

SUBJECT : INTEGRATED SCIENCE

Time : 2½ Hrs.

MM: 80

General Instructions :

- (i) This paper consists of three sections A, B and C.
(ii) Marks are indicated against each question.
(iii) Draw neat and well labelled diagrams wherever required.

SECTION-A (PHYSICS)

Q1. Answer in one word or one sentence : (1x5=5)

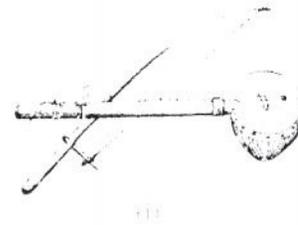
- (a) Rishabh used a matchstick to clean his ear and became partially deaf. Which part of his ear might have been affected?
- (b) A train is moving towards east. In which direction does the frictional force act on the train?
- (c) If the frequency of a vibrating string is 100 Hz, find its time period.
- (d) It is easier to move with flat shoes on sand rather than pointed heels. Give reason.
- (e) Given below are two situations. Name the type of force acting in each situation :
- (i) Falling of rain drops.
- (ii) Two plastic pipes rubbed against a woollen cloth are kept 1 cm apart.

Q2. Answer briefly : (2x4=8)

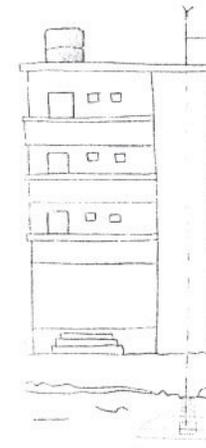
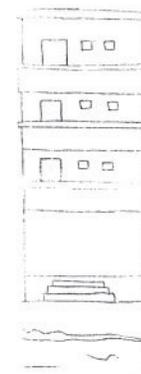
- (a)
- (i) What is the similarity between the two figures given above?
- (ii) Explain the significance of the similarity.

(1)

- (b) Identify the musical instruments (i) and (ii) and name their vibrating part.



- (c) A man exerts pressure of 12 Pa by applying a force of 72 N on a table. Calculate the area over which the force is applied.
- (d) (i) Which of the two buildings given below will be safe from the effect of lightning?
(ii) Name the device which keeps it safe and how?



Q3. Answer the following : (3x3=9)

- (a) "Friction is a necessary evil". Justify the statement.
- (b) Two hollow metallic hemispheres are joined together. Can you separate these hemispheres if all the air is sucked out from them? Explain your answer.
- (c) Wire 'A' oscillates 300 times in 60 seconds and wire 'B' oscillates 240 times in 80 seconds.

(2)

- (i) Find the frequency of both wires 'A' and 'B'.
 (ii) Which of these wires will have a higher pitch and why?

PAPER-1
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PAPER-1
9

- Q4. Answer in detail : (5x1=5)
 Name the device used to test the charge on an object. Explain its construction and working with the help of a well labelled diagram.

SECTION-B (CHEMISTRY)

- Q1. Answer in one word or one sentence : (1x5=5)
- (a) The prefix 'poly' means many, for example polygon means a figure with many sides. What is the significance of the prefix 'poly' in polymer?
- (b) Some elements have properties that are intermediate between those of metals and non-metals. What are these elements known as?
- (c) Deficiency of a metal 'X' causes lack of formation of chlorophyll in a plant. Identify metal 'X'.
- (d) Reehan was learning how to cook. His father strictly told him not to wear nylon clothes in the kitchen. Justify his father's advise.
- (e) Complete the given analogy :
 sulphur : sulphuric acid :: _____ : nitric acid ::
 chlorine : _____

- Q2. Answer briefly : (2x4=8)
- (a) Element 'A' is very soft and reacts vigorously with water. It is placed second in the reactivity series.
- (i) Identify element 'A'.
 (ii) Write the word equation of its reaction with water.
 (iii) State the nature of the oxide that will be formed when element 'A' reacts with oxygen.
- (b) (i) Rahul lives in Mumbai and prefers to use a synthetic belt rather than a leather one. Give reason.
 (ii) Differentiate between biodegradable and non-biodegradable substances.

(3)

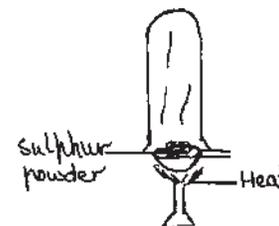
- (c) Complete the table given below :

	Metal	Physical property	Use of the physical property
(i)	_____	_____	used to make electrical wires
(ii)	Iron	_____	used to make bells
(iii)	Aluminium	malleability	_____

- (d) Plastic is the material of choice for most requirements but we often hear of the campaign "SAY NO TO PLASTICS" as plastics are not eco-friendly. State any two ways in which you can cope with the problems related to overuse of plastics.

- Q3. Answer the following : (3x3=9)

- (a) Pratyush took sulphur powder in a spatula and heated it as shown in the figure. He collected the gas evolved by inverting a test tube over it and dissolved it in water.



- (i) What will be the action of the solution obtained on litmus paper? Justify the change observed in the litmus paper.
- (ii) Write the chemical equation involved on heating sulphur powder.
- (iii) State one use of sulphur.
- (b) A synthetic fibre 'W' contains large number of ester groups whereas the synthetic fibre 'X' is chemically a polyamide and is stronger than a steel wire. Another synthetic fibre 'Y' is made up of a polymer 'Z' which consists of a number of glucose units joined one after the other.
- (i) Identify the fibres 'W' and 'X'.
 (ii) Name the polymer 'Z'.
 (iii) State one use each of fibres W, X and Y.
- (c) A magician arrives in Electron village and claims that he has a magic solution for sale that can transform

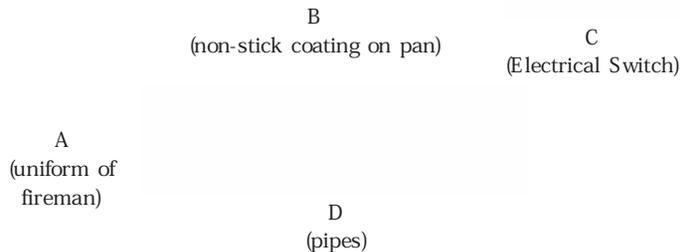
(4)

copper objects to silver. For demonstration he asks the villagers to give him a small copper object which he suspends in his magic solution with the help of a thread. After an hour he takes out the object which seems to be transformed to silver and shows it to the amazed villagers.

- Name the type of reaction demonstrated by the magician.
- Which of the following solution do you think is the magic solution?
(1) silver nitrate (2) copper sulphate (3) iron sulphate
- The above activity demonstrated by the magician proves that a _____ reactive metal can replace a _____ reactive metal from its _____.

Q4. Answer the following : (5)

(a)



- Name the plastic used in making the articles A, B, C and D given in the figure.
 - Plastics are broadly classified into two types - thermoplastics and thermosetting plastics. Classify the different plastics used in articles A, B, C and D as thermoplastic or thermosetting plastics.
- (b) Differentiate between thermoplastics and thermosetting plastics.

(5)

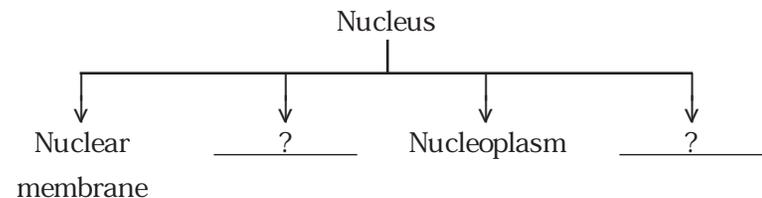
SECTION-C (BIOLOGY)

Q1. Answer in one word or one sentence : (1x4=4)

- Antibiotics though a boon in medicine, should not be taken unnecessarily. Give reason.
- I am microscopic and exist both as living and non-living particle. I reproduce only inside the body of host organism. Who am I?
- Choose the odd one out and give reason for your choice: Rhinoceros, Bengal tiger, Giant Panda, Dinosaurs
- Complete the given analogy :
Rust of wheat : _____ :: Citrus canker : Bacteria ::
Yellow vein mosaic of bhindi : _____

Q2. Answer briefly : (2x4=8)

- Reshma was considered ill mannered by her friends when she sneezed without covering her mouth with a handkerchief. Her teacher told her that it aids in the spread of communicable diseases. What are communicable diseases? Classify the following as bacterial or viral diseases (i) Typhoid (ii) Chicken Pox.
- The shape of a cell is related to the function it performs. Justify the statement diagrammatically by drawing any two cells of the human body.
- (i) Complete the following flow chart :



- What is the role played by the nucleus in a cell?
- (d) Pachmarhi Biosphere Reserve consisting of one national park and two wildlife sanctuaries has the richest biodiversity.
- Name the national park in Pachmarhi Biosphere Reserve.

(6)

- (ii) Name two endemic flora of this reserve.
- (iii) What is the aim of the Forest Conservation Act?

- (i) Identify the two fungi '1' and '2'.
- (ii) Explain one role played by each in the two industries.

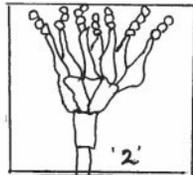
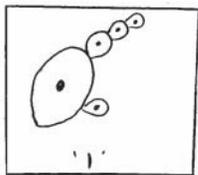
Q3. Answer the following: (3x3=9)

- (a) The picture depicts an important part in a child's health care regime.
 - (i) What are the biological preparations such as polio drops known as?
 - (ii) What changes take place in the human body when such preparations are administered?
 - (iii) Other than Polio name any two diseases a person is protected from by taking such biological preparations.

(b) Study the table given below and answer the questions

Cell	Cell Wall	Cell Membrane	Plastids	Nucleus
Cell A	absent	present	absent	present
Cell B	present	present	absent	absent
Cell C	present	present	present	present

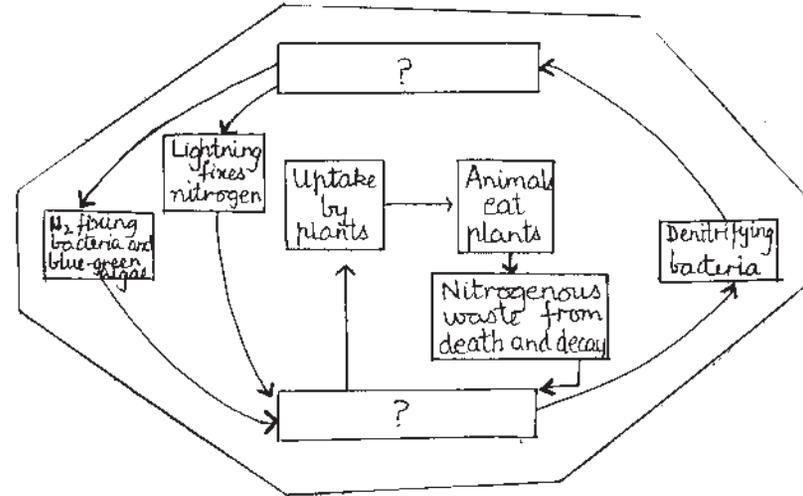
- (i) Identify the following in the table :
 - (1) Plant Cell (2) Animal Cell
- (ii) Classify the cells A, B and C as prokaryotic and eukaryotic cells. Give reason to support your answer.
- (c) The diagrams given below represent two types of fungi. Each plays a significant role in two important industries - Food and Medicine



(7)

Q4. Answer the following: (5)

- (a) Study the given flow chart and answer the questions that follow :



- (i) What does the flow chart represent?
- (ii) Complete the missing steps in the flow chart.
- (iii) Name the bacterium present in the root nodules of leguminous plants. What relationship does it have with the plant?
- (b) Justify the use of following food preservation methods-
 - (i) use of sugar / salt
 - (ii) pasteurisation

(8)