

## SUBJECT : INTEGRATED SCIENCE

Time : 2½ hrs.

M.M. : 80

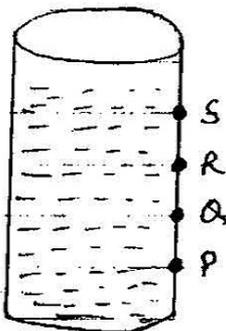
## General Instructions :

- (i) This paper consists of three sections - A, B and C. Do each part on a separate sheet.
- (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) Anshul saw a long metallic rod installed in a tall building. Name this device. Why is it used in tall buildings?
- (b) Why do gymnasts apply some coarse substance on their hands?
- (c) A container has four holes marked as P, Q, R and S at height of 2cm, 3cm, 4cm and 5cm from the base. From which hole will water come out with the maximum pressure and why?



- (d) The frequency of a sound is 2.5 kHz. How many vibrations does it complete in 1 second?
- (e) Why does a bird make a high pitched sound whereas a lion makes a low pitched roar?

Q2. Answer briefly :

(2x4=8)

- (a) Three forces of magnitude 8N, 17N and 15N act on a body. The first two forces act in the same direction whereas the third force acts in the opposite direction. Find the net force acting on the body.
- (b) Seema was working on the computer. Suddenly she felt the shaking of the earth. Give some precautions which she should take to protect herself from this natural disaster.
- (c) Hema claimed that friction is always harmful but Rashi did not agree with her. Give two examples which support Rashi's view.
- (d) Sohan has a pendulum which oscillates 625 times in 25 seconds. What will be the frequency and time period of this pendulum?

Q3. Answer the following :

(3x3=9)

- (a) Vineet's father has various health problems. The doctor advised him to stay away from noise pollution. List various methods to control noise pollution.
- (b) The machines in Sahil's factory produce a lot of heat. What causes this heat? Also suggest any two ways to reduce this heat and loss of energy.
- (c) Give reasons :
  - (i) Elephants have broad feet.
  - (ii) A bicycle gradually slows down and finally comes to rest once we stop pedalling it.

Q4. Answer in detail :

(5x1=5)

Explain the construction and working of an electroscope with the help of a well labelled diagram.

### SECTION-B (CHEMISTRY)

Q1. Answer in one word or one sentence :

(1x5=5)

- (a) The molecular structure of synthetic fibres and plastics have one common feature. What is it?

- (b) 'X' is a non-metal used in fertilisers to enhance the growth of plants. Name 'X'.
- (c) Sonam is confused as to which container she should use to store mango pickle - the plastic one or the metallic one. What would you suggest her to use? Support your answer with an appropriate reason.
- (d) The nature of the oxide of an element 'A' is acidic and that of 'B' is basic. Classify 'A' and 'B' as metal and non-metal.
- (e) Do you think rayon, a man-made fibre when burnt will stick to the body like other synthetic fibres. Give reason.

Q2. Answer briefly : (2x4=8)

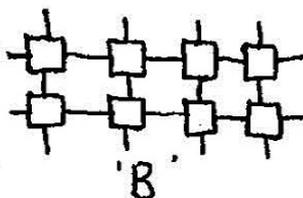
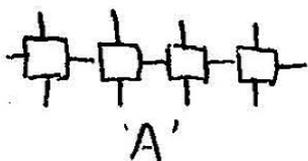
- (a) Plastic is a material of choice for most requirements. Justify the use of the following plastics :
  - (i) Melamine is used to make uniform of firemen.
  - (ii) Teflon is used as coating for non-stick cookware.
- (b) Dr. Kumar gave his student two highly reactive elements 'X' and 'Y'. He told him to store 'X' in kerosene and element 'Y' in water in the laboratory. Identify the elements 'X' and 'Y'. Explain why they are stored in different medium.
- (c) Synthetic fibres are strong, elastic, light and wrinkle resistant. Even with so many advantages we do not prefer to wear clothes made of pure synthetic fibres especially during summers. Explain.
- (d) Classify the following articles of everyday use as biodegradable and non-biodegradable :
  - (i) match sticks
  - (ii) leather belts
  - (iii) PET bottles
  - (iv) metal cans

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

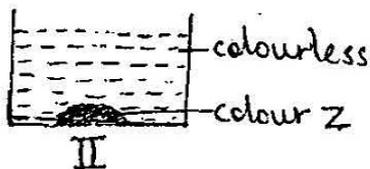
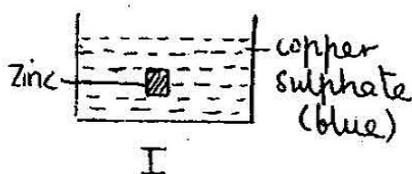
- (a) Radhika carried out tests on four elements W, X, Y, Z. The results are shown in the table below :

Element	Solid at room temperature	Conducts electricity	Malleable
W	No	No	No
X	Yes	No	No
Y	Yes	Yes	No
Z	Yes	Yes	Yes

- (i) From the above results which of the four elements could she say is a metal?
- (ii) State two other physical properties of metals other than those mentioned in the table.
- (iii) Explain the term 'malleable'.
- (b) Given below are diagrams showing linkage patterns in polymers of two different types of plastics 'A' and 'B'.



- (i) Identify the two types of plastics 'A' and 'B'.
- (ii) Differentiate between the two types of plastics other than their linkage patterns.
- (c) Akanksha performed the experiment as shown in I figure and obtained the result as shown in figure II



- (i) What is the colour Z of the deposit in figure II?
- (ii) Write the word equation for the reaction shown in the above figures.

(iii) Name and define the type of reaction being performed by Akanksha.

Q4. Answer the following : (5)

A woman stored two buckets made of two different elements 'x' and 'y' each in a room. After a few months she found the buckets had lost their lustre due to the formation of a greenish layer on 'x' and a reddish brown porous deposit on 'y'.

- Name the metals 'x' and 'y'.
- Write word equations for the formation of the deposit on the two buckets.
- How will you test the nature of the deposit on bucket 'y'?
- State one use of element 'x'.

### SECTION-C (BIOLOGY)

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

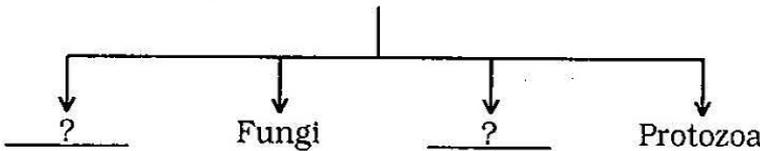
- A cell has a defect which results in the loss of its ability to control passage of substances in and out of the cell. In which part of the cell is the defect most likely to be present?
- Sonu says that real dinosaurs were used in making the movie Jurassic Park. Sabeena says it is not so. Who is right? Give reason.
- Sneha went to a friend's party. On reaching home she started vomiting and had to be hospitalised. What is the condition known as? State its cause.
- Which of the following components given below represent the biota of an ecosystem?
  - soil
  - mongoose
  - mulberry bushes
  - water

Q2. Answer briefly : (2x4=8)

- Diana was suffering from cold and flu. Her doctor prescribed antibiotics to treat her. Is the doctor's advice justified? Give reason to support your answer.

State any three precautions that should be taken while taking antibiotics.

- (b) Pathogens causing communicable diseases



What are communicable diseases?

- (c) Give appropriate reason for the use of the following methods of food preservation :

(i) It is preferable to use pasteurised milk rather than boiled milk.

(ii) Salt helps to preserve amla and raw mango.

- (d) Pachmarhi Biosphere Reserve consists of one National Park and two Wildlife Sanctuaries. What is the difference between a National Park and Wildlife sanctuary. Name two endemic flora or fauna of the Pachmarhi Biosphere Reserve.

Q3. Answer in detail :

(3x3=9)

- (a) Ritu and Meena wanted to bake bread. While preparing the dough with flour they added some Yeast dissolved in water. Ritu then kept the dough in the refrigerator and Meena kept it in a warm place for 3 hours. Both baked the bread with their dough. Predict the kind of bread both would get after baking. Explain the difference in results of both.
- (b) Nitrogen fixation in environment produces about 175 million tonnes of nitrogen compounds per year. What are the different ways by which nitrogen is fixed in the environment?
- (c) To prevent a disease caused by a certain microbe, doctors inject the same microbes in a weakened or

dead form in a person's blood. What is the process of injecting the solution of microbes called? How does the process protect us from diseases?

Q4. Answer the following : (5)

(a) Compare the cell to a factory. Given below are various areas in the factory. Select and place the cell components listed below against each corresponding factory area. ribosomes, genes, mitochondria, nucleus, golgi bodies, nuclear membrane, cytoplasm, cell membrane

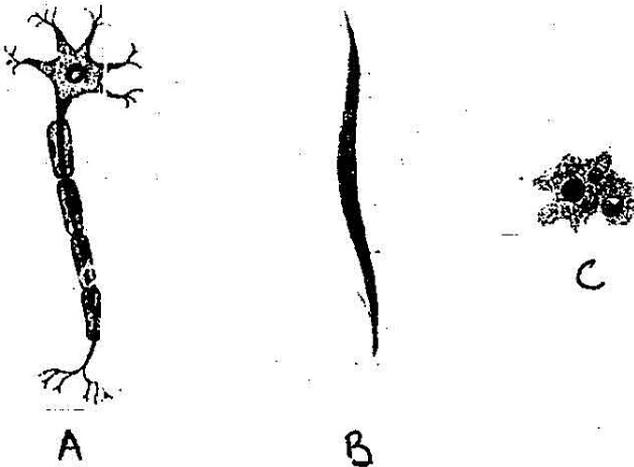
A - Head Office

B - Office boundary

C - Area surrounding main office

D - Boundary wall of factory

(b) Rohan's teacher gave him the following three slides A, B, C of different human cells to study.



- (i) Identify the cells A, B and C.
- (ii) State the advantage of the shape for cell A.
- (iii) Name an organism which has a shape similar to that of cell C.