



## Class – VIII

# School Accelerated Program

### ENTRANCE TEST CUM SCHOLARSHIP TEST (Sample Paper-1)

[Time: 1 Hour 50 Min]

[Max Marks: 400]

#### A. General:

1. This booklet is a Question Paper containing 100 questions.
2. **Blank Papers, Clipboards, Log Tables, slide rules, calculators, cellular phones, pagers 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 +4 marks for correct answer and -1 mark for incorrect answer.**

### MAT

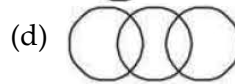
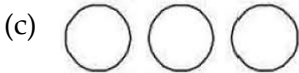
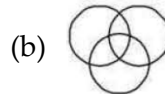
1. Pointing out to a photograph, a man tells his friend, " she is the daughter of the only son of my father's wife. How is the girls related to the man in the photograph?  
(a) Daughter (b) Cousin (c) Mother (d) Sister

**Direction (Qs. 2-3) :** Study the following information and answer the question given below. *S* and *R* are brothers. *T* is daughter of *S*. *U* is the spouse of *R* and mother of *Q*. *P* is the daughter of *V*, who is the spouse of *T*.

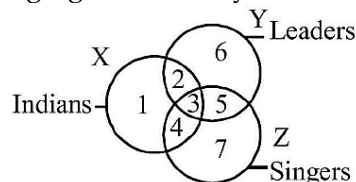
2. Who is the grand father of P ?  
(a) U (b) S (c) R (d) V
3. Who is the cousin of ?  
(a) T (b) V (c) R (d) P

**Direction (Qs. 4 to 6):** Complete the following series

4. 16,33,67,135, .....  
(a) 251 (b) 259 (c) 271 (d) 289
5. 5,9,16,29,54, ... ..  
(a) 103 (b) 105 (c) 109 (d) None of these
6.  $ab - -a - dcacb - acd -$   
(a)  $dcbdb$  (b)  $cdbbd$  (c)  $dabdb$  (d)  $cdbdb$
7. In a certain code language, the word 'RECTANGLE' is coded as TGEVCPING, then how is the word 'RHOMBUS' coded ?  
(a) TJOQDWV (b) UVWTJQN (c) TJQODWU (d) JTQOEWN
8. In a certain code, RADIO is XZOPL and SHEET is NBBGI, then HEATER is coded as ?  
(a) BNGZIX (b) BGZGIX (c) BGZIGX (d) GZBIXZ
9. If  $\times$  means  $\div$ ,  $-$  means  $\times$ ,  $\div$  means  $+$  and  $+$  means  $-$  then  $(3 - 15 \div 19) \times 8 + 6 = ?$   
(a) -1 (b) 2 (c) 4 (d) 8
10. A man leaves for his office from his house. He walks towards East. After moving a distance of 20 m, he turns south and walks 10 m. Then he walks 35 m towards the west and further 5 m towards the North. He then turns towards east and walks 15 m. What is the straight distance (in metres) between his initial and final positions?  
(a) 0 (b) 5  
(c) 10 (d) Cannot be determined
11. Choose the correct alternative that represents the relationship among illiterates, poor people and unemployed.



**Direction (Qs. 12-13) :** Study the following figure carefully and answer the given questions:

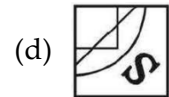
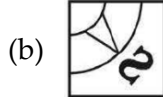
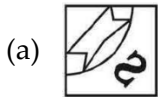


12. Which region denotes Indian leaders who are not singers?  
(a) 2 (b) 3 (c) 4 (d) 5
13. Which region represents Indian leaders who are singers?  
(a) 2 (b) 3 (c) 4 (d) 5
14. What is the angle between the 2 hands of the clock at 8:24pm ?  
(a)  $100^\circ$  (b)  $107^\circ$  (c)  $106^\circ$  (d)  $108^\circ$

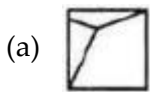
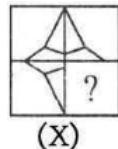
15. The year next to 1991 having the same calendar as that of 1991 is -

- (a) 1998 (b) 2001 (c) 2002 (d) 2003

16. Select a figure from the four alternatives, which when placed in the blank space of figure (X) would complete the pattern.



17. In the following question, select a figure from amongst the four alternatives, which when placed in the blank space of fig. (X) would complete the pattern.



18. Find the correct option for the mirror image for the following question.



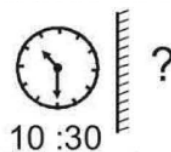
(a) MAERD

(b) DREAM

(c) DREAM

(d) MAERD

19. Rotate the mirror image of the given clock 90° clockwise and the time will be.



(a) 4:45

(b) 5:45

(c) ?

(d) ?

20. Find the correct option for the water image for the following question.



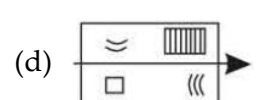
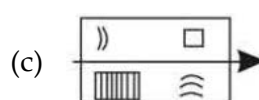
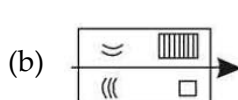
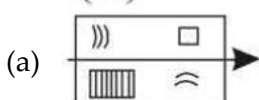
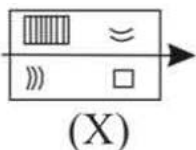
(a) PLEDGE

(b) PLEDGE

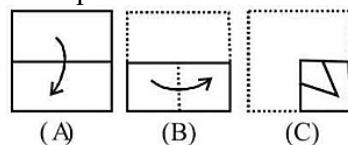
(c) PLEDGE

(d) PLEDGE

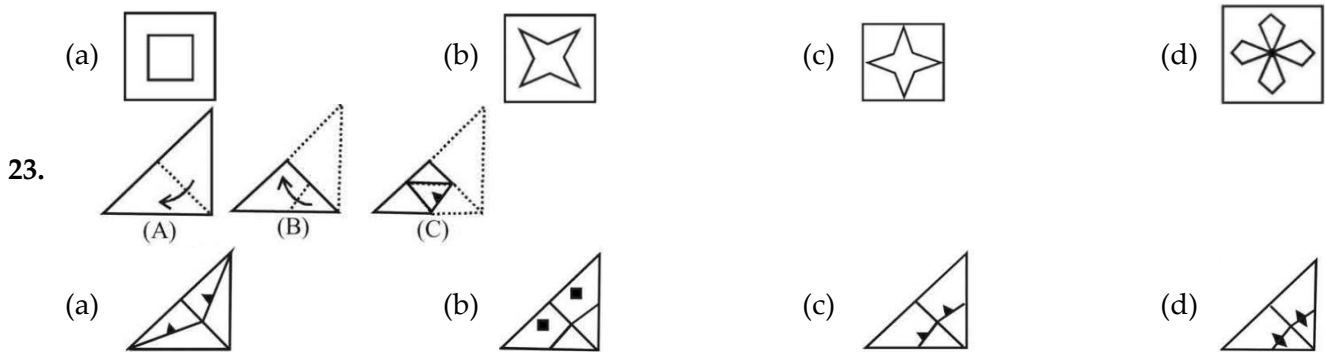
21. Find the correct option for the water image for the following question.



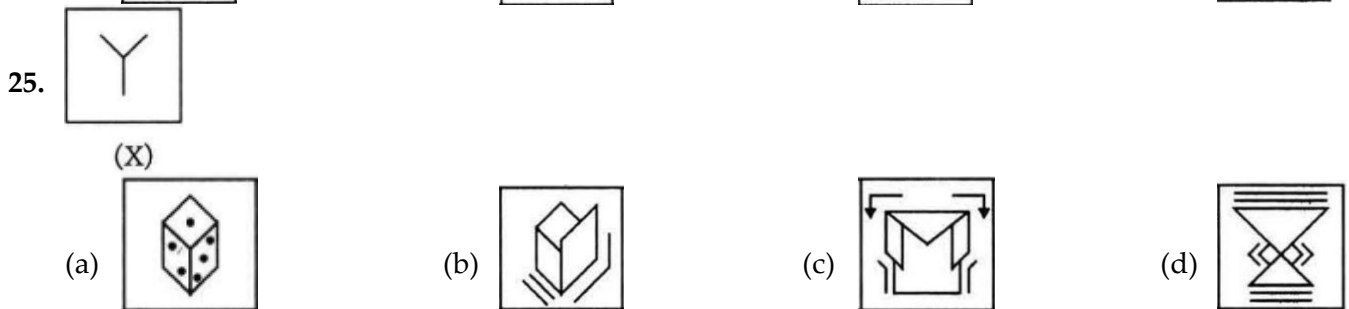
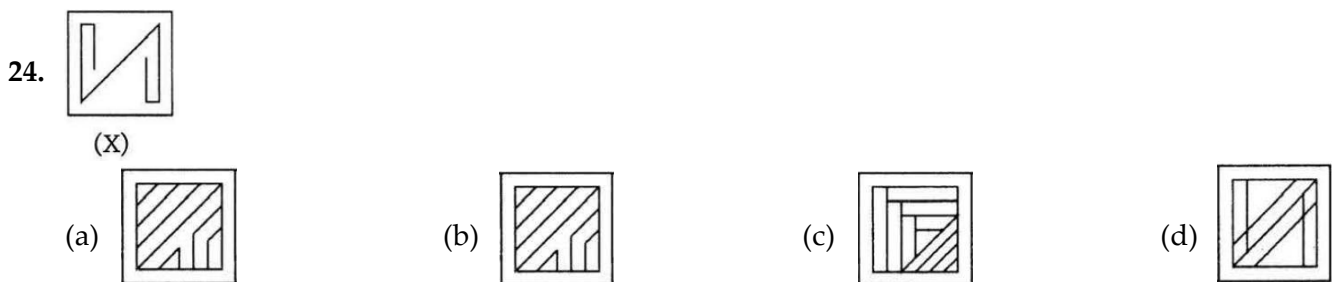
**Direction (Qs.22-23) :** Consider the three figures, marked A, B, and C showing one fold in A, another in B and the cut in C. From amongst the four alternative figures a, b, c and d, select the one showing the unfolded position of C.



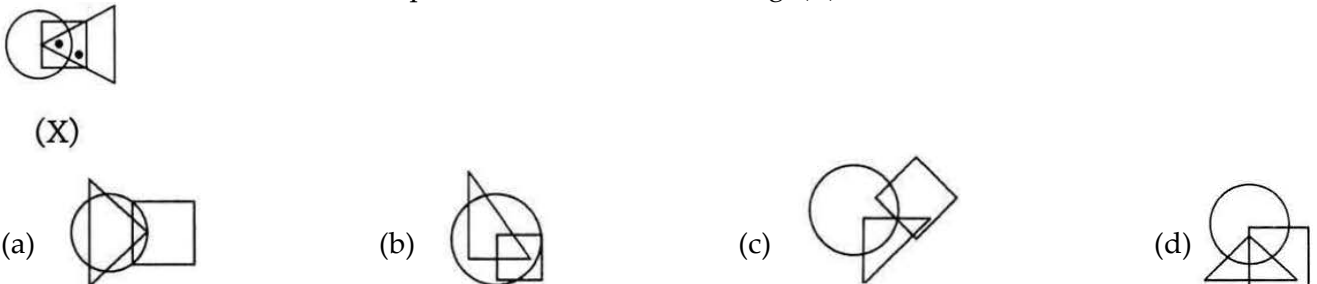
22.



**Direction (Qs. 24-25) :** In each of the following questions, you are given a figure (X) followed by four alternative figures (a), (b), (c) and (d) such that fig. (X) is embeded in one of them. Trace out the alternative figure which contains fig. (X) as its part.



26. In the following question, from amongst the figures marked (a), (b), (c) and (d), select the one which satisfies the same conditions of placement of the dot as in fig. (X).



27. In the question below are given two statements followed by 2 conclusions numbered I & II. You have to take the given two statements to be true even if they seem to be at variance from commonly known facts. Read the conclusion and then decide which of the given conclusions logically follows from the two given statements, disregarding commonly known facts.

Statements: Some hens are cows. All cows are horse. Conclusion:

I. Some horses are hens.

II. Some hens are horses.

(a) If only conclusion I follows

(b) If only conclusion II follows

(c) If both conclusion I & II follows.

(d) If neither conclusion I nor II follows

**Direction (Q. 28-30):** A number arrangement machine, when given a particular input, rearranges it following a particular rule. The following is the illustration of the input and the steps of arrangement:

Input: 245, 316, 436, 519, 868, 710, 689

Step I: 710, 316, 436, 519, 868, 245, 689

Step II: 710, 316, 245, 519, 868, 436, 689

Step III: 710, 316, 245, 436, 868, 519, 689

Step IV: 710, 316, 245, 436, 519, 868, 689

Step IV is the last step for the given input.

28. If ' 655,436,764,799,977,572,333 ' is the input, which of the following steps will be ' 333,436,572,655,977,764, 799 '?

- (a) Second (b) Third (c) Fourth (d) First

29. How many steps will be required to get the final output from the following input?

Input: 544, 653, 325, 688, 461, 231, 857

- (a) 5 (b) 4 (c) 3 (d) 6

30. For the given input, which of the following will be the third step?

Input: 236, 522, 824, 765, 622, 463, 358

- (a) 522,236,765,824,622,463,358 (b) 522,622,236,824,765,463,358

- (c) 522,622,236,765,824,463,358 (d) 522,622,236,463,824,765,358

### PHYSICS

31. An electrolyte:

- (a) Has positive charge  
(b) Has longer life  
(c) Should be able to conduct charge without dissociating  
(d) Should be able to form positive and negative ions

32. Which of the following liquids can conduct electricity?

- (a) Pure distilled water (b) Sodium chloride solution  
(c) Pure kerosene (d) Sugar solution

33. Which of the following best defines electrorefining?

- (a) Extraction of metal from its ore using carbon reduction  
(b) Purification of metals by using electricity in an electrolytic  
(c) Coating a metal with another metal using electric current  
(d) Corrosion of metals due to moisture and air

34. What is a dry cell?

- (a) A cell that uses liquid acid as electrolyte only  
(b) A cell in which electrolyte is in paste form, not free liquid  
(c) A cell that produces electricity without any chemical reaction  
(d) A rechargeable cell used in electric vehicles

35. Which of the following is a property of an electromagnet?

- (a) It always has permanent polarity  
(b) It cannot be switched off  
(c) It can be switched on and off using electric current  
(d) It works without electricity

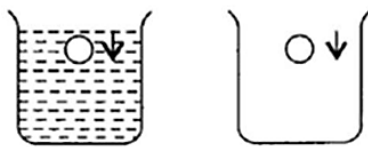
36. In which of the following cases the friction is helpful (H) and troublesome (T)?

- (A) Lighting a matchstick  
(B) Applying the brakes on a cycle  
(C) Use a towel to open tightly closed lid of a bottle  
(D) Pulling drawer out of a desk

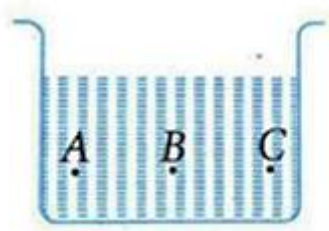
|     | (A) | (B) | (C) | (D) |
|-----|-----|-----|-----|-----|
| (a) | T   | T   | H   | H   |
| (b) | H   | H   | T   | T   |
| (c) | T   | T   | T   | H   |
| (d) | H   | H   | H   | T   |

**Direction (Q. No. 37, 38)** Read the passage carefully and answer the following questions.

In the figures shown, there are two jars, one is filled with water and other is empty. There are two balls of plasticine of the same size.



37. In which jar does the ball reach the bottom first?
- (a) In jar filled with water (b) In jar without water  
(c) In both the jars at the same time (d) Cannot be said because data is insufficient.
38. What do you observe from the given information?
- (a) Friction due to air is much smaller than the friction due to liquid.  
(b) Friction due to air is much greater than the friction due to liquid.  
(c) Friction due to air is equal to the friction due to liquid.  
(d) None of these
39. Which of the following statements correctly distinguishes mass and weight?
- (a) Mass depends on gravity, weight does not  
(b) Mass is constant everywhere, weight changes with gravity  
(c) Both mass and weight are constant everywhere  
(d) Weight is measured in kg
40. Which of the following is NOT attributable to application of force?
- (a) Rowing of a boat  
(b) Bursting of a balloon while blowing  
(c) Pedaling a cycle  
(d) Catching a moving cricket ball
41. The elephant weighs 20,000 N stands on one foot of area  $1000 \text{ cm}^2$ . How much pressure would it exert on the ground?
- (a)  $2,00,000 \text{ N/m}^2$  (b)  $2,00,000 \text{ N/cm}^2$  (c)  $2,00 \text{ N/m}^2$  (d)  $2,50,000 \text{ N/m}^2$
42. Pressure at a point inside a liquid does not depend on
- (a) The depth of the point below the surface of the liquid  
(b) The nature of the liquid  
(c) The acceleration due to gravity at that point  
(d) The shape of the containing vessel
43. Kalbaisakhi (Nor' wester) represents:
- (a) Cold winter wind in North India  
(b) Pre-monsoon thunderstorm in eastern India  
(c) Dry desert wind in Rajasthan  
(d) Ocean current in Bay of Bengal
44. If  $P_1$ ,  $P_2$  and  $P_3$  be the pressure at the three points A, B and C respectively at the bottom of the container as shown in figure, then

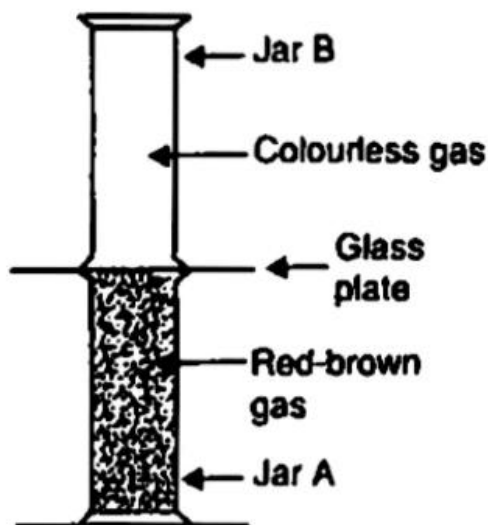


- (a)  $P_1 = P_2 = P_3$  (b)  $P_1 < P_2 < P_3$  (c)  $P_1 > P_2 > P_3$  (d)  $P_2 = P_3 > P_1$

45. Normally, air acts as:
- (a) Electrical conductor
  - (b) Electrical insulator
  - (c) Magnet
  - (d) Battery

### CHEMISTRY

46. Which of the following statements is NOT true about particles of matter?
- (a) They have spaces between them.
  - (b) They attract each other.
  - (c) They are always at rest.
  - (d) They are extremely small.
47. Name the process by which a drop of ink spreads in a beaker of water.
- (a) Diffusion
  - (b) Vaporization
  - (c) Condensation
  - (d) Sublimation
48. When a gas is cooled, its particles
- (a) Move faster
  - (b) Come closer and may change to a liquid
  - (c) Lose their mass
  - (d) Start vibrating in fixed positions.
49. The energy possessed by particles due to their motion is called
- (a) Potential energy
  - (b) Kinetic energy
  - (c) Thermal energy
  - (d) Chemical energy.
50. On a cold and humid day, rate of evaporation
- (a) Is more
  - (b) Is less
  - (c) Initially more, later on less
  - (d) Remain same.
51. The random motion of microscopic particles suspended in a fluid is known as
- (a) Diffusion
  - (b) Brownian motion
  - (c) Osmosis
  - (d) Evaporation.
52. 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.
53. A solid substance possesses
- (a) Rigidity, fluidity and weak force of attraction
  - (b) Rigidity, fluidity and fixed volume
  - (c) Rigidity, fixed volume and high forces of attraction
  - (d) Rigidity, fixed shape and large intermolecular space between particles.
54. What name is given to the phenomenon which takes place?



- (a) Distribution
- (b) Intrusion
- (c) Diffusion
- (d) Effusion

55. Soniya observed that an iron nail does not break easily, while salt crumbles quickly. What does this observation mainly show?
- All solids are equally strong
  - Different solids have different interparticle forces
  - Salt and iron have the same particle arrangement
  - Solids are made of liquid particles
56. Correct order of compressibility is
- Iron > Water > Carbon dioxide
  - Iron > Carbon dioxide > Water
  - Carbon dioxide > Water > Iron
  - Carbon dioxide > Iron > Water
57. Which of the following statements is not true about liquids?
- The particles in a liquid are loosely packed.
  - Liquids can flow easily.
  - Liquids can be compressed easily.
  - Liquids take the shape of the container they are in.
58. Which of the following factors affect the arrangement of molecules in a substance?
- Temperature and pressure
  - Concentration and temperature
  - Temperature, pressure and concentration
  - Volume and pressure
59. Match the following with the correct response.
- | Column I |                                                    | Column II |                |
|----------|----------------------------------------------------|-----------|----------------|
| (i)      | Intermixing of substances on their own             | (a)       | Kinetic energy |
| (ii)     | The temperature at which liquid change into vapour | (b)       | Melting point  |
| (iii)    | The temperature at which solid changes into liquid | (c)       | Boiling point  |
| (iv)     | Energy possessed by the particles of the matter    | (d)       | Diffusion      |
- (i)-(d), (ii)-(c), (iii)-(b), (iv)-(a)
  - (i)-(d), (ii)-(a), (iii)-(c), (iv)-(b)
  - (i)-(b), (ii)-(d), (iii)-(a), (iv)-(c)
  - (i)-(a), (ii)-(b), (iii)-(d), (iv)-(c)
60. Assertion: Particles of matter are continuously moving.  
Reason: The kinetic energy of particles increases with an increase in temperature.
- Both Assertion and Reason are correct, and Reason is the correct explanation of the Assertion.
  - Both Assertion and Reason are correct, but Reason is not the correct explanation of the Assertion.
  - Assertion is correct, but Reason is incorrect.
  - Assertion is incorrect, but Reason is correct.

## BIOLOGY

61. Which of the following is not a method of food preservation?
- Vaccination
  - Salting
  - Pasteurization
  - Canning
62. Which of the following is a biological nitrogen fixer?
- Housefly
  - Mould
  - Rhizobium
  - Amoeba
63. Pricking a hole in a puri before frying may lead to puri not puffing up because
- Oil escapes through the hole.
  - Water vapour escapes through the hole
  - Dough becomes thicker.
  - Heat doesn't reach the puri
64. The heating effect of electric current is useful in
- Fans
  - Motors
  - Generators
  - Heaters
65. The first calendars were created mainly for observing
- Stars only
  - Seasons only
  - Sun and moon cycles
  - Tides of oceans
66. Spirogyra is a/an
- Alga
  - Fungus
  - Protozoa
  - Bacteria

67. Mushroom belongs to which of the following group?  
 (a) Algae (b) Virus (c) Fungi (d) None of these
68. Amoeba belongs to  
 (a) Algae (b) Fungi (c) Protozoa (d) Virus
69. Who discovered fermentation?  
 (a) Alexander Fleming (b) Louis Pasteur  
 (c) John Mendal (d) Edward Jenner
70. Microorganisms are  
 (a) Unicellular (b) Multicellular (c) Both (d) None of these
71. Who discovered the first antibiotic, penicillin?  
 (a) Edward Jenner (b) Alexander Fleming  
 (c) Dr. Kamal Ranadive (d) Dr. Maharaj Kishan Bhan
72. Which of the following is considered a leading risk factor for health?  
 (a) Eating too many vegetables (b) Playing outdoor games  
 (c) Air pollution (d) Reading books
73. Which of these activities does NOT support physical and mental health?  
 (a) Limiting screen time (b) Getting adequate sleep  
 (c) Practicing breathing exercises and yoga (d) Eating high-sugar junk food all day
74. Vaccine for small pox is discovered by  
 (a) Louis Pasteur (b) Alexander Fleming (c) Edward Jenner (d) John Mendal
75. Pathogenic micro-organisms present in host cells are killed by medicines called  
 (a) Pain killer (b) Antibodies (c) Antibiotics (d) Vaccines

### MATHEMATICS

76. If  $x = \sqrt{20 + \sqrt{20 + \sqrt{20 + \dots}}}$ , what is the value of  $x$ ?  
 (a) 4 (b) 5 (c) 10 (d) 20
77. Evaluate the value of  $\sqrt{0.00059049}$ .  
 (a) 0.243 (b) 0.00243 (c) 0.0243 (d) 2.43
78. How many natural numbers lie between  $99^2$  and  $100^2$ ?  
 (a) 197 (b) 199 (c) 200 (d) 198
79. Find the smallest number by which 81 must be divided so that the quotient is a perfect cube.  
 (a) 3 (b) 9 (c) 2 (d) 27
80. Find the value of  $\sqrt[3]{0.000125}$ .  
 (a) 0.5 (b) 0.25 (c) 0.005 (d) 0.05
81. What is the value of  $\sqrt[3]{-2744} \times \sqrt[3]{-0.001}$ ?  
 (a) -1.4 (b) 1.4 (c) -0.14 (d) 0.14
82. Simplify the expression:  $\frac{3^{-5} \times 10^{-5} \times 125}{5^{-7} \times 6^{-5}}$   
 (a) 5 (b) 25 (c) 3125 (d) 1
83. Find the value of  $x$  if  $\left(\frac{2}{9}\right)^3 \times \left(\frac{2}{9}\right)^{-6} = \left(\frac{2}{9}\right)^{2x-1}$   
 (a) -1 (b) 1 (c) 0 (d) -2
84. If  $2^x = 4^y = 8^z$  and  $xyz = 288$ , find the value of  $\frac{1}{2x} + \frac{1}{4y} + \frac{1}{8z}$ .  
 (a)  $\frac{11}{24}$  (b)  $\frac{11}{48}$  (c)  $\frac{11}{96}$  (d)  $\frac{11}{12}$
85. What is the value of  $\frac{2^n + 2^{n-1}}{2^{n+1} + 2^n}$ ?  
 (a) 2 (b)  $\frac{3}{2}$  (c)  $\frac{1}{2}$  (d) 1

86. If  $a = 2$  and  $b = 3$ , find the value of  $(a^b + b^a)^{-1}$   
 (a)  $\frac{1}{17}$  (b) 17 (c)  $\frac{1}{12}$  (d)  $\frac{1}{5}$
87. In a parallelogram  $ABCD$ , if  $\angle A = 2\angle B$ , then the measure of  $\angle A$  is:  
 (a)  $60^\circ$  (b)  $45^\circ$  (c)  $90^\circ$  (d)  $120^\circ$
88. In a square  $ABCD$ , the diagonal  $AC$  makes an angle with side  $AB$  equal to:  
 (a)  $30^\circ$  (b)  $45^\circ$  (c)  $60^\circ$  (d)  $90^\circ$
89. The perimeter of a rhombus is 40 cm. If one of its diagonals is 12 cm, find the length of the other diagonal.  
 (a) 16 cm (b) 8 cm (c) 10 cm (d) 14 cm
90. How many diagonals does a regular hexagon have?  
 (a) 6 (b) 9 (c) 5 (d) 12
91. If each interior angle of a regular polygon is  $144^\circ$ , how many sides does the polygon have?  
 (a) 8 (b) 6 (c) 12 (d) 10
92. In a quadrilateral  $ABCD$ ,  $\angle A = \angle B = \angle C = 90^\circ$ . Then  $ABCD$  must definitely be a:  
 (a) Square (b) Rectangle  
 (c) Rhombus (d) Parallelogram but not a rectangle
93. Simplify the continuous product:  $(x - 1)(x + 1)(x^2 + 1)$ .  
 (a)  $x^4 + 1$  (b)  $x^4 - 1$  (c)  $x^2 - 1$  (d)  $x^4 - 2x^2 + 1$
94. If  $x^2 - y^2 = 24$  and  $x - y = 4$ , find the value of  $x + y$ .  
 (a) 96 (b) 8 (c) 6 (d) 20
95. If  $x^2 + \frac{1}{x^2} = 83$ , find the positive value of  $x - \frac{1}{x}$ .  
 (a) 9 (b) 81 (c) 11 (d)  $\sqrt{85}$
96. If  $(3x - k)^2 = 9x^2 - 42x + k^2$ , find the value of  $k$ .  
 (a) 6 (b) 9 (c) 14 (d) 7
97. The ratio of the number of boys to girls in a school of 720 students is 7: 5. How many more girls should be admitted to make the ratio 1: 1?  
 (a) 90 (b) 120 (c) 220 (d) 240
98. If  $(3x + 5y) : (3x - 5y) = 7 : 3$ , what is the value of  $x : y$ ?  
 (a) 2: 5 (b) 5: 2 (c) 2: 3 (d) 25: 6
99. If  $A : B = \frac{1}{2} : \frac{3}{8}$  and  $B : C = \frac{1}{3} : \frac{5}{9}$  Evaluate  $A : C$   
 (a) 4: 5 (b) 3: 5 (c) 2: 3 (d) 1: 2
100. The ratio of copper and zinc in brass is 13: 7. How much zinc is there in 100 kg of brass?  
 (a) 20 kg (b) 65 kg (c) 35 kg (d) 40 kg