and reaches place R. He, then turns towards South-West and walks to a place S. From there he turns towards North-West and finally reaches place T. Which of the following figures shows the movement fo Raju?
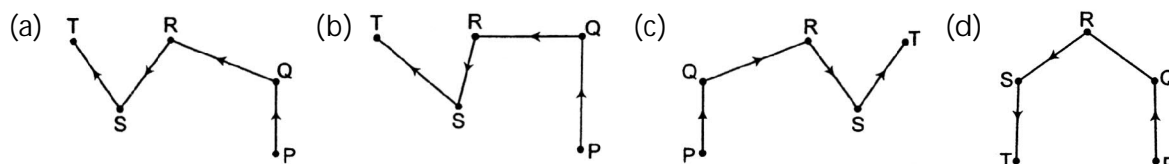
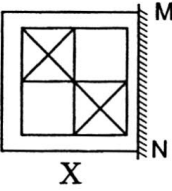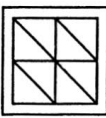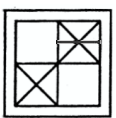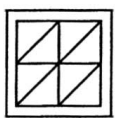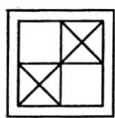

(Directions 9 to 11) : In the followings, four alternatives are given, out of these, three are alike in a certain way and one is different. Choose the one which is different from the rest three?
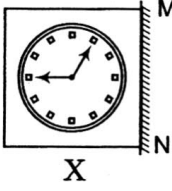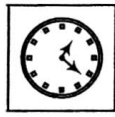
9. (a) 144   (b) 169   (c) 256   (d) 288

10. (a) Camel   (b) Horse   (c) Bullock   (d) Cat

11. (a)   (b)   (c)   (d)

12. How many number from 11 to 50 are there which are exactly divisible by 7 but not by 3?

    (a) Two   (b) Four   (c) Five   (d) Six

13. A number is greater than 3 but less than 8. Also, it is greater than 6 but less than 10. The number is

    (a) 5   (b) 6   (c) 7   (d) 8
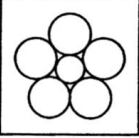
(Directions 14 to 15) : In the following questions, find out which of the answer figures is the mirror image of the given figure when mirror is hold at the MN.

14.

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

15.

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

16. Five girls are sitting in a row. S is sitting next to P but not T. K is sitting next to R, who is sitting on the extreme left and T is not sitting next to K. Who are sitting adjacent to S?

    (a) K and P   (b) R and P   (c) Only P   (d) P and T

(Directions 17 to 18) : In each of the following questions, choose the alternatives in which the problem figure is embedded?

17.

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

3

18.

X

(a)   (b)   (c)   (d)
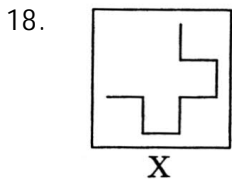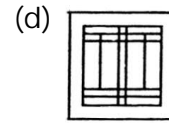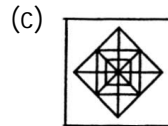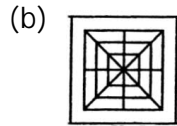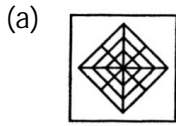
19. Arun said, 'This girl is the wife of the grandson of my mother.' Who is girl to the Arun?

(a) Father   (b) Granfather   (c) Husband   (d) Daughter-in-law

20. It is 3 O'clock in a watch. If the minute hand points towards the North-East, then the hour hand will point towards the

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

(Directions 21 to 23) : Read the following information carefully and answer the question given below.

A family consists of six members P, Q, R, S, T and U. There are two married couples. Q is a doctor and father of T. U is grandfather of R and is a contractor. S is grandmother of T and is a housewife. There is one doctor one contractor, one nurse, one housewife and two students in the family.

21. Who is the husband of P?

(a) R   (b) U   (c) Q   (d) S

22. Who is the sister of T?

(a) R   (b) U   (c) T   (d) Data insufficient

23. What is the profession of P?

(a) Doctor   (b) Nurse   (c) Doctor or Nurse   (d) Housewife

24. In a dinner party both fish and meat were served. Some took fish only and some only meat. There are some vegetarians who did not accept either. The rest accepted both fish and meat.

Which of the following logic diagrams correctly reflects this situations?

(a)   (b)   (c)   (d)
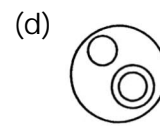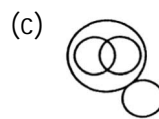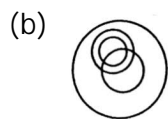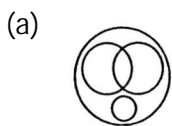
(Directions 25 to 29) : Study the figure carefully and answer the questions given below.
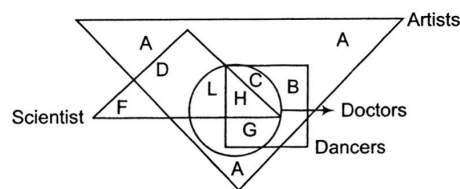
25. Which letter represents the artists who are doctors and dancers only?

(a) A   (b) D   (c) G   (d) H

26. Which letter represent the artists who are neither scientists nor doctors?

(a) A and B   (c) A and L   (c) B and G   (d) L and H

27. Which letters represent the artists who are dancers as well as doctors?

(a) A and D   (b) C and G   (c) C and D   (d) G and H

4

28. Which letter represents the artists who are neither doctor nor scientists nor dancers?

    (a) A   (b) D   (c) F   (d) G

29. Which letter represents the scientists only?

    (a) B   (b) D   (c) F   (d) L

    (Directions 30 to 35) : According to a certain code language, words in column-I are written in capital letters and in column-II codes are given. The codes in column-II are jumbled up. Decode the language and choose the correct code for the word given in each of the questions that follow.

Column-I	Column-II
1. CHAIN	A. acmvq
2. FRAIL	B. pngal
3. TEAM	C. wjqd
4. DESTINY	D. xwtjazc
5. TOIL	E. ajgl
6. VARY	F. qbzn
7. Naughty	G. igcfvzj

30. DAILY

    (a) aqzia   (b) alzqi   (b) lzqat   (d) aqtzc

31. TEAR

    (a) nqjw   (b) qwmc   (c) jwqc   (d) fjcw

32. REACH

    (a) nnxqm   (b) nxwwt   (c) wxnmv   (d) mqwvn

33. AIRY

    (a) naqz   (b) qamz   (c) amqv   (d) tamq

34. SUSTAIN

    (a) xqfjamc   (b) fafjeqc   (c) xxqfjac   (d) xqfjaac

35. ENVOY

    (a) cwbgz   (b) bgzww   (c) tcwbz   (d) wbbgz

36. If 'FISH' is written as 'EHRG' in a certain code, how will 'JUNGLE' be written in that code?

    (a) ITMFKD   (b) ITNFKD   (c) KVOMF   (d) TIMFKD

37. In a certain code, 'DEAF' is written as 3587 and 'FILE' is wirtten as 7465. How is 'IDEAL' written is that code?

    (a) 43568   (b) 43586   (c) 63548   (d) 48536

38. If O = 16, FOR = 42, then what is FRONT equal to?

    (a) 61   (b) 65   (c) 73   (d) 78

39. If 'light' is called 'stick', 'stick' is called 'nib', 'nib' is called needle, 'needle' is called 'rope' and 'rope' is called 'thread'. What will be fit in a pen to write with it?

    (a) Stick   (b) Lead   (c) Needle   (d) Nib

40. If 'DELHI' can be coded as 'CCIDD', how would you code 'BOMBAY'?

    (a) AJMTVT   (b) AMJXVS   (c) MJXVSU   (d) WXYZAX

Directions (41 to 43) : Read this statement given below. Find out the diagram from the given alternatives representing the statement correctly.

41. Some toys are pens. Some pens are papers.

Some papers are black.
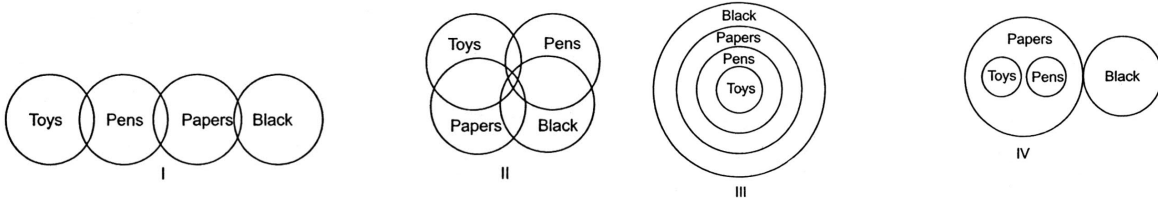
(a) I and II   (b) I and II   (c) II and III   (d) III and IV

42. Statement   These apples are too expensive to be bad.

Conclusions

I. When apples are in short supply, the prices grows.

II. The higher the selling price, the superior is the quality of the commodity.

(a) Only Conclusion I follow   (b) Only Conclusion II follows

(c) Both Conclusion I and II follow   (d) Neither Conclusion I nor II follow

43. Statements   All classes are glasses.

All brasses are glasses.

Conclusions

I. Some classes are brasses.

II. Some brasses are glasses.

III. Some brasses are classes.

IV. Same classes are glasses.

Which of the following are immediate inferences?

(a) Only I follows   (b) Only II follows   (c) I and II follow   (d) II and IV follow

(Directions 44 to 46) : Find the missing number in the following series.

44. 6, 7, 9, 13, 21,?

(a) 25   (b) 29   (c) 37   (d) 32

45. 5, 7, ?, 9, 7, 11, 8, 13

(a) 8   (b) 6   (c) 19   (d) 7

46. 4, 8, 12, 24, 36, 72, ?

(a) 108   (b) 98   (c) 92   (d) 69

(Directions 47 to 49) : Find out the wrong number in the following series.

47. 2, 3, 12, 37, 86, 166, 288

(a) 2   (b) 3   (c) 166   (d) 86

48. 4, 9, 19, 43, 90, 185, 375

(a) 9   (b) 19   (c) 90   (d) 185

49. 572, 284, 140, 72, 32, 14, 5

(a) 140   (b) 32   (c) 72   (d) 572

50. Find out the correct value in place of question mark in the problem figures.
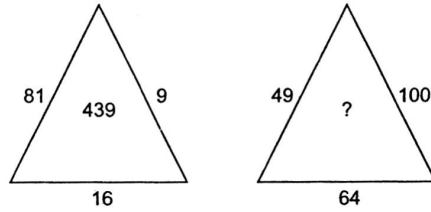
(a) 8710   (b) 1078   (c) 8107   (d) 789

(Directions 51 to 53) : A cube is painted red on two adjacent surfaces and black on the surfaces opposite to red surfaces and green on the remaining faces. Now, the cube is cut into sixty four smaller cubes of equal size.

51. How many smaller cubes have only one surface painted?
(a) 8   (b) 16   (c) 24   (d) 32

52. How many smaller cubes will have no surface painted?
(a) 0   (b) 4   (c) 8   (d) 16

53. How many smaller cubes have less than three surfaces painted?
(a) 8   (b) 24   (c) 28   (d) 48

54. Select the figure which is identical to the figure (A).
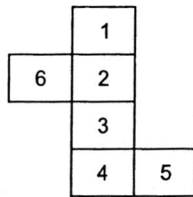
(a)   (b)   (c)   (d)

(Directions 55 to 60) : Given below are two matrix containing two classes of letters. The rows and columns of matrix are numbered from 0 to 4 and that of matrix from 5 to 9. A letter from these matrix can be represented first by its row number and next by its column number.

Martrix I

	0	1	2	3	4
0	C	U	C	L	G
1	A	R	R	A	G
2	L	C	U	P	L
3	P	L	O	O	C
4	O	A	P	U	R

Matrix II

	5	6	7	8	9
5	B	I	M	N	E
6	S	B	I	M	N
7	E	S	B	E	M
8	N	I	S	B	E
9	M	N	I	S	B

55. SOUR
(a) 76, 40, 22, 44   (b) 98, 32, 11, 32   (c) 95, 32, 50, 55   (d) 58, 59, 10, 12

56. NEAR
(a) 58, 98, 14, 10   (b) 68, 34, 41, 57   (c) 85, 89, 41, 14   (d) 58, 59, 10, 12

57. BONE
(a) 67, 23, 54, 30   (b) 34, 32, 22, 31   (c) 88, 33, 14, 21   (d) 77, 32, 85, 89

58. MOON
    (a) 68, 32, 40, 86   (b) 68, 34, 56, 32   (c) 57, 32, 33, 58   (d) 43, 31, 24, 99
59. GOLES
    (a) 14, 40, 24, 78, 98 (b) 14, 04, 23, 87, 24 (c) 04, 32, 24, 78, 8 (d) 40, 04, 03, 75, 98
60. BANE
    (a) 88, 41, 58, 89   (b) 87, 14, 58, 59   (c) 68, 14, 85, 32   (d) 11, 14, 56, 66

PHYSICS

61. If a rock is brought from the surface of the moon
    (a) its mass will change   (b) its weight will change, but not mass
    (c) both mass and weight will change   (d) its mass and weight will remain the same

62. Pressure applied to an enclosed fluid is transmitted equally to every portion of the fluid and walls of the containing vessel. This law was first formulated by :
    (a) Bernoulli   (b) Archimedes   (c) Boyle   (d) Pascal

63. The force acting on a mass of 1 g due to the gravitational pull on the earth is called 1 gwt. One gwt equals.
    (a) 1 N   (b) 9.8 N   (c) 980 dyne   (d) none of these

64. A man is standing on a boat in still water. If he walks towards the shore the boat will
    (a) move away from the shore   (b) remain stationary
    (c) move towards the shore   (d) sink

65. A body of mass 5 kg undergoes a change in speed from 30 to 40 m/s. Its momentum would increase by
    (a) 50 kg m/s   (b) 75 kg m/s   (c) 150 kg m/s   (d) 350 kg m/s

66. A bullet of mass A and velocity B is fired into a block of wood of mass C. If loss of any mass and friction be neglected, the velocity of the system must be

    (a) $\dfrac{AB}{A+C}$ (b) $\dfrac{A+C}{B+C}$ (c) $\dfrac{AC}{B+C}$ (d) $\dfrac{A+B}{AC}$

67. The given figure shows the cross section of a dam and its reservoir. The widening of the wall, towards the bottom is because of _____

Water level

Thickness of wall
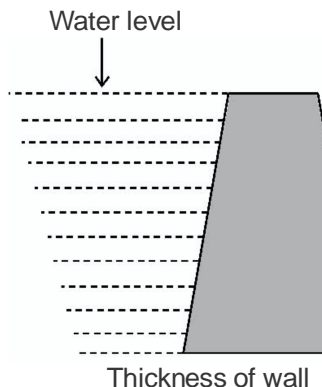
    (a) increase in pressure with depth of water
    (b) decrease in pressure with depth of water
    (c) change in density of water
    (d) increase in mass of the wall

68. Frictional force is directly proportional to the
    (a) External force
    (b) Normal force
    (c) Gravitation force
    (d) Acceleration due to gravity
69. Kinetic friction always acts when
    (a) Body is in motion with respect to the contact surface
    (b) Body in rest with respect to the contact surface
    (c) Body either in rest or in motion with respect to contact surface
    (d) None of these
70. Any solid will not sink in water if its relative density is
    (a) less than 1   (b) equal to 1   (c) greater than 1   (d) infinite
71. The persistence of hearing for human beings is not more than

    (a) 1 s   (b) $\frac{1}{5}$ s   (c) $\frac{1}{10}$ s   (d) $\frac{1}{2}$ s

72. Waves produced by supersonic jet planes are
    (a) shock waves   (b) seismic waves   (c) infrasonics   (d) none of these
73. The audible range of frequency is
    (a) 20 Hz to 20,000 Hz
    (b) 40 Hz to 40,000 Hz
    (c) 60 Hz to 60,000 Hz
    (d) 10 Hz to 20,000 Hz
74. Waves produced due to the earthquake are known as
    (a) seismic waves   (b) shock waves   (c) infrasonic waves   (d) none of these
75. Which of the following type of waves is different from others?
    (a) Light waves   (b) X-rays   (c) Radio waves   (d) Sound waves
76. Figure shows that the shape of a part of a long string in which transverse waves are produced. Which pair of particles are in phase?
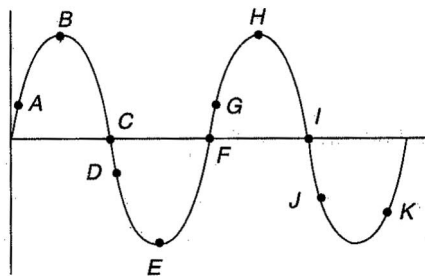
    (a) A and G   (b) D and G   (c) B and E   (d) C and K
77. The relation between frequency (n) and wavelength (λ) is given by (v is velocity, n is frequency and T is time-period)

    (a) $v = n\lambda$ (b) $n = \frac{\lambda}{v}$ (c) $v = \frac{n}{\lambda^2}$ (d) $n = \frac{T}{\lambda}$

78. A wave completes 24 cycles in 0.8 s. The frequency of the wave is
    (a) 30 Hz   (b) 8 Hz   (c) 24 Hz   (d) 12 Hz
79. The unit of refractive index is
    (a) metre   (b) degree   (c) dioptre   (d) it has no units

80. A simple magnifying glass consists of a

(a) concave lens

(b) convex lens of large focal length

(c) convex lens of small focal length

(d) plane mirror only

81. The focal length of a lens is 50 cm. Its power would be

(a) 50 dioptres　　(b) 2 dioptres　　(c) 20 dioptres　　(d) none of these

82. Figure (a), (b), and (c) respectively, indicate the point of focus in case of

(a)　　　　(b)　　　　(c)
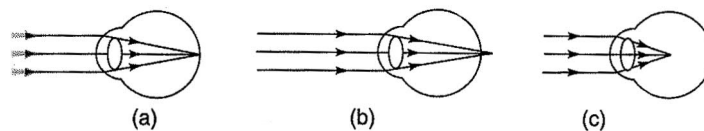
(a) the normal eye, the hypermetropic eye and myopic eye

(b) the hypermetropic eye, the myopic eye and the normal eye

(c) the normal eye, the myopic eye and the hypermetropic eye

(d) the myopic eye, the normal eye and the hypermetropic eye

83. The screen behind the eye lens is called the

(a) iris　　　　(b) ciliary muscle　　(c) retina　　　　(d) pupil

84. The mirror formula is given by

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$$

where the symbols have their usual meanings. Then the lens formula is given by

(a) $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$　　(b) $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$　　(c) $\frac{1}{v} + \frac{1}{u} = -\frac{1}{f}$　　(d) none of these

85. A boy is standing infront of a plane mirror at a distance 1 m. What is the distance between the boy and his image?

(a) 1 m　　　　(b) 0.5 m　　　　(c) 1.5 m　　　　(d) 2 m

CHEMISTRY

86. The most reactive metal among the following is :

(a) Ca　　　　(b) Al　　　　(c) Ni　　　　(d) Pb

87. The oxide of non-metal which is neutral in nature is :

(a) SO_3　　　　(b) NO_2　　　　(c) NO　　　　(d) P_2O_3

88. Acid which can react even with non-metal is :

(a) dil. HCl　　　(b) conc. HCl　　　(c) dil. H_2SO_4　　(d) conc. HNO_3

89. CNG stands for :

(a) Central natural gas

(b) Compressed natural gas

(c) Combined natural gas

(d) Cold natural gas

90. The composition of producer gas is :

(a) $CO + O_2$　　(b) $CO + H_2O$　　(c) $CO + CH_4$　　(d) None of these

91. Which of the following property is not a characteristic of a good fuel?

(a) High ignition temperature

(b) Low cost

(c) Causes minimum pollution

(d) Readily available

92. Which zone of flame has the maximum temperature?

    (a)   Luminous   (b) Non-luminous   (c) Dark zone   (d) None of these

93. Which of the following alloys contain Lead?

    (a)   Brass   (b) Solder   (c) Duralumin   (d) Steel

94. Aluminium is extracted from :

    (a)   hematite   (b) bauxite   (c) calamine   (d) magnetite

95. Which of the following is a good conductor of electricity?

    (a)   Charcoal   (b) Coke   (c) Graphite   (d) Diamond

96. What should be added to pure iron to make stainless steel?

    (a)   Nickel and Cobalt   (b) Cadmium and Chromium

    (c)   Nickel and Cadmium   (d) Chromium and Nickel

97. Which of the following pairs cannot undergo displacement reaction?

    (a)   Iron sulphate solution and magnesium   (b) Zinc sulphate solution and iron

    (c)   Zinc sulphate solution and calcium   (d) Silver nitrate solution and copper

98. Which one of the following four metals would be displaced from the solution of its salt by the other three metals?

    (a)   zinc   (b) silver   (c) copper   (d) magnesium

99. The flame of a kerosene oil lamp (or lantern) has :

    (a)   single zone   (b) two zones   (c) three zones   (d) four zones

100. Those elements which has characteristic properties of both metals and non metals are known as metalloids.

    Which of the following is not a metalloid?

    (a)   Germanium   (b) Silicon   (c) Antimony   (d) Lead

101. Fill in the boxes with appropriate option :
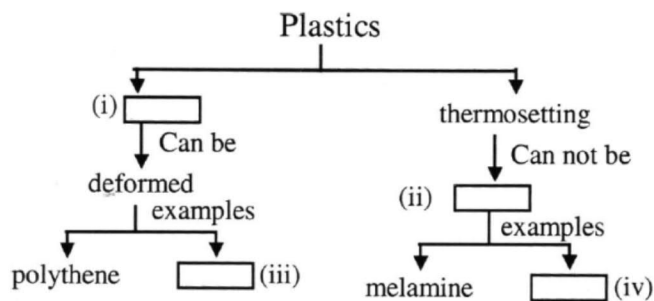
	(i)	(ii)	(iii)	(iv)
(a)	Non-reactive	Formed	Bakelite	PVC
(b)	Thermoplastic	Remoulded	PVC	Bakelite
(c)	Cross-linked	Manufactured	Polycot	PVC
(d)	Thermoplastic	Formed	Silk	Polywool

102. _____ is stronger than steel wire.

    (a) Cotton fibre   (b) Silk thread   (c) Plastic thread   (d) Nylon fibre

103. Which of the following is not obtained from coal?

    (a)   coke   (b) coal tar

    (c)   coal gas   (d) compressed natural gas

104. Which of the following gases is produced in air during lightning that absorbs ultraviolet radiation present in sunlight?

    (a)   Carbon dioxide   (b) Hydrogen   (c) Ozone   (d) Oxygen

105. Pick the synthetic fibre out of the following?

    (a) Cotton   (b) Nylon   (c) Jute   (d) Wool

106. The plastic which is coated on the uniforms of firemen to make them fire-resistant is:

    (a)   Bakelite   (b) Polythene   (c) Teflon   (d) Melamine

107. Match the items in column A and B :

                  Column A   Column B

            (P)   Coal   (i)   Bus

            (Q)   Water in a dam   (ii)   Thermal power station

            (R)   CNG   (iii)   Hydroelectric power station

            (S)   Wind   (iv)   Cooking

            (T)   LPG   (v)   Wind mill

    (a)   (P) - (i), (Q) - (ii), (R) - (iii), (S) - (iv), (T) - (v)

    (b)   (P) - (ii), (Q) - (iii), (R) - (v), (S) - (iv), (T) - (i)

    (c)   (P) - (ii), (Q) - (iii), (R) - (i), (S) - (v), (T) - (iv)

    (d)   (P) - (iii), (Q) - (i), (R) - (ii), (S) - (v), (T) - (iv)

108. Which among the following is true with regarding thermoplastics and thermosettings?

    (a)   Thermosettings are permanent setting resins but thermoplastics are not, since they can be softened on cooling.

    (b)   Thermoplastics are less brittle when compared to thermosettings due to the absence of long chain polymers.

    (c)   Thermosettings are more brittle when compared to thermoplastics due to the presence of strong bonds.

    (d)   The chemical nature of thermoplastics can be altered by repeated heating and cooling.

109. The reducing property of SO_2 is shown in which of the following reactions?

    (a) $SO_2 + H_2O + Cl_2 \longrightarrow 2HCl + H_2SO_4$ (b) $2H_2S + SO_2 \longrightarrow 2H_2O + 3S$

    (c) $KOH + SO_2 \longrightarrow K_2SO_3 + H_2O$ (d) None of the above

110. Naphthalene balls are obtained from coal tar and are used as :

    (a)   Mosquito repellant   (b) Honey bee repellant

    (c)   Moth repellant   (d) Snake repellant

111. The small rod shaped structure bound by a double membrane which helps in oxidation of food to release energy is:

    (a) Mitochondrion   (b) Golgi complex   (c) Nucleus   (d) Vacuole

112. Arrange the cell organelles useful for intracellular digestion, intracellular respiration, intracellular movements and cell secretion in a sequence.

    P. Golgi complex   Q. Lysosomes   R. Mitochondria   S. Microtubules

    (a) Q – R – S – P   (b) R – Q – P – S   (c) S – P – Q – R   (d) P – S – R – Q

113. Which of the following is a closely related character of Euglena with higher plants?

    (a) Presence of a flexible pellicle made of protein.

    (b) They have an eye spot, astaxanthin bearing pigment.

    (c) Euglenoids bear one or two flagella.

    (d) Chlorophyll is localised in chloroplasts.

114. Which pair is correct?

	Pathogens	Diseases caused
(a)	Virus	Dengue fever
(b)	Bacteria	Malaria
(c)	Fungi	Hepatitis
(d)	Protozoa	Syphilis

115. Transferring and combining desirable characteristic features into plants and multiplying them is called :

    (a) Eugenics   (b) Histology

    (c) Genetic engineering   (d) Crop improvement

116. Which of the following methods of cultivation causes salinisation of soil?

    (a) Transplantation   (b) Crop rotation

    (c) Excessive irrigation   (d) Broadcasting

117. Bark of which plant yields famous drug for malaria?

    (a) Cinchona   (b) Quercus   (c) Betula   (d) Eucalyptus

118. Which of the following is not correctly matched?

    (a) Dengue fever – Arbovirus   (b) Plague – Yersinia pestis

    (c) Syphilis – Trichuris trichiura   (d) Sleeping sickness – Trypanosoma

119. Which of the following is not a weedicide?

    (a) 2,4–D   (b) M C P A   (c) Butachlor   (d) Superphosphate

120. Which of the following is a denitrifying bacteria?

    (a) Rhizobium   (b) Azotobacter   (c) Nitrobacter   (d) Pseudomonas

121. If $\sqrt[3]{3\left(\sqrt[3]{x} - \dfrac{1}{\sqrt[3]{x}}\right)} = 2$, then $\sqrt[3]{x} - \dfrac{1}{\sqrt[3]{x}} = $ _____ .

    (a) −3/8   (b) 3/8   (c) 8/3   (d) −8/3

122. The digit in the unit place of the cube of a four digit number of the form xyz8 is _____ .

    (a) 8   (b) 4   (c) 2   (d) Can't be determined

123. If n leaves a remainder 2 when divided by 3, then n^3 leaves a remainder of _____, when divided by 3.

    (a) 2   (b) 1   (c) 0   (d) 3

124. What should be added to 2714 to make the sum a perfect square?

    (a) 10   (b) 517   (c) 95   (d) 150

125. If p and q are perfect squares, then $\sqrt{\dfrac{p}{q}}$ is always?

    (a) Rational Number   (b) Irrational number

    (c) Integer   (d) Natural number

126. If $(a^2 + b^2)^3 = (a^3 + b^3)^2$ then $\dfrac{a}{b} + \dfrac{b}{a} =$

    (a) $\dfrac{2}{3}$ (b) $\dfrac{3}{2}$ (c) $\dfrac{5}{6}$ (d) $\dfrac{6}{5}$

127. Find the square root of the algebraic expression which is the average of the following expressions $x^2 + \dfrac{1}{x^2}, -2\left(x + \dfrac{1}{x}\right)$ and 3.

    (a) $\dfrac{x}{\sqrt{3}} - \dfrac{1}{\sqrt{3}} + \dfrac{1}{x}$ (b) $\dfrac{x}{\sqrt{3}} + 1 + x$ (c) $\dfrac{1}{\sqrt{3}}\left(x - 1 + \dfrac{1}{x}\right)$ (d) None of these

128. $abc + a + b + c + ab + bc + ac = 0$ then the value of $(1 + a)(1 + b)(1 + c)$ is ?

    (a) 1   (b) 0   (c) −1   (d) 2

129. Find the square root of $\dfrac{a^2}{4} + \dfrac{1}{a^2} - \dfrac{1}{a} + \dfrac{a}{2} - \dfrac{3}{4}$

    (a) $\dfrac{a}{2} - \dfrac{1}{a} + \dfrac{1}{2}$ (b) $\dfrac{a}{2} + \dfrac{2}{a} - 1$ (c) $\dfrac{a}{2} + \dfrac{1}{a} - \dfrac{1}{2}$ (d) $\dfrac{a}{2} - \dfrac{2}{a} - \dfrac{1}{2}$

130. The square root of $(3a + 2b + 3c)^2 - (2a + 3b + 2c)^2 + 5b^2$ is

    (a) $\sqrt{5}(a + b + c)$ (b) $\sqrt{5}(a + b)$ (c) $\sqrt{5}(a + c)$ (d) $\sqrt{5}(a + c - b)$

131. If $A = x - \dfrac{1}{x}$, then the value of $\left(A + \dfrac{1}{A}\right)$ is

(a) $\dfrac{x^4 - x^2 + 1}{x(x^2 - 1)}$ 　　(b) $\dfrac{x^4 + x^2 + 1}{x(x^2 - 1)}$ 　　(c) $\dfrac{x^4 + 1}{x^3 - x^2}$ 　　(d) 1

132. Which one of the following is a rational number ?

(a) $\left(\sqrt{2}\right)^2$ 　　(b) $2\sqrt{2}$ 　　(c) $2 + 2\sqrt{2}$ 　　(d) $\dfrac{\sqrt{2}}{2}$

133. Between any two distinct rational numbers –
　(a) There lie infinitely many rational numbers.
　(b) There lies only one rational number.
　(c) There lie only finitely many numbers.
　(d) There lie only rational numbers.

134. $\dfrac{15}{\sqrt{10} + \sqrt{20} + \sqrt{40} - \sqrt{125}}$ is equal to _____

(a) $\sqrt{5}(5 + \sqrt{2})$ 　　(b) $\sqrt{5}(2 + \sqrt{2})$ 　　(c) $\sqrt{5}(\sqrt{2} + 1)$ 　　(d) $\sqrt{5}(3 + \sqrt{2})$

135. The missing member 'x' in the ordered pair $(x, -8)$ if the second member of the pair is 4 more than the first member is :
(a) –4 　　(b) –8 　　(c) –12 　　(d) 4

136. The cost of a note book is twice the cost of a pen. If the cost of a note book is 'x' and that of a pen is 'y', then a linear equation in two variables is represented as :
(a) $x + 2y = 0$ 　　(b) $x - 2y = 0$ 　　(c) $-x + 2y = 1$ 　　(d) $2x - y = 0$

137. If $x + 1\cdot\overline{ab}$ and $x = \dfrac{47}{33}$ then $a + b = ?$

(a) 6 　　(b) 4 　　(c) 3 　　(d) 2

138. In the given figure, PQRS is a parallelogram. A and B are the mid-points of $\overline{PQ}$ and $\overline{SR}$ respectively. if PS = BR, then the quadrilateral ADBC is a _____ .
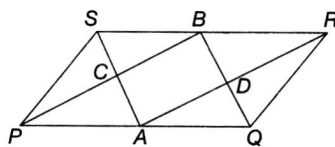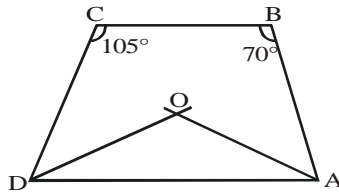

(a) rhombus 　　(b) kite 　　(c) square 　　(d) rectangle

139. A fly is in a cubical room of length 'a' unit. And sit at the bottom corner of it. It needs to be at top diagonally opposite corner of the room then find out smallest distance need to be covered?

(a) $\sqrt{5}a$ 　　(b) $\sqrt{3}a$ 　　(c) $a + \sqrt{3}a$ 　　(d) $2a$

140. In the given figure, AO and DO are the bisector of the ∠A and ∠D of the quadrilateral ABCD. Then the ∠AOD is

(a) 67.5°   (b) 77.5°   (c) 87.5°   (d) 99.75°

141. In a square ABCD, its diagonals bisect at O. Then the triangle AOB is

(a) An equilateral triangle   (b) An isosceles but not right angled triangle

(c) A right angled but not an isosceles triangle (d) An isosceles right angled triangle

142. Which of the following is greatest?

(a) $1 + \sqrt{48}$ (b) $\sqrt{6} + \sqrt{8}$ (c) $\sqrt{2} + \sqrt{24}$ (d) $2 + \sqrt{12}$

143. Find out the remainder when x is divided by 101? Where x = 123412341234 ... 100 digits.

(a) 32   (b) 67   (c) 45   (d) None of these

144. $2^x = 3^y = 6^{-z}$ then find out the value of $\dfrac{1}{x} + \dfrac{1}{y} + \dfrac{1}{z} = ?$

(a) 0   (b) –1   (c) 1   (d) Can't be determined

145. The profit earned by selling an article for Rs 482 is equal to loss incurred when the same article is sold for Rs 318. What should be the sale price of the article for making 30 per cent profit?

(a) Rs 560   (b) Rs 520   (c) Rs 540   (d) 580

146. n! = n(n – 1) (n –2) ... 3 × 2 × 1

Find $\dfrac{5!}{3!}$

(a) 7   (b) 20   (c) $\dfrac{5}{3}$ (d) None of these

147. A Shopkeeper expects a gain of 22.5% on his cost price. If in a week, his sale was of Rs. 392, what was his profit ?

(a) Rs. 18   (b) Rs. 70   (c) Rs. 72   (d) Rs. 88.25

148. The areas of three adjacent faces of a cuboid are x, y and z. If the volume of the cuboid is V, then V^2 is equal to:

(a) xyz   (b) xy + yz + zx   (c) $(xyz)^2$ (d) xy + yz

149. A monkey wants to climb a tree. In first 3 min to move 3 metres in upward direction and in next 2 min. 2 metres downwards. If the height of a tree is 20 metres? Find out the time taken by monkey to be at the top of the tree?

(a) 88 minutes   (b) 100 minutes   (c) 67 minutes   (d) 92 minutes

150. A room is 6 m long, 5 m broad and 4 m height. If all its wall are to be covered with paper 50 cm wide, the length of the paper is:

(a) 120 m   (b) 88 m   (c) 440 m   (d) 176 m