

# AIMPIAD 2023

# **REWARD TEST**

**Class 8th to 9th moving** 

Previous Year Question Paper AIMPIAD - 2022

> R AIMPIAD 2023



# AIMPIAD-2022



# PREVIOUS YEAR QUESTION PAPER COURSE : NURTURE

A Unit of VSA Education Pvt. Ltd.

# FOR CLASS VIII TO IX MOVING STUDENTS

Date	: XX-XX-XXXX Time : 1 Hours 30 Mins Max. Marks : 360	
	GENERAL INSTRUCTIONS :	
1.	<ul> <li>The Test Booklet (Physics, Chemistry, Biology, Mathematics, IQ) consists of 90 questions.</li> <li>→ All questions are compulsory.</li> <li>→ Marking Scheme : Four (4) mark for each correct response. Minus One (-1) mark will be awarded for incorrect response and zero mark if no bubble is darkened.</li> <li>→ Question paper is divided into five sections –</li> <li>Section I :- Physics (Question No. 1 to 15 with Max. Marks - 60)</li> <li>Section II :- Chemistry (Question No. 16 to 30 with Max. Marks - 60)</li> <li>Section III :- Biology (Question No. 31 to 50 with Max. Marks - 80)</li> <li>Section IV :- Mathematics (Question No. 51 to 70 with Max. Marks - 80)</li> <li>Section V :- IQ (Question No. 71 to 90 with Max. Marks - 80)</li> </ul>	
2.	Blank papers, clip boards, log tables, slide rule, calculators, mobile or any other electronic gadgets, in any form, is not allowed.	
3.	Write your Name and Roll No. in the space provided in the bottom of this booklet.	
4.	Before answering the paper, fill up the required details in the blank space provided in the answer sheet.	
5.	Do not forget to mention your roll number neatly and clearly in the blank space provided in th answer sheet.	e
7.	No rough sheets will be provided by the invigilators. All the rough work is to be done in the blank space provided in the question paper.	
8.	In case of any dispute, the answer filled in the OMR sheet available with the institute shall be final.	
Name	: Roll No	

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# SECTION - 1 Straight Objective Type

This section contains 90 multiple choice questions. Each question has choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. The displacement-time graph of a boy is shown in the figure below





**5.** A student attaches four drawing pins to a copper rod using candle wax as shown in the diagram. The rod is then heated continuously at one end and the pins fall off in the order 4, 3, 2, 1.



By which process does heat reach the pins? (A) expansion (B) radiation

(C) conduction

(D) convection

6. 1 hertz equals (A) 1 vibration per minute (C) 60 vibrations per minute

(B) 10 vibrations per minute (D) 600 vibrations per minute

7. Study the circuit shown here. Which switch if opened will cause the light bulb to stop glowing ?





9. The graph below represents the motion of a cart.



How does the speed of the cart compare when t = 6 s and t = 12 s? (A) The speed of the cart at 6 s is greater than when time equals 12 s. (B) The speed of the cart at 6 s is less than when time equals 12 s. (C) The speed of the cart is 0.5 m/s at 6 s and 12 s. (D) The speed of the cart is 2 m/s at 6 s and 12 s.

**10.** An object is moving along a curved path of diameter 14 m. It reaches from A to B in 10 s. Find the speed of the object.







(D) Both (A) and (C)

- 16. Which metal oxide shows amphoteric nature? (A) Calcium (B) Zinc (C) Magnesium
- 17. Choose the correct option : Statement - I : It is difficult to cook food at hill. Statement - II : The boiling point of water increases at hill. (A) Statement I and II are correct and statement II is the correct explanation of statement I. (B) Statement I and II are incorrect. (C) Statement I is correct but statement II is incorrect.
  - (D) Statement I is incorrect but statement II is correct.
- 18. The heat energy is required to change the state of a substance causes (A) rise in temperature (B) no rise in its temperature (C) separation of forces of attraction between the particles
  - (D) Both (B) and (C)
- 19. Which of the following gases with a smell of rotten egg is evolved when sulphuric acid is treated with copper sulphide? (C) Hydrogen sulphide (D) Sulphur trioxide
  - (A) Sulphur vapour (B) Sulphur dioxide
- 20. In the type of air conditioner shown in the figure below, warm dry air passes through water-soaked padding to become cool air. Which of the following statements correctly explains how this cooling occurs ?



- (A) Water condenses, thus removing thermal energy from the hot air
- (B) Water evaporates, thus removing thermal energy from the hot air
- (C) Energy is removed from the air by thermal conductivity in the padding
- (D) The air is cooled by being moved quickly through the air conditioner



21.	Which of the following $(A) \Box_{a}$	Which of the following is an example of strategic metal ?				
22	(A) Fe Total amount of boot pro	(B) Al	(C)∠N Jorifia value of 20 k l/ka wa	(D) II		
22.	I total amount of heat produced by a fuel having calorific value of 30 kJ/kg was found to be 60,000 Joules. How					
	(A) 2000 km	$(\mathbf{D})$ 000 km	$(\mathbf{C})$ 20 km			
<b></b>	(A) 2000 kg	(B) 200 kg	(C) 20 kg	(D) 2 kg		
23.	When Mg is burnt in the atmosphere of an element X white powder is obtained. When this is dissolved in					
	water it gives a gas Y v	/ith pungent smell. what	are X and Y ?			
• •	(A) C, CH <sub>4</sub>	(B) N <sub>2</sub> , NH <sub>3</sub>	(C) P, H <sub>3</sub> PO <sub>4</sub>	(D) S, H <sub>2</sub> S		
24.	An element "X" after reacting with acids liberate hydrogen gas and can displace Lead and Tin from their sal					
	solution. The metal 'X'	IS :				
	(A) Copper	(B) Gold	(C) Nickel	(D) Mercury		
25.	In presence of water, ig	nition temperature of pap	er			
	(A) Decreases		(B) Increases			
	(C) Remains constant		(D) Can decrease or inc	rease		
26.	Barium chloride on read	ting with ammonium sulpl	nate forms barium sulphat	e and ammonium chloride. Which		
	of the following correctl	y represents the type of the	ne reaction involved?			
	(i) Displacement reaction	on	(ii) Precipitation reaction	n		
	(iii) Combination reaction	on	(iv) Double displacement reaction			
	(A) (i) only	(B) (ii) only	(C) (iv) only	(D) (ii) and (iv)		
27.	Which of the following	reactions should be calle	d decomposition reaction	:		
	(i) $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$ (ii) $2NaHCO_3(s) \rightarrow Na_2CO_3(s) + H_2O(g) + CO_2(g)$					
	(iii) $2HgO(s) \rightarrow 2Hg(\ell)$	$+O_2(g)$	(iv) $Cu(s) + 2AgNO_3(aq) \rightarrow 2Ag(s) + Cu(NO_3)_2(aq)$ (B) Reaction (i) and (ii) only (D) All reactions (i) to (iv)			
	(A) Reaction (i) only					
	(C) Reaction (i), (ii) and	l (iii) only				
28.	On the basis of followin	g features identify the co	rrect fabric.			
	I. It is prepared by cond	lensation polymerisation	of two monomers.			
	II. It is very durable.					
	III. It is used in making	certain draperies and ma	gnetic recording tapes.			
	IV. This fabric has two	common names.				
	(A) Nylon	(B) Rayon	(C) Polyester	(D) Acrylic		
29.	Which of the following	s commonly called polya	mide?			
	(A) Orlon	(B) Nylon	(C) Terylene	(D) Rayon		
30.	An unknown metal X w	hen placed in copper sul	phate solution gives red b	rown precipitate. When placed in		
	magnesium sulphate solution, gives no reaction. Identify element X.					
	(A) Sodium	(B) Potassium	(C) Calcium	(D) Iron		
		Roug	h Space			



- **31.** Which of these is not related to endoplasmic reticulum ?
  - (A) It helps in the exchange of materials between nucleus and cytoplasm.
  - (B) It transports material between various regions in cytoplasm.
  - (C) It is the site of energy generation.
  - (D) It is the site for some biochemical activities of the cell.
  - What can a grower do to produce plants that are attractive and full of side branches?
    - (A) Pinch off the apical meristem to decrease the amount of auxin.
      - (B) Pinch off the apical meristem to increase the amount of auxin.
      - (C) Pinch off the intercalary meristems to increase the amount of auxin.
      - (D) Pinch off the intercalary meristems to decrease the amount of auxin.
  - What happened when we inoculated Rhizobium in wheat field?
    - (A) No increase in production (nitrogen content of soil remains same)
    - (B) A lot of increase in production (nitrogen content of soil increases)
    - (C) Fertility of soil decreases
    - (D) Fertility of soil increases
  - Shown here are some drawings of structures that are found in our bodies. They are all at different magnifications.



32.

33.

34.

35.





Blood vesselThyroid glandOrgansWhich one of them is drawn at the highest magnification?(A) Blood vessel(B) Thyroid gland(C) OrgansIdentify A to E in the sectional view of a chloroplast given below.





Nucleus of a cell

(D) Nucleus of a cell

(A) A-Inner membrane, B-Granum, C-Outer membrane, D-Stromal lamellae E-Stroma (B) A-Outer membrane, B-Inner membrane, C-Thylakoid D-Stroma, E-Stromal lamellae (C) A-Thylakoid, B-Outer membrane, C-Stroma, D-Stromal lamellae, E-Granum (D) A-Outer membrane, B-Stroma, C-Inner membrane, D-Granum, E-Thylakoid



(D) (iii) and (iv)

- **36.** Find out the correct sentences about manure.
  - (i) Manure reduces soil erosion.
    - (ii) Manure improves the texture of soil by adding organic matter.
    - (iii) Manure decreases water holding capacity.
    - (iv) Manure decreases the number of friendly microbes.
  - (A) (i) and (iii) (B) (i) and (ii) (C) (ii) and (iii)
- **37.** Which of the following process is shown in the below diagram?



(A) Harvesting (B) Irrigation (C) Transplantation (D) Transpiration38. Which one of the following types of plants is usually found in coniferous forest ?





**40.** "Species which cannot be found in the area where they once lived or any other habitat are called extinct species." Many species die or disappear from the earth if they are not able to reproduce and adapt to climate as are able to compete with other organisms. There are some species given below. Which one is the extinct species ?



- **41.** The term 'water-pollution' can be defined in several ways. Which of the following statements does not give the correct definition ?
  - (A) The addition of undesirable substances in water bodies.
  - (B) The removal of desirable substances from water bodies.
  - (C) A change in pressure of the water bodies.
  - (D) A change in temperature of the water bodies.
- 42. The diagram below shows part of the carbon cycle.



If many trees are removed from a forest by logging, what is the most immediate effect on the carbon cycle in that forest?

- (A) Increased rates of decomposition
- (C) Decreased combustion of fossil fuels
- (B) Decreased use of atmospheric CO<sub>2</sub> (D) Increased production of organic compounds



43. During which stage of the cell cycle does the cell duplicate its DNA?



	(A) M stage	(B) G <sub>1</sub> stage	(C) S stage	(D) G <sub>2</sub> stage	
44.	Select the alternative giving correct identification and function of the organelle 'A' in the diagram.				



(A) Endoplasmic reticulum-synthesis of lipids (B) Mitochondria-produce cellular energy in the form of ATP (C) Golgi body - packaging of material (D) Lysosomes - secrete hydrolytic enzymes 45. The equation below represents a biological process. Where is this process completed? carbon dioxide + water  $\rightarrow$  glucose + oxygen + water (A) Mitochondria (B) Ribosomes (C) Cell membranes (D) Chloroplasts 46. Which of the following is the most abundant component of the human blood? (A) Erythrocytes (B) Lymphocytes (C) Thrombocytes (D) Monocytes What do DNA and RNA have in common? 47. (A) Both are double stranded. (B) Both contain ribose molecules. (C) Both contain phosphate groups. (D) Both contain uracil. Which organizes groups of organisms in order of increasing complexity? 48. (A) Eukaryotes, prokaryotes, viruses (B) Viruses, prokaryotes, eukaryotes (C) Viruses, eukaryotes, prokaryotes (D) Prokaryotes, viruses, eukaryotes Which statement is not true about ribosomes? 49. (A) Ribosomes build proteins by following the directions of the DNA. (B) Ribosomes are made in the cytoplasm of the cell. (C) Ribosomes can occur attached to the endoplasmic reticulum as well as free in the cytoplasm. (D) Ribosomes are not bound by a membrane. 50. A cell has mitochondria, ribosomes, endoplasmic reticulum and other organelles. Based on this information, it could not be (A) A cell from a pine tree (B) A bacterium (C) A grasshopper cell (D) A protozoan



51. A boat goes upstream and covers the distance between two ports in 4 hours while it covers the same

distance downstream in  $1\frac{7}{13}$  hours. If the speed of the boat is 18 km/hr in still water, then the speed of the stream is

(A) 8 km/hr (B) 20 km/hr (C) 9 km/hr (D) 10 km/hr 52. In the given figure, the value of  $x^{\circ}$  is



**53.** If V be the volume of the cuboid of dimensions a, b and c and S its total surface area, then  $\frac{4}{S}\left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right)$  in terms of V is equal to

(A) 
$$\frac{8}{V}$$
 (B)  $\frac{2}{V}$  (C)  $\frac{4}{V}$  (D)  $\frac{1}{V}$ 

**54.** D, E, F are mid points of the sides BC, CA and AB respectively of  $\triangle ABC$ , then area of parallelogram BDEF is equal to

(A) 
$$\frac{1}{2}ar(\Delta ABC)$$
 (B)  $\frac{1}{4}ar(\Delta ABC)$  (C)  $\frac{1}{3}ar(\Delta ABC)$  (D)  $\frac{1}{6}ar(\Delta ABC)$   
55. The value of  $\frac{2^{m+3} \times 3^{3m-n} \times 5^{m+n+3} \times 6^{n+1}}{6^{m+1} \times 10^{n+3} \times 15^m}$   
(A) 0 (B) 1 (C)  $2^m$  (D) None of these  
56. If  $a = \frac{1}{3-2\sqrt{2}}, b = \frac{1}{3+2\sqrt{2}}$ , then the value of  $a^3 + b^3$  is  
(A) 195 (B 196 (C) 197 (D) 198  
57. Three numbers are in the ratio 2 : 3 : 4, if sum of their cubes is 33957, then the sum of numbers is  
(A) 14 (B) 21 (C) 28 (D) 63  
(B) 63



58. In the figure given below, O is the centre of the circle and OPQR is a rectangle. A is a point on PO such that

AO =  $\frac{1}{3}$  PO and B is the mid point of OR. Find the area of the shaded region if PA = 8 cm and BR = 4 cm (Use  $\pi$  = 3.14)







**68.** rectangular plank  $\sqrt{2}$  m wide is placed symmetrically on the diagonal of a square of side 8 meters as shown. What is the area of the plank?





**Directions :** The figure (X) given below is the unfolded position of a cubical dice. This unfolded figure is followed by four different figures of dice. You have to select the figure which is identical to the figure (X).



Direction: (Question 2 & 3) Find the missing number(s):



(A) Sky (B)Air (C) Water (D) Dust *Rough Space* 



				AIMPIAD (8TH TO 9TH)			
77.	In a certain code 'MONk (A) SHFDQ	KEY' is written as XDJMN (B) QDFHS	IL, how is 'TIGER' written (C) SDFHS	in that code? (D) QDHJS			
78.	I went 15 m North and t direction am I from my h	hen turned south, covere ouse?	ed 5 m and then turned e	east and covered 10 m. In which			
	(A) East	(B) West	(C) North	(D) None of these			
79.	If L denotes x, M denote	If L denotes x, M denotes $\div$ , P denotes + and Q denotes –, then 16 P 24 M 8 Q 6 M 2 L 3 = ?					
	(A) $\frac{13}{6}$	(B) - <u>1</u> 6	(C) $14\frac{1}{2}$	(D) 10			
PROBL	PROBLEMS ON RANKING TEST						
80.	Ragav ranked 8th. from class?	the top and 28th. from t	the bottom in a class. Ho	w many students are there in a			
	(A) 34	(B) 35	(C) 36	(D) 37			
81.	The numbers follow a series as per some rule. Find out the missing number which will come in place of from amongst the four alternatives. 5, 11, 24, 51, 106,						
	(A) 217	(B) 212	(C) 214	(D) 216			
82.	This question is based on letter series in which some letters are missing. The missing letters are given in a proper sequence as one of the alternatives among the given four alternative. b — a b b c — b b c a — b c a b b — a b						
	(A) a c a a	(B) a c b a	(C) c a b c	(D) c a c c			
<b>Direction :</b> (Questions 13) In the following diagram, three classes of population are represented by three figures : $\Delta \Rightarrow$ School teachers $\Box \Rightarrow$ Married persons $O \Rightarrow$ Persons living in joint families							

83.Married persons living in joint families but not working as school teachers are represented by<br/>(A) C(B) F(C) D(D) A



84. If the mirror is placed on the line XY, then identify the correct mirror image from the given four alternatives.



87. Choose the correct water image of the question figure, from the given answer figures (assume that water is along XY)





88. How many triangles in the following figure.



(D) 5

89. Find the missing figure in the series from the given answer figures.



**90.** From the given four alternatives select the one in which the question figure (x) is hidden/embedded in the same direction.







# Syllabus

# **Class VIII**

#### Physics

- Electric current and it's effects.
- Force and Pressure
- Heat and Temperature
- Light
- Motion and Time
- Sound

#### Chemistry

- Acid, Bases and Salts
- Metals and non-Metals
- Physical and Chemical Changes
- Synthetic Fibre and Plastic
- Water
- Coal & Petroleum
- Combustion & Flame

#### **Biology**

- Cell Structure and Function
- Crop Production and management
- Micro Organisms : Friends and Foe
- Respiration in organisms
- Transportation in Animals and Plants
- Weather, climate and adaptation of animals to climate

#### **Mathematics**

- Power & exponents
- Square & Square Roots, Cub & Cube Roots
- Algebric expression & identity
- Factorisation
- Linear Equation in one variable
- Comparing Quantities
- Congruent Triangles & Quadrilaterals
- Area
- Surface Area & Volume
- Visualizing Solid Shapes

#### IQ

- Blood Relation
- Coding-Decoding
- Direction Sense
- Cubes and Dice
- Counting of figures
- Insert the Missing character
- Mathematical operation
- Mirror Image & Water Image
- Number Ranking
- Number Series
- Embedded Figure
- Non-Verbal Series
- Venn-Diagram

### **Class IX**

#### **Physics**

- Motion
- Force and Law of Motion
- Gravitation
- Light
- Sound

#### Chemistry

- Matter around us
- Is matter Around us Pure
- Atoms and Molecules
- Structure of atom
- Metal and Non-Metal

#### **Biology**

- Fundamental unit of life : CELL
- Tissue
- Improvement in Food Resources
- Micro Organism : Friend and Foe
- Reproduction & Reaching the age of adolescence.
- Pollution of Air and Water

#### **Mathematics**

- Number System
- Polynomial & its factorisation
- Triangle
- Quadrilateral & Circle
- Co-ordinate Geometry
- Linear Equation in two variables
- Area
- Surface Area & Volume
- Linear Equation in one variable
- Comparing Quantities

#### IQ

- Blood Relation
- Coding-Decoding
- Direction Sense
- Cube and Dice
- Counting of figures
- Insert the Missing character
- Mathematical operation
- Ranking (Number & Letter)
- Number Series
- Embedded Figure
- Non-verbal Series
- Mirror & Water Image
- Venn-Diagram

# Class X

#### **Physics**

- Electricity
- Magnetism

Chemistry

**Biology** 

Nutrition

Excretion

Tissue

Respiration

Transportation

Why do we fall ill?

**Mathematics** 

Number Theory

Real Number Polynomial

**Similar Triangle** 

Trigonometry

**Blood Relation** 

**Clock & Calendar** 

Coding and Decoding

**Sitting Arrangement** 

Mirror & Water Image Counting Figure Analogy

**Embedded Figure** 

**Insert the Missing Character** 

Ranking (Number & Letter)

Venn-Diagram & Syllogism

**Mathematical Operation** 

**Cubes and Dice** 

**Direction Sense** 

**Puzzle** 

Circle

Area

IQ

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**Force and Laws of Motion** 

**Chemical Reaction & Equation** 

Work Power and Energy

Acid, Bases and Salts

**Metal and Non-Metal** 

Atoms and Molecules

**Atomic Structure** 

**Carbon & Its Compounds** 

How do organisms reproduce

**Diversity in living organisms** 

**Pair of Linear Equation** 

Surface Area & Volume

**Co-ordinate Geometry** 

Area of Parallelogram & Triangle

**Chemical Bonding** 

Optics Motion