



Class – VIII

School Integrated Program

ENTRANCE TEST CUM SCHOLARSHIP TEST

[Time: 3 Hours]

[Max Marks: 300]

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 +3 marks for correct answer and -1 mark for incorrect answer.*

MAT

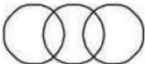
1. Pointing out to a photograph, a man tells his friend, " she is the daughter of the only son of my father's wife. How is the girls related to the man in the photograph?
 (a) Daughter (b) Cousin (c) Mother (d) Sister

Direction (Q. 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*.

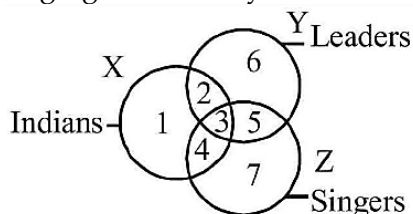
2. Who is the grand father of *P* ?
 (a) *U* (b) *S* (c) *R* (d) *V*
3. Who is the cousin of
 (a) *T* (b) *V* (c) *R* (d) *P*

Direction (Q. 4-5) : 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. $ab - -da - bcda - cd -bcd$
 (a) bcbbaab (b) bcabbab (c) babbbab (d) bcbbbab
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 NBGGI, 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.

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

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



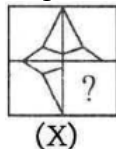
12. Which region denotes Indian leaders who are not singers?
 (a) 2 (b) 3 (c) 4 (d) 5
13. Which region represents Indian leaders who are singers
 (a) 2 (b) 3 (c) 4 (d) 5
14. What is the angle between the 2 hands of the clock at 8: 24pm ?
 (a) 100° (b) 107° (c) 106° (d) 108°
15. The year next to 1991 having the same calendar as that of 1990 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.



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

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.



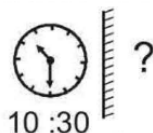
- (a) (b) (c) (d)

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



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

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



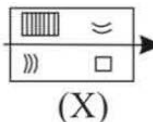
- (a) 4:45 (b) 5:45 (c) 2:30 (d) 1:45

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



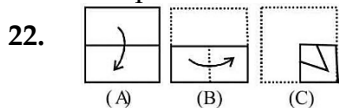
- (a) (b) (c) (d)

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

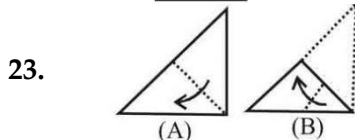


- (a) (b) (c) (d)

Direction (Q. 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.

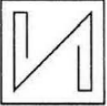


- (a) (b) (c) (d)

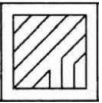


- (a) (b) (c) (d)

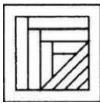
Direction (Q. 24-25) : In each of the following questions, you are given a figure (X) followed by four alternative figures (a), (b), (c) and (d) such that fig. (X) is embeded in one of them. Trace out the alternative figure which contains fig. (X) as its part.

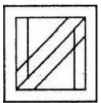
24.


(X)

(a) 

(b) 

(c) 

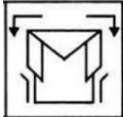
(d) 

25.


(X)

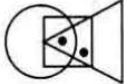
(a) 

(b) 

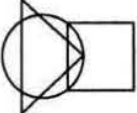
(c) 

(d) 

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).



(X)

(a) 

(b) 

(c) 

(d) 

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

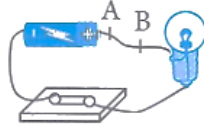
(c) 3

(d) 6

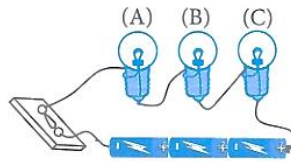
30. For the given input, which of the following will be the third step?
Input: 236, 522, 824, 765, 622, 463, 358
- (a) 522,236,765,824,622,463,358 (b) 522,622,236,824,765,463,358
(c) 522,622,236,765,824,463,358 (d) 522,622,236,463,824,765,358

PHYSICS

31. When current flows through insulated copper wire AB (see figure), how does the wire behave?



- (a) Deflects a magnetic needle placed near it. (b) Becomes red hot.
(c) Gives electric shock. (d) Behaves like a fuse.
32. Then the switch is turned ON in the circuit with bulbs A, B, and C (as shown), which of the following statements is true?



- (a) Bulb C glows before the others.
(b) Bulbs B and C glow together, and bulb A glows after a delay.
(c) All bulbs A, B, and C light up at the same moment.
(d) The bulbs light up one after another in the order A, then B, then C.
33. Match the column

Column - A		Column - B	
A.	A cell	a.	Study of electric charges at rest
B.	Bulb	b.	Close or open an electric circuit
C.	Static electricity	c.	Substitute for fuse
D.	Switch	d.	
E.	MCBs	e.	Avoid unauthorized use of current
F.	Main fuse at kWh metre	f.	Converts chemical energy into electrical energy

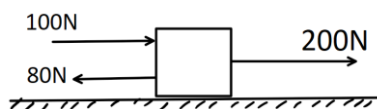
- (a) $A \rightarrow f; B \rightarrow d; C \rightarrow a; D \rightarrow b; E \rightarrow c; F \rightarrow e$
 (b) $A \rightarrow b; B \rightarrow e; C \rightarrow a; D \rightarrow f; E \rightarrow c; F \rightarrow d$
 (c) $A \rightarrow f; B \rightarrow d; C \rightarrow e; D \rightarrow b; E \rightarrow f; F \rightarrow a$
 (d) $A \rightarrow d; B \rightarrow f; C \rightarrow c; D \rightarrow b; E \rightarrow a; F \rightarrow e$
34. Which of the following statement is INCORRECT?
- (a) A freely falling body is acted upon by gravitational force.
 (b) Pressure on top of Mt. Everest is much lesser than 1atm.
 (c) S.I. unit of pressure is Pascal.
 (d) Only option 'b' and 'c' are correct
35. What is the unit of force.
- (a) kgm/hr^2 (b) kgm/s^2
 (c) $\text{kgm}^{-1}/\text{s}^2$ (d) Both 'a' and 'b'

36. Which of the following is NOT true?
- A sharp knife can easily cut due to its small cutting surface.
 - It is easier to walk in sand than on road.
 - A battle tank can move easily on soft ground because its tracks have bigger surface.
 - The pressure exerted by a needle is much more than the foot of an elephant.
37. When a ball is left rolling on ground it stops after some time. What bring the rolling ball to rest?
- Force of friction
 - Gravitational force
 - Buoyant force
 - None of these

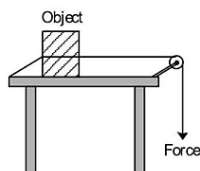
38. Match the column

Column - A		Column - B	
A.	A battery	a.	Good conductor
B.	Metal	b.	Mechanical energy is converted into electric energy
C.	A generator	c.	
D.	Filament bulb	d.	Heating effect of electricity
E.	Ammeter	e.	

- $A \rightarrow e; B \rightarrow a; C \rightarrow b; D \rightarrow d; E \rightarrow c$
 - $A \rightarrow d; B \rightarrow a; C \rightarrow b; D \rightarrow e; E \rightarrow c$
 - $A \rightarrow a; B \rightarrow e; C \rightarrow b; D \rightarrow d; E \rightarrow c$
 - $A \rightarrow e; B \rightarrow a; C \rightarrow c; D \rightarrow d; E \rightarrow b$
39. Which one of the following is not used to reduce friction.
- Oil
 - Ball bearings
 - Sand
 - Graphite
40. Which of the following is not an example of force acting at a distance ?
- Force of gravity
 - Magnetic force
 - Electric force
 - Frictional force
41. If three forces are acting on the body of mass 40kg as shown in figure. Find out the net force acting on the body



- 180N towards right
 - 320N towards left
 - 220N towards right
 - 180N towards left
42. A perpendicular force is applied to a certain area and produces a pressure P . If the same force is applied to a twice bigger area, the new pressure on the surface is:
- $\frac{P}{2}$
 - $\frac{P}{3}$
 - $\frac{P}{4}$
 - None
43. The force between two charge bodies is called
- Muscular force
 - Gravitational force
 - Magnetic force
 - Electrostatic force
44. A force of 5 N is required to move an object from rest. The maximum value of static friction (f) acting on the body will be:



- 5 N
- $f > 5 \text{ N}$
- $f < 5 \text{ N}$
- 10 N

45. Tick the most appropriate answer:
A car skids on a wet or muddy road due to
- (a) Increased friction between the road and the tyres
 - (b) Lubrication of brakes on a wet road
 - (c) Reduced friction between the road and the tyres
 - (d) Streamlined shape of the car

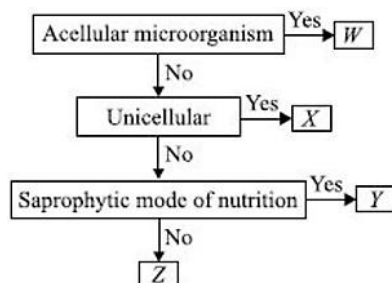
CHEMISTRY

46. How can the volume of an irregular solid be measured?
- (a) Using a balance
 - (b) Using a measuring cylinder and water displacement method
 - (c) Using a thermometer
 - (d) Using a ruler only
47. The component present in larger quantity in a solution is called
- (a) Solute
 - (b) Solvent
 - (c) Mixture
 - (d) Compound.
48. A solution that can dissolve more solute at a given temperature is called:
- (a) Concentrated solution
 - (b) Saturated solution
 - (c) Dilute solution
 - (d) Unsaturated solution.
49. Which technique would best separate a mixture of gases present in air based on the lowest boiling point?
- (a) Diffusion
 - (b) Fractional liquefaction
 - (c) Filtration
 - (d) Solvent extraction
50. Assertion (A): Aluminium foil is widely used for wrapping food items.
Reason (R): Aluminium is a highly malleable metal.
- (a) Both A and R are true, and R is the correct explanation of A.
 - (b) Both A and R are true, but R is NOT the correct explanation of A.
 - (c) A is true, but R is false.
 - (d) A is false, but R is true.
51. Which statement about element is correct?
- (a) They can be broken into simpler substance by physical methods.
 - (b) They are made of identical atoms.
 - (c) They are always compounds.
 - (d) They exist only in liquid state.
52. A student states: "All minerals are elements because they occur naturally." Identify the error.
- (a) Minerals cannot occur naturally.
 - (b) Minerals are always metals.
 - (c) Most minerals are compounds, not elements.
 - (d) Minerals have no fixed composition.
53. Which two elements are liquids at room temperature?
- (a) Mercury and bromine
 - (b) Helium and oxygen
 - (c) Nitrogen and hydrogen
 - (d) Sodium and chlorine
54. Which of the following best describes the arrangement and attractive forces between particles in a gas jar filled with oxygen?
- (a) Particles are closely packed and orderly; attractive forces are weak.
 - (b) Particles are not arranged in any order; attractive forces are weak.
 - (c) Particles are not arranged in any order; attractive forces are strong.
 - (d) Particles are closely packed and orderly; attractive forces are strong.
55. What happens to the volume of an aqueous solution when a small amount of sugar is dissolved in it?
- (a) Volume increase
 - (b) No change
 - (c) Volume decrease
 - (d) Volume first decreases then increases

56. The process of converting liquid into solid is called
 (a) Boiling (b) Melting (c) Condensation (d) Freezing.
57. Which of the following has the strongest interparticle force of attraction at room temperature?
 (a) Nitrogen (b) Water (c) Iron (d) Chalk
58. In liquids, there is ___ and ___ between particles than in solids.
 (a) Strong force of attraction, more spacing
 (b) Weaker force of attraction, less spacing
 (c) Weaker force of attraction, more spacing
 (d) Strong force of attraction, less spacing.
59. A student finds a greenish coating on a copper vessel after it was left exposed to moist air for months. This process is analogous to:
 (a) The burning of magnesium. (b) The rusting of iron.
 (c) The melting of ice. (d) The dissolution of sugar.
60. In the tester circuit experiment, if a lump of sulfur is placed between the terminals, the bulb does not glow. This demonstrates that:
 (a) Sulfur is a highly ductile metal.
 (b) Sulfur requires high voltage to conduct.
 (c) Sulfur is a non-metal and a poor conductor of electricity.
 (d) Sulfur undergoes a chemical reaction with the wires.

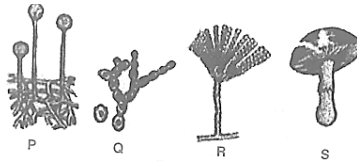
BIOLOGY

61. A student views a cell under a microscope and notices a large central vacuole, a distinct cell wall, but no chloroplasts. Which of the following could this cell belong to?
 (a) An animal skin cell (b) A plant root cell
 (c) A photosynthetic leaf cell (d) A bacterial cell
62. Refer to the given flow chart and select the correct statement regarding it.



- (a) W causes typhoid in humans and leaf curl disease in plants.
 (b) X causes malaria in humans and yellow vein mosaic disease in plants.
 (c) Y causes athlete's foot in humans and late blight in potatoes.
 (d) Z causes leprosy in humans and citrus canker in plants.
63. Disease caused by virus:-
 (a) Typhoid (b) Dysentery (c) Influenza (d) Cholera
64. Which organelle contains digestive enzymes capable of breaking down worn-out cellular components, often referred to as the 'suicide bags' of the cell?
 (a) Golgi apparatus (b) Lysosome
 (c) Ribosome (d) Endoplasmic reticulum
65. Which bacteria are primarily responsible for turning milk into curd?
 (a) Rhizobium (b) Lactobacillus
 (c) Vibrio cholerae (d) Salmonella
66. Why is yeast extensively used in the baking industry to make bread and cakes rise?
 (a) It consumes oxygen and produces moisture.
 (b) It undergoes fermentation, releasing carbon dioxide gas.

- (c) It produces heat that bakes the dough from the inside.
 (d) It creates a protective layer that traps air outside.
67. Which of the following structures is present in plant cells but completely absent in animal cells?
 (a) Cell membrane (b) Cytoplasm
 (c) Cell wall (d) Nucleus
68. Match the disease with its INCORRECT mode of transmission:
 (a) Tuberculosis – Air (b) Cholera - Contaminated water/food
 (c) Malaria - Contaminated air (d) Chickenpox - Air/direct contact
69. Assertion (A): Yeast is used in making bread but bacteria is used in making curd.
 Reason (R): Yeast respire anaerobically to produce CO₂ which raises dough, while Lactobacillus converts lactose to lactic acid.
 (a) Both A and R true and R is correct explanation
 (b) Both true but R not correct explanation
 (c) A true R false
 (d) A false R true
70. Select the incorrect statement regarding AIDS.
 (a) It is an immunodeficiency disease.
 (b) HIV has RNA as its genetic material.
 (c) AIDS can be transmitted to an infant from the infected mother through her milk.
 (d) The time-lag between the infection and appearance of AIDS symptoms may vary from week to month.
71. The thread like network in the nucleus is _____.
 (a) chromatin (b) chromosome (c) cilia (d) flagella
72. Figures given below show some examples of fungi.



- Which of the following was used by Alexander Fleming to prepare an antibiotic to kill bacteria?
 (a) P (b) Q (c) R (d) S
73. Amoeba belongs to
 (a) Algae (b) Fungi (c) Protozoa (d) Virus
74. Scientist who discovered fermentation is
 (a) Alexander Fleming (b) Louis Pasteur
 (c) John Mendal (d) Edward Jenner
75. The female part of the flower
 (a) Gynoecium (b) pedicel (c) Androecium (d) corolla

MATHEMATICS

76. What is the smallest positive integer multiplier to make 504 a perfect square?
 (a) 14 (b) 7 (c) 6 (d) 21
77. The difference between two consecutive perfect squares is 45. What is the smaller square?
 (a) 484 (b) 529 (c) 441 (d) 400
78. If a perfect cube ends in 8, then the number must end in:
 (a) 4 (b) 2 (c) 6 (d) 8
79. Which of the following cannot be expressed as the difference between two perfect squares?
 (a) 10 (b) 11 (c) 13 (d) 17
80. Which of the following is always true for an integer k?
 (a) $k(k + 1)(k + 2)$ is a multiple of 6 (b) $k^2 + 1$ is even
 (c) $2k + 3$ is prime (d) $k^3 - k$ is a multiple of 5

81. If the sum of digits of a number is 27, it must be divisible by:
 (a) 9 (b) 27 (c) 81 (d) 18
82. In the cryptarithm $AB \times 5 = BC$, what is the value of $A + B + C$? (A, B, C are distinct digits, $A > 0$)
 (a) 13 (b) 12 (c) 15 (d) 14
83. The area of a square is $4x^2 + 12x + 9$. What is its perimeter?
 (a) $8x + 12$ (b) $4x + 6$ (c) $2x + 3$ (d) $16x + 24$
84. Calculate 999^2 using distribution.
 (a) 998001 (b) 999001 (c) 998011 (d) 999991
85. If $2(a^2 + b^2) = (a + b)^2$, then what is the relationship between a and b ?
 (a) $a = b$ (b) $a = -b$ (c) $ab = 1$ (d) $a^2 = b$
86. If the temperature is 50°F , what is it in Celsius? ($C = (F - 32) \times \frac{5}{9}$)
 (a) 10°C (b) 18°C (c) 20°C (d) 15°C
87. A farmer sells a 250g packet of spices for Rs 300. Another sells a 1kg packet for Rs 1100. Which is the better deal per gram and by how much per kg?
 (a) 1kg packet is cheaper by Rs 100/kg (b) 250 g packet is cheaper by Rs 100/kg
 (c) 1kg packet is cheaper by Rs 50/kg (d) They are equal
88. The mass of equal volumes of metal A and water are in the ratio 19:1. For metal B and water, the ratio is 9:1. In what ratio of volumes must A and B be mixed so the alloy is 15 times as heavy as water?
 (a) 3:2 (b) 2:3 (c) 1:1 (d) 4:1
89. A ladder 13m long reaches a window 12m high. How far is the foot of the ladder from the base of the wall?
 (a) 5 m (b) 1m (c) 7 m (d) 9m
90. The diagonal of a rectangle is 25 cm and length is 24 cm. Its width is:
 (a) 7 cm (b) 10 cm (c) 14 cm (d) 1 cm
91. Let a, b, c be a primitive Baudhāyana triple. Which of the following must be true?
 (a) Exactly one of a or b is even (b) Both a and b are odd
 (c) Both a and b are even (d) c is always an even number
92. A recipe requires ingredients A, B, C in ratio 2:3:5. If you only have 40 g of B, what is the total mass of the mixture you can make?
 (a) $133\frac{1}{3}\text{g}$ (b) 100g (c) 150g (d) 120g
93. A garrison of 120 men has provisions for 30 days. After 5 days, 30 men leave. How long will the remaining food last?
 (a) $33\frac{1}{3}$ days (b) 30 days (c) 25 days (d) 40 days
94. Three workers A, B, C can do a job in 10, 15, and 30 days respectively. If they all work together for 3 days, what fraction of the job is left?
 (a) 0 (b) $\frac{1}{10}$ (c) $\frac{2}{5}$ (d) $\frac{1}{2}$
95. What is 12.5% expressed as a fraction in simplest form?
 (a) $\frac{1}{8}$ (b) $\frac{1}{4}$ (c) $\frac{1}{12}$ (d) $\frac{1}{6}$
96. A shop offers successive discounts of 20% and 10%. This is equivalent to a single discount of:
 (a) 28% (b) 30% (c) 26% (d) 32%
97. A number is first increased by 20%, then decreased by 20%. The final number is:
 (a) 4% less than original (b) Same as original
 (c) 4% more than original (d) 1% less than original
98. The median of 3, 11, 7, 2, 5, 9, 8 is:
 (a) 7 (b) 5 (c) 8 (d) 6
99. If the mean of $x, x + 2, x + 4, x + 6, x + 8$ is 11, what is the value of the last three observations' mean?
 (a) 13 (b) 11 (c) 15 (d) 14
100. The average score of a class of 40 students is 65. If the average score of the 25 boys is 62, what is the average score of the girls?
 (a) 70 (b) 68 (c) 72 (d) 66