



Class – VII

## 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.

## MAT

Directions (Qs. 1 to 4) : The first two words have a definite relationship with each other. A third word followed by a set of alternatives is given on the right side of the sign. Choose the alternative which expresses the same relationship with the third word.

1. Conscience : Wrong : : Police : ?  
(a) Discipline (b) Enemy (c) Hardship (d) Crime
2. Vendor : Buyer : : Advocate : ?  
(a) Client (b) Case (c) Court (d) Victim
3. Height : Climber : : Space : ?  
(a) Courage (b) Astronauts (c) Orbit (d) Flyer
4. Birds : Nests : : People : ?  
(a) Homes (b) Houses (c) Sky (d) Land

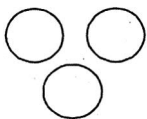
Directions (Qs. 5 to 9) : Choose the correct alternative that will continue the same pattern and fill the blank space.

5. 2, 6, 12, 20, 30, 42, \_\_\_\_\_.  
(a) 54 (b) 55 (c) 56 (d) 58
6. 1, 4, 2, 8, 6, 24, 22, 88, \_\_\_\_\_.  
(a) 86 (b) 90 (c) 154 (d) 188
7. 6, 13, 28, 59, \_\_\_\_\_.  
(a) 119 (b) 120 (c) 122 (d) 125
8. 225, 336, 447, \_\_\_\_\_, 669, 7710  
(a) 114 (b) 338 (c) 558 (d) 991
9. 5, 17, 37, 65, \_\_\_\_\_, 145.  
(a) 95 (b) 97 (c) 99 (d) 101

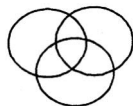
Directions (Qs. 10 to 14) : Choose the one which is different from the remaining four.

10. (a) 10 (b) 26 (c) 24 (d) 21
11. (a) 51 (b) 144 (c) 64 (d) 121
12. (a) NPM (b) IJL (c) QSZ (d) BHK
13. (a) XYZ (b) ABC (c) MNO (d) PQS
14. (a) FCGDE (b) TRQPS (c) KJHMF (d) KHGJI

Directions (Qs. 15 to 16) : Each of the questions below contains three elements. These elements may or may not have some linkage. Each group of the elements may fit into one of the diagrams (a), (b), (c), (d). You have to indicate the group of elements in each of the questions which fits into one of the following diagrams. The option of that diagram is the answer.



(a)



(b)



(c)



(d)

15. Train, Bus, Taxi.  
16. Tree, Fruit, Guava.

Directions (Questions 17 to 18) : Answer the following questions based on the alphabet given below :

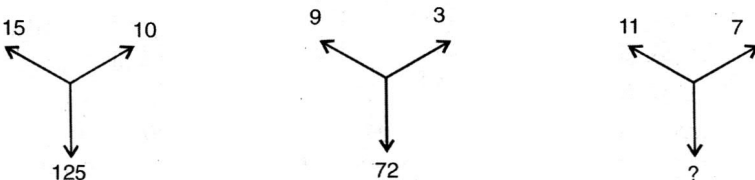
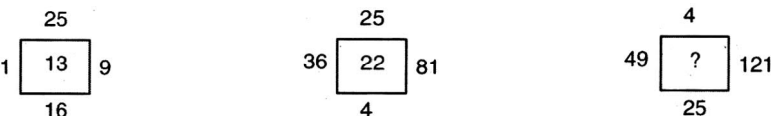
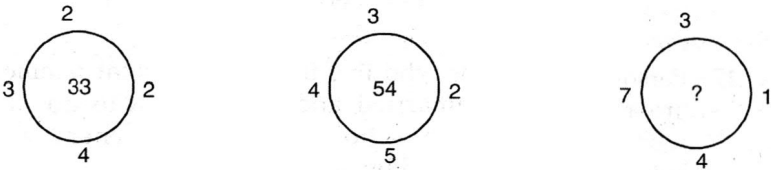
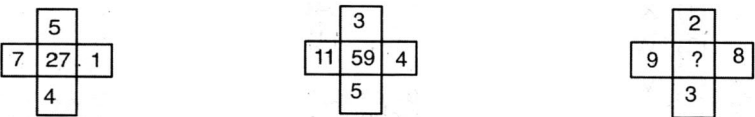
17. What will come in place of the question (?) mark in the following series?  
GPW, GPUW, GIPUW, GIPSUW, ?  
(a) GILPSUW      (b) GIPQSUW      (c) GIKPSUW      (d) GIJPSUW
18. If the alphabets are written in the reverse order after interchanging alphabets from 'D to L' with those from 'R to Z' respectively, which letter would be midway between W and E in the new order?  
(a) M      (b) N  
(c) O      (d) There is no such letter
19. In a certain code 'Lee ra de' means 'what was it'; 'mo nil' means 'you go' ; 'nil pam ra' means 'you like it' and 'tok lee fo' means 'she was sick'. How will you write 'what you like' in that code?  
(a) pam ra Lee      (b) ni ra Lee  
(c) Data inadequate      (d) None of these
20. How many pairs of letters are there in the word EXCLUSIVE which have as many letters between them as in the alphabet?  
(a) 2      (b) 3      (c) 4      (d) Nil
21. If it is possible to make a meaningful word from the fifth, seventh, eighth, ninth and thirteenth letters of the word 'EXTRAORDINARY', using each letter of that word once only, write the second letter of that word as your answer. If no such word can be formed, write 'X' as your answer and if more than one such words can be formed, write 'M' as your answer.  
(a) A      (b) I      (c) R      (d) M
22. Ankit walks 10 kilometres towards North. From there he walks 6 kilometres towards South, Then, he walks 3 kilometres towards East. How far and in which direction is he with reference to his starting position?  
(a) 5 km. West      (b) 5 km. North-East  
(c) 7 km. East      (d) 7 km. West

Directions (Qs. 23 to 27) : Read the following information and answer the questions given below it:

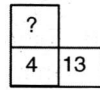
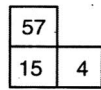
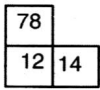
- (i) There are five friends S, K, M, A and R.  
(ii) S is shorter than K but taller than R.  
(iii) M is the tallest.  
(iv) A is a little shorter than K and little taller than S.
23. Who is the shortest ?  
(a) R      (b) S      (c) A      (d) K

24. If they stand in order of their heights, who will be the second?  
 (a) A (b) S (c) R (d) K
25. If they stand in the order of increasing heights, who will be in the middle ?  
 (a) K (b) R (c) S (d) A
26. Who is the second tallest ?  
 (a) S (b) K (c) A (d) R
27. Who is taller than A but shorter than M ?  
 (a) K (b) R (c) S (d) Data inadequate
- Directions (Qs. 28 to 30) : Find one word that cannot be made from the letters of the given word.
28. CONSTITUTIONAL  
 (a) LOCATION (b) TUITION (c) TALENT (d) CONSULT
29. CREDENTIALS  
 (a) DENTAL (b) CREATE (c) TRAIN (d) CREAM
30. CARPENTER  
 (a) NECTAR (b) CARPET (c) PAINTER (d) REPENT

Directions (Questions 31 to 35) : Find the missing character in each of the following questions :

31. 
- (a) 54 (b) 72 (c) 75 (d) 83
32. 
- (I) (II) (III)
- (a) 25 (b) 22 (c) 27 (d) 37
33. 
- (a) 79 (b) 78 (c) 77 (d) 75
34. 
- (a) 86 (b) 72 (c) 66 (d) 78

35.



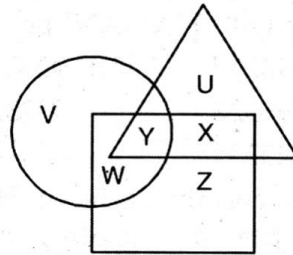
(a) 54

(b) 51

(c) 49

(d) 45

Directions (Questions 36 to 40): In the following diagram, three classes of population are represented by three figures. The triangle represents the school teachers, the square represents the married person and the circle represents the person living in joint families.



36. Married persons living in joint families but not working as school teachers are represented by

(a) X

(b) U

(c) W

(d) Z

37. Persons who live in joint families are unmarried and who do not work as school teachers are represented by

(a) X

(b) Y

(c) V

(d) W

38. Married teachers living in joint families are represented by

(a) X

(b) Y

(c) W

(d) U

39. School teachers who are married but do not live in joint families are represented by

(a) X

(b) U

(c) Z

(d) W

40. School teachers who are neither married nor live in joint families are represented by

(a) U

(b) X

(c) Y

(d) Z

41. Find the word that cannot be formed from the letters of the word PHOTOSYNTHETIC

(a) THOSE

(b) SCENT

(c) PRONE

(d) COTTON

42. If RAMAN is written as 12325 and DINESH is written as 67589, then how will 'HAMAN' be written?

(a) 92233

(b) 92323

(c) 93322

(d) 92325

43. In a certain code, if HENRY is written as 'jgpta', how will COUNTRY be coded?

(a) Eqwputa

(b) Eqwvpta

(c) Eqwvpte

(d) Eqwvpta

44. If MARS is written as ZNEF, how ARMS can be coded in that code?

(a) NEZF

(b) FENZ

(c) NFZE

(d) MEZF

45. In a class, Suman is ranked 7th from the top. Vijay is ranked 15th from the top and 21st from the bottom in the same class. What is Suman's rank from the bottom?

(a) 27th

(b) 39th

(c) 38th

(d) 29th

Directions (Qs 46 to 48) : Supply the right letters for question mark (?) in the following questions.

46. A D E H I L ? ?  
(a) MP (b) MN (c) MO (d) MQ
47. CD HI MN ? ?  
(a) QS (b) RS (c) OP (d) PQ
48. ACF acf G ? ? ? ? ?  
(a) ILgil (b) JLgil (c) ILgli (d) LLgli

Directions (Qs. 49-51) : In each of the following questions, one term in the number series is wrong. Find out the wrong number.

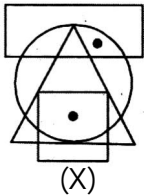
49. 5, 5, 10, 30, 120, 480, 3600  
(a) 10 (b) 120 (c) 30 (d) 480
50. 0.5, 2, 5, 11, 23, 46, 95, 191  
(a) 191 (b) 95 (c) 46 (d) 23
51. 1, 2, 4, 12, 36, 72, 216, 432, 1296  
(a) 4 (b) 12 (c) 36 (d) 72
52. February 3 was Friday in a particular year. The last Sunday of February in that year will fall on :  
(a) Feb. 25 (b) Feb. 26 (c) Feb. 27 (d) Feb. 28
53. How many times between 4 O'clock afternoon and 10 o'clock night, the two hands of a clock are at right angles ?  
(a) 8 (b) 10 (c) 12 (d) 11
54. B is A's son. B is my son's uncle. Then A is my :  
(a) Uncle (b) Grandmother (c) Father (d) Brother
55. Both 'P' and 'Q' are S's children, S is father of P but Q is not son of S. Then Q is S's :  
(a) Brother (b) Sister (c) Daughter (d) Son
56. Shitin starts from Bus stop and goes 4 km. towards east. Then he turns left and goes 3 km. He further turns to right and goes 1 km. He, then turns to left and goes 2 km and again turns to left and goes 5 km. In which direction is he now from the bus stop?  
(a) East (b) North-West (c) North (d) South

Directions (Qs 57 to 59) : Find the odd one out :

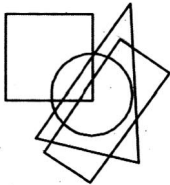
57. (a) Area (b) Region (c) District (d) Land
58. (a) Few (b) Some (c) Most (d) All
59. (a) 25 (b) 36 (c) 49 (d) 63

Directions (Questions 60) : There is a diagram marked (X) with one or more dots placed in it. Select the figure from the four alternatives (a), (b), (c), (d) which satisfies the same conditions of placement of dots as in fig. (X).

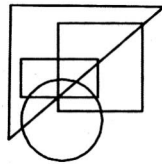
60.



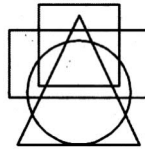
(X)



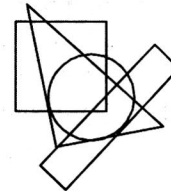
(a)



(b)



(c)

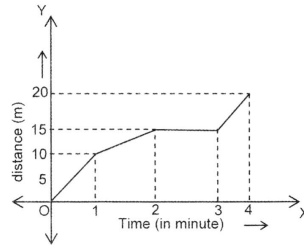


(d)

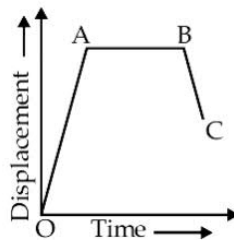
## PHYSICS

61. Which of the following is a poor conductor of heat?  
 (a) Vacuum (b) Water (c) Air (d) All the above
62. During the day time, mid day is hotter than early morning or late evening. It is  
 (a) due to the sun's rays that fall normally on the surface of earth during mid day  
 (b) due to the sun's rays that fall obliquely during the early morning (or) late evening  
 (c) not concerned with how the light rays fall  
 (d) Both (a) and (b)
63.  $-40^{\circ}\text{C}$  is numerically equal to  
 (a)  $-40^{\circ}\text{F}$  (b) 233 K (c)  $-32^{\circ}\text{F}$  (d) All the above
64. Which among the following is the hottest substance?  
 (a) Water at  $100^{\circ}\text{C}$  (b) Steam at  $100^{\circ}\text{C}$   
 (c) Mercury at  $100^{\circ}\text{C}$  (d) All the above are equally hot
65. The image formed by a concave mirror can be \_\_\_\_\_.  
 (a) real (b) virtual (c) magnified (d) All of the above
66. Geometric centre of a mirror is called \_\_\_\_\_.  
 (a) pole (b) plane (c) optic centre (d) centre of curvature
67. Long-sightedness is caused due to  
 (a) eye ball being too short (b) eye ball being too long  
 (c) the blind spot on the retina (d) None of the above
68. Assertion (A) : Convex mirrors are used as rear view mirrors in vehicles.  
 Reason (R) : The field view of convex mirrors is maximum and they form diminished images.  
 (a) Both A and R are correct, and R is the correct explanation of A  
 (b) Both A and R are correct, but R is not the correct explanation of A  
 (c) A is correct but R is incorrect  
 (d) Both A and R are incorrect

69. Distance versus time graph of an object is as shown in the figure. The average speed of the object in m/s is.



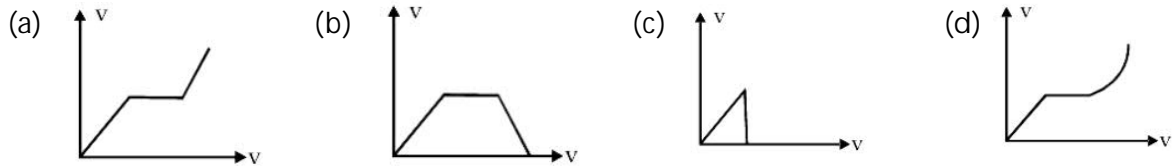
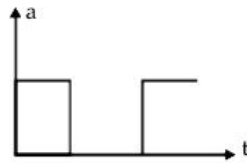
- (a) 0.08                      (b) 0.5                      (c) 1                      (d) 2
70. A car driver accelerates the car to increase its speed from  $30 \text{ km h}^{-1}$  to  $60 \text{ km h}^{-1}$  in 5 mins. Acceleration of car is\_\_\_\_\_.
- (a)  $\frac{1}{18} \text{ ms}^{-2}$                       (b)  $\frac{1}{36} \text{ ms}^{-2}$                       (c) zero                      (d)  $5 \text{ ms}^{-2}$
71. A truck running along a straight line increases its speed uniformly from  $30 \text{ m/s}$  to  $60 \text{ m/s}$  over a time interval 1 min. The distance travelled during this time interval is
- (a) 900 m                      (b) 1800 m                      (c) 2700 m                      (d) 3600m
72. Distance of the moon from the earth is  $4 \times 10^8 \text{ m}$ . The time taken by a radar signal transmitted from the earth to reach the moon is
- (a) 5.2 s                      (b) 1.3 s                      (c) 2.6 s                      (d) 0.70 s
73. A body is dropped from the top of a tower and reaches the ground in 3 sec. Then the height of the tower is :
- (a) 44.1 m                      (b) 40.2 m                      (c) 62.3 m                      (d) None of these
74. If two bodies of different masses  $m_1$  and  $m_2$  are dropped from different heights  $h_1$  and  $h_2$ , then ratio of the time taken by the two to drop through these distances is
- (a)  $h_1 : h_2$                       (b)  $h_2 : h_1$                       (c)  $\sqrt{h_1} : \sqrt{h_2}$                       (d)  $h_1^2 : h_2^2$
75. In fig, BC represents a body moving



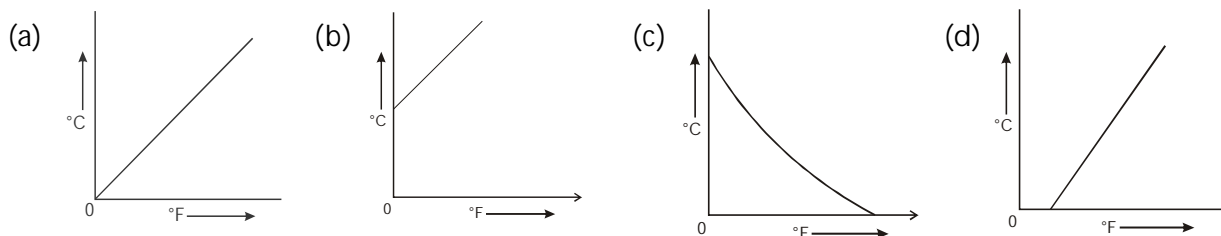
- (a) Backward with uniform velocity
- (b) Forward with uniform velocity
- (c) Backward with non-uniform velocity
- (d) Forward with non-uniform velocity



76. Which of the following graphs would probably show the velocity plotted against time graph for a body whose acceleration-time graph is shown in the figure?



77. A wheel is of diameter 1 m. If it makes 30 revolutions/sec., then the linear speed (in m/s) of a point on its circumference is  
 (a)  $30\pi$  (b)  $\pi$  (c)  $60\pi$  (d)  $\pi/2$
78. Quantum theory of light was given by :  
 (a) Newton (b) Plank (c) Faraday (d) None of these
79. A boy is moving towards a plane mirror with 5 cm/s. What will be the relative speed of the boy w.r.t. the image of the boy :  
 (a) 5 cm/s (b) 10 cm/s (c) 15 cm/s (d) 20 cm/s
80. Monochromatic light is refracted from air into a medium of refractive index n. The ratio of wavelength of the incident and refracted waves is :  
 (a) 1 : 1 (b) 1 : n (c) n : 1 (d)  $n^2 : 1$
81. Focal length of a concave lens is—  
 (a) Always positive (b) Can be positive (c) Always negative (d) Can be negative
82. Liquids A and B are at  $30^\circ\text{C}$  and  $20^\circ\text{C}$ . When mixed in equal masses, the temperature of the mixture is found to be  $26^\circ\text{C}$ . Their specific heats are in the ratio of :  
 (a) 1 : 1 (b) 2 : 3 (c) 4 : 3 (d) 3 : 2
83. A rod of steel at  $10^\circ\text{C}$  has length of 10 cm. Find the change in length of rod if temperature rises up to  $60^\circ\text{C}$  (Given  $\alpha_{\text{steel}} = 0.005/^\circ\text{C}$ ) :  
 (a) 2.5 cm (b) 12.5 cm (c) 5.2 cm (d) 7.5 cm
84. In the above question (83), the percentage change in length of steel rod will be :  
 (a) 25% (b) 124% (c) 100% (d) 76%
85. Which graph represents correct curve between  $^\circ\text{C}$  along y-axis and  $^\circ\text{F}$  along x-axis :



## CHEMISTRY

86. Which among the following is considered as strong acid?  
 (a) Acetic acid      (b) Sulphurous acid      (c) Carbonic acid      (d) Nitric acid
87. Which of the following solutions turn phenolphthalein pink?  
 (a) Soda water      (b) Lime water      (c) Common salt      (d) Sugar solution
88. Washing soda is \_\_\_\_\_.  
 (a) hydrated sodium carbonate      (b) anhydrous sodium carbonate  
 (c) hydrated magnesium sulphate      (d) anhydrous magnesium sulphate
89. A salt formed by the partial neutralization of hydroxyl ions of a base by an acid is called \_\_\_\_\_.  
 (a) normal      (b) acidic      (c) basic      (d) None of these
90. Hydrated salt is \_\_\_\_\_.  
 (a) Marble      (b) Baking soda      (c) Green vitriol      (d) All the above
91. Match the entries given in column A with the appropriate ones in column B.
- | Column A             | Column B                     |
|----------------------|------------------------------|
| (p) Carbonic acid    | (i) Baking Powder            |
| (q) Tartaric acid    | (ii) Antacid                 |
| (r) Caustic soda     | (iii) Soft drink             |
| (s) Milk of magnesia | (iv) Additive in food stuffs |
|                      | (v) Soap industry            |
- (a) p-iii, q-i, r-v, s-ii      (b) p-iii, q-i, iv, r-v, s-ii  
 (c) p-iii, q-i, r-v, iv, s-ii      (d) p-iii, q-ii, r-iv, s-ii
92. Two Salts "X" and "Y" are taken in two test tubes "A" and "B" respectively and subjected to heating. Water is added to two test tubes. In case of "A" salt regains its original colour and In case of "B" water starts boiling. Then X and Y respectively are :  
 (a) blue vitriol and lime      (b) blue vitriol and baking soda  
 (c) nitre and lime      (d) nitre and washing soda
93. The salt formed by complete neutralization of calcium hydroxide with oxy acid of sulphur having four oxygen atoms is \_\_\_\_\_.  
 (a) calcium sulphite      (b) calcium bisulphate  
 (c) calcium sulphate      (d) calcium bisulphite
94. Role of nitre in the manufacture of gun powder is \_\_\_\_\_.  
 (a) to supply oxygen      (b) to supply nitrogen  
 (c) to decrease the rate of combustion      (d) absorb temperature produced by combustion
95. Identify the acid used in the purification of metals like gold and silver among the following :  
 (a) sulphuric acid      (b) phosphoric acid      (c) hydrochloric acid      (d) nitric acid

96. Which of the following substances used in agriculture does not cause water pollution to large extent?  
 (a) Manures (b) Pesticides (c) Fertilizers (d) Insecticides
97. Metals present in permutit are :  
 (a) Na and K (b) Na and Al (c) Al and K (d) K and Al
98. Which among the following liquids has the highest specific heat?  
 (a) Petrol (b) Mercury (c) Oil (d) Water
99. The solvent water is used in the car radiators. Which of the following properties of water is exploited?  
 (a) High solubility (b) Poor conductivity  
 (c) Maximum density (d) High specific heat
100. A divalent metal salt X, which contributes to hardness of water, combines with washing soda and forms an insoluble salt Y and common salt. Salt Y is also used for the laboratory preparation of  $\text{CO}_2$ . Identify X and Y respectively.  
 (a)  $\text{CaSO}_4$ ,  $\text{CaCO}_3$  (b)  $\text{MgSO}_4$ ,  $\text{MgCO}_3$  (c)  $\text{CaCl}_2$ ,  $\text{CaCO}_3$  (d)  $\text{MgCl}_2$ ,  $\text{MgCO}_3$
101. The amount of heat energy required to increase the temperature of 20 g of water by  $1^\circ\text{C}$  is \_\_\_\_ .  
 (a) 10 cal (b) 20 cal (c) 15 cal (d) 2 cal
102. Arrange the steps in a sequence for the conversion of atmospheric water vapour into underground water.  
 (1) Infiltration in recharge area (2) Water table  
 (3) Infiltration in zone of aeration (4) Precipitation  
 (5) Aquifer  
 (a) 4 1 3 2 5 (b) 4 3 1 2 5 (c) 4 3 1 5 2 (d) 4 1 3 5 2
103. Water containing salt X, of a divalent metal, when treated with a compound Y gives much lather with soap and forms, insoluble compound Magnesium carbonate and salt of a monovalent metal sulphate. Identify X and Y respectively.  
 (a)  $\text{CaCl}_2$ ,  $\text{Na}_2\text{CO}_3$  (b)  $\text{MgSO}_4$ ,  $\text{Na}_2\text{CO}_3$   
 (c)  $\text{MgCl}_2$ ,  $\text{NaHCO}_3$  (d)  $\text{CaSO}_4$ ,  $\text{Mg}(\text{HCO}_3)_2$
104. Which of the following is used to protect silk and woollen clothes?  
 (a) Medicines (b) Salt solution (c) Benzene solution (d) Naphthalene balls
105. Given below are two groups of materials used to make dress articles.
- |         |          |
|---------|----------|
| Group I | Group II |
| Flax    | Cotton   |
| Jute    | Wool     |
|         | Silk     |
- Which of the following does not belong to the group formed by the others?  
 (a) Leather (b) Flax (c) Cotton (d) Silk
106. Which of the following is the function of hair?  
 (a) Traps a lot of heat (b) Protects internal organs  
 (c) Keeps body cool (d) Gives beauty

107. In which of the following processes new offspring with special characters is produced by selecting parents?  
 (a) Translation (b) Selective breeding (c) Separating (d) Rearing
108. Which type of shawls are woven from the fur of Kashmir goat?  
 (a) Pashmina (b) Parsi (c) Kashmiri (d) Simla
109. In South America wool is obtained from which of the following animals?  
 (a) Goat and Sheep (b) Angora Goat  
 (c) Llama and Alpaca (d) Yak and Sheep
110. In which process fleece of sheep with skin is/are removed?  
 (a) Shaving (b) Rearing (c) Shearing (d) All of the above

## BIOLOGY

111. In which part of chloroplast, light reaction of photosynthesis takes place?  
 (a) Granum (b) Stroma (c) Both (a) and (b) (d) None of these
112. Which part of the leaf controls the rate of loss of water to the air?  
 (a) Midrib (b) Stomata (c) Vascular bundles (d) Veins
113. During photosynthesis, photolysis of water occurs:  
 (a) in presence of light  
 (b) in absence of light  
 (c) both in presence and in absence of light  
 (d) none of these
114. Which of the following is/are saprotrophic organism(s)?  
 (a) Agaricus (b) Few bacteria (c) Both (a) and (b) (d) Green plants
115. The milk protein splitting enzyme found in the stomach of infants is:  
 (a) Pepsin (b) Rennin (c) Lipase (d) Protease
116. Name the largest gland of the alimentary canal?  
 (a) Large intestine (b) Small intestine (c) Liver (d) Stomach
117. The process of breakdown of pyruvate into carbon dioxide, water and energy takes place in \_\_\_\_\_ of cell.  
 (a) Mitochondria (b) Cytoplasm (c) Chloroplast (d) Nucleus
118. The human lungs always contain a certain volume of air so that there is sufficient time for oxygen to be absorbed and for the carbon dioxide to be released which is known as :  
 (a) Residual volume (b) Tidal volume  
 (c) Total lung capacity (d) None of these
119. Which of the following is/are adaptive characteristic(s) of elephants?  
 (a) They have long trunk which is used for picking food.  
 (b) They have strong tusks used to tear barks of the tree for eating.  
 (c) They have large ears to release heat and hear very soft sounds.  
 (d) All of the above.
120. Which birds migrate to warmer regions during winter and return during summer?  
 (i) Penguins (ii) Siberian cranes (iii) Arctic terns (iv) Toucans  
 (a) (i) and (iv) (b) (ii) and (iv) (c) (ii) and (iii) (d) (iii) and (iv)

# MATHEMATICS

121. Find the value of  $\sqrt[3]{27} \times \sqrt[3]{216} \times \sqrt[3]{64}$
- (a) 24                      (b) 45                      (c) 72                      (d) 96
122. The LCM of two numbers is 420. Which of the following cannot be the HCF of the two numbers?
- (a) 70                      (b) 60                      (c) 210                      (d) 80
123. If  $m = (-1)^{2000}$  and  $n = (-1)^{2002}$ , then find the value of  $\frac{m}{n}$ .
- (a) -1                      (b) 1                      (c) 2000                      (d) 2002
124. The number 444 444 444 444 is divisible by:
- (a) 3, 11                      (b) 7                      (c) 5, 11                      (d) 9, 11
125. If  $\frac{x}{y} = \frac{3}{5}$ , then the value of  $\frac{x-y}{x+y}$  is
- (a)  $-\frac{1}{4}$                       (b)  $\frac{1}{4}$                       (c)  $\frac{1}{2}$                       (d) -6
126. The unit digit in the product  $(7^{71} \times 6^{59} \times 3^{65})$  as:
- (a) 6                      (b) 2                      (c) 4                      (d) 1
127. The greatest number of 4 digits divisible by 12, 15, 20 and 35 is
- (a) 9999                      (b) 9900                      (c) 9804                      (d) 9660
128. Every composite number has:
- (a) no prime divisor                      (b) at least one prime divisor  
(c) at least two prime divisor                      (d) one and only one prime divisor
129. The mean of 15 observations is 30. Two observations 28 and 38 are deleted and three observations 33, 39 and 48 are included. Find the mean of new set of observation.
- (a) 31                      (b) 31.5                      (c) 32                      (d) 33.4
130. If mode - mean = mean - mode, then which of the following is necessarily true?
- (a) Mean = Median    (b) Median = Mode    (c) Mean = Mode    (d) All of these
131. If the mean of 5, 7, x, 10, 5, and 7 is 7, then find the value of x.
- (a) 6                      (b) 7                      (c) 8                      (d) 9
132. If the median of  $\frac{a}{3}, \frac{a}{2}, \frac{a}{4}, \frac{2a}{5}, \frac{a}{6}$  is 12, then find the value of a ( $a > 0$ ).
- (a) 36                      (b) 48                      (c) 30                      (d) 24
133. The value of  $\frac{2^{2001} + 2^{1999}}{2^{2000} - 2^{1998}}$ , is:
- (a) 2                      (b)  $\frac{10}{3}$                       (c)  $2^{1000} + 1$                       (d) 10

134. The value of  $\frac{(67.542)^2 - (32.458)^2}{75.458 - 40.374}$  is:

- (a) 1                                      (b) 10                                      (c) 100                                      (d) none

135. Find the values of  $x$  and  $y$ , which satisfies the simultaneous equations  $2006x + 2007y = 8024$  and  $2007x + 2006y = 8028$ .

- (a)  $x = 4, y = 0$                       (b)  $x = 0, y = 4$                       (c)  $x = y = 4$                       (d)  $x = y = 0$

136. If  $x + \frac{1}{x} = 6$ , then find  $x^2 + \frac{1}{x^2}$ .

- (a) 34                                      (b) 36                                      (c) 32                                      (d) 38

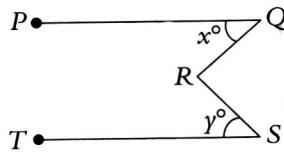
137. If  $x + \frac{1}{x} = 2$ , then find  $x^{100} - \frac{1}{x^{100}} =$  \_\_\_\_\_

- (a) 0                                      (b) 1                                      (c) 2                                      (d) 2100

138. Ajay and Vijay have 25 chocolates in total. If Ajay gives 3 chocolates to Vijay, then the number of chocolates with them is in the ratio 2 : 3. Find the number of chocolates with Ajay and Vijay, respectively.

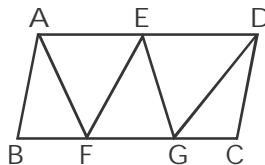
- (a) 20, 30                                      (b) 15, 10                                      (c) 10, 15                                      (d) None of these

139. In the figure below (not to scale),  $\overline{PQ} \parallel \overline{TS}$ , reflex  $\angle QRS = 300^\circ$ , and  $x - y = 30^\circ$ . The measure of  $y$  will be \_\_\_\_.



- (a)  $25^\circ$                                       (b)  $15^\circ$                                       (c)  $20^\circ$                                       (d)  $30^\circ$

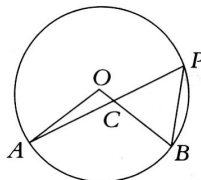
140.



In the figure above (not to scale),  $\overline{EF} \parallel \overline{GD}$ ,  $\overline{AF} \parallel \overline{EG}$ ,  $\overline{AD} \parallel \overline{BC}$  and  $\angle DCG = 100^\circ$ . If  $\angle CDG = 40^\circ$ , then find  $\angle AEF$ .

- (a)  $30^\circ$                                       (b)  $40^\circ$                                       (c)  $150^\circ$                                       (d)  $60^\circ$

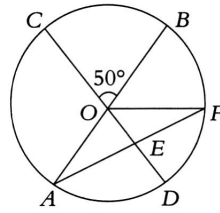
141.



In the above figure (not to scale),  $O$  is the centre of the circle.  $\overline{AP}$  and  $\overline{BP}$  are two chords.  $C$  is the point of intersection of  $\overline{AP}$  and  $\overline{OB}$ . If  $\angle OAC = 30^\circ$  and  $\angle PBC = 80^\circ$ , then  $\angle AOB =$  \_\_\_\_.

- (a)  $110^\circ$                                       (b)  $100^\circ$                                       (c)  $130^\circ$                                       (d)  $120^\circ$

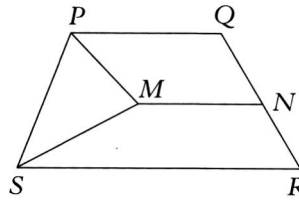
142.



In the above figure, O is the centre of the circle, AB and CD are diameters,  $\angle COB = 50^\circ$ . If E is the midpoint of AF, then find  $\angle ADF$ .

- (a)  $130^\circ$                       (b)  $100^\circ$                       (c)  $110^\circ$                       (d)  $120^\circ$

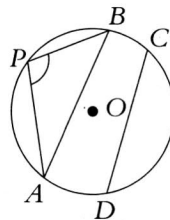
143.



In the given figure, PQRS is an isosceles trapezium and  $\overline{PQ} \parallel \overline{SR} \parallel \overline{MN}$ . If  $\angle SPM = 70^\circ$  and  $\angle PQR = 110^\circ$ , then find  $\angle PMN$ .

- (a)  $140^\circ$                       (b)  $150^\circ$                       (c)  $120^\circ$                       (d)  $100^\circ$

144.



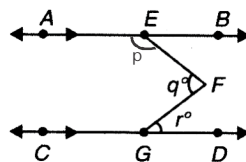
In the above figure, O is the centre of the circle and  $AB = CD$ . if  $\angle APB = 110^\circ$ , then find the angle made by the chord CD at the centre.

- (a)  $220^\circ$                       (b)  $110^\circ$                       (c)  $120^\circ$                       (d)  $140^\circ$

145. For what value of x which satisfy the equation  $\frac{2}{3x-2} = \frac{3}{x-6}$  is \_\_\_\_\_

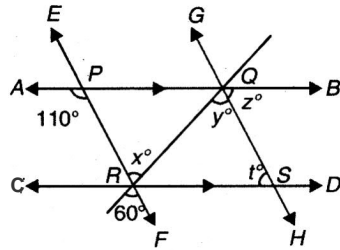
- (a)  $\frac{6}{7}$                       (b)  $\frac{7}{6}$                       (c)  $\frac{-6}{7}$                       (d)  $\frac{-7}{6}$

146. In the given figure,  $AB \parallel CD$ , then which of the following is true :



- (a)  $p + q - r = 180^\circ$                       (b)  $p + q + r = 180^\circ$   
 (c)  $p - q + r = 180^\circ$                       (d)  $p + q - 2r = 180^\circ$

147. In the given figure  $AB \parallel CD$  and  $EF \parallel GH$ . The values of  $x$ ,  $y$ ,  $z$  and  $t$  are respectively.



- (a) 65, 75, 75, 60      (b) 50, 75, 75, 65      (c) 60, 70, 60, 70      (d) 60, 60, 70, 70

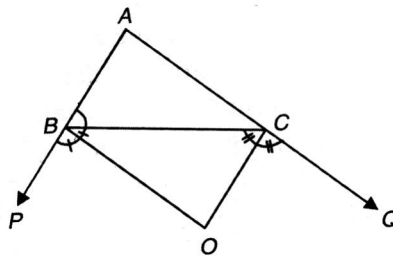
148. If  $\frac{(\sqrt{a} - \sqrt{b})^2 + 4\sqrt{ab}}{a - b} = \frac{5}{3}$  then the value of  $a:b$  is,

- (a) 16 : 1      (b) 1 : 4      (c) 4 : 1      (d) 15 : 1

149. One-third of a number is subtracted from three times the numbers, the result is 800. Find the number.

- (a) 300      (b) 400      (c) 200      (d) 600

150. In figure, side  $AB$  and  $AC$  of a  $\triangle ABC$  are produced to  $P$  and  $Q$  respectively. The bisectors of  $\angle PBC$  and  $\angle QCB$  intersect at  $O$ . Then  $\angle BOC$  is equal to:



- (a)  $90^\circ - \frac{1}{2}\angle BAC$       (b)  $\frac{1}{2}(\angle PBC + \angle QCB)$   
 (c)  $90^\circ + \frac{1}{2}\angle BAC$       (d) None of these