

--	--	--	--	--

---

**Time : 2½ Hours****SCIENCE (E)****Subject Code**

S	0	3	1
---	---	---	---

**Total No. of Questions : 5****(Printed Pages : 13)****Maximum Marks : 65**

---

**INSTRUCTIONS :** (i) The question paper consists of *five* questions of **13** marks each.

(ii) *All* questions are compulsory.

(iii) There is no overall choice, however internal choice has been provided in *two* questions of *three* marks and *two* questions of *four* marks category. You have to attempt only one option in such questions.

(iv) Begin each main question on a fresh page.

(v) Figures to the right indicate full marks.

1. (A) (i) Select the *correct* alternative from those given below each statement and write the complete statement : 1

(a) The alloy whose constituents are lead and tin is .....

- Brass
- Bronze
- Solder
- Steel

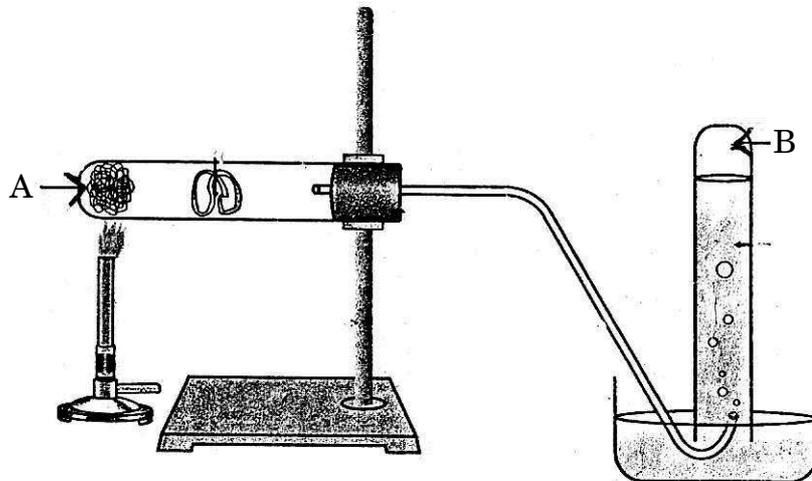
(b) All metals exist in same physical state except .....

- Gold
- Mercury
- Aluminium
- Copper

(ii) Why is the brain contained in a fluid filled balloon ? 1

(iii) State any *two* abiotic factors of an ecosystem. 1

(iv) Observe the given diagram of action of steam on metal and label 'A' and 'B' : 1



(B) (i) Answer the following : 2

(a) How does ozone affect any ecosystem ?

(b) Form a food chain from the following :

Fox, Grass, Rabbit, Tiger.

(ii) Answer the following : 2

(a) Ores of many metals are found as oxides. Why ?

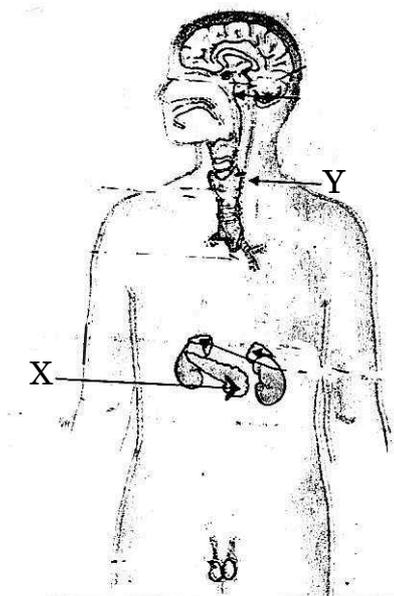
(b) Why is the reaction of iron oxide with aluminum used in joining the railway tracks ?

(C) (i) Management of natural resources for sustainable development is very essential : 2

(a) State the economic problem associated with the construction of large dams.

(b) State any *two* effects of Chipko Movement.

(ii) Glands and Hormones play a vital role in living organisms : 3



(a) Refer the diagram and identify the parts 'X' and 'Y'.

(b) Why does the doctor advice insulin injections to a diabetic patient ?

(c) When Adrenaline is secreted into the blood the breathing rate increases. Why ?

2. (A) (i) Select the correct alternative given below each statement and write the completed statement : 1
- (a) The slurry produced in a biogas plant is rich in .....
- Sodium and Chlorine
  - Sodium and Fluorine
  - Nitrogen and Oxygen
  - Nitrogen and Phosphorous
- (b) Silver is used in .....
- The preparation of solar cells
  - The interconnection of solar cells in solar panels
  - The supporting structure of solar panels.
  - The solar cookers
- (ii) What is the cause of refraction of light ? 1
- (iii) Differentiate between principal focus of a concave mirror and convex mirror. 1
- (iv) A change that is useful for one property to start with, can become useful later for a different function during evolution. Give *one* example to support the statement. 1
- (v) Name : 1
- (a) Artificially selected vegetable having larger leaves.
- (b) The earliest member of human species.

- (B) (i) Electricity is one of the important form of energy for all of us. 2
- (a) How can we generate electricity from hot springs ?
- (b) State any *two* limitations in the use of wind energy.
- (ii) Answer the following : 2
- (a) What method is extensively used to define evolutionary relationship ?
- (b) With respect to size, distinguish between X and Y chromosomes.
- (C) Do as directed : 4
- (i) Draw a neat ray diagram to show the formation of image by a concave mirror when the object is placed “at C”.
- (ii) An object when placed at a distance of 25 cms from a convex lens produces a double sized real image on the other side of the lens. Calculate :
- (a) The image distance
- (b) The focal length of the lens.

*OR*

- Do as directed : 4
- (i) Draw a neat ray diagram to show the formation of image by convex lens, when the object is placed “at  $2F_1$ ”.
- (ii) (a) At what distance an object be placed in front of a concave mirror so that a three times bigger real image is formed at a distance of 60 cms from the mirror on the same side ?
- (b) Find the focal length of above concave mirror.

3. (A) (i) Match the formulae in Column 'A' with their appropriate names in Column 'B' and rewrite the correct pairs : 1

**Column A**

**Column B**

- |                 |           |
|-----------------|-----------|
| (a) $C_3H_4$    | • Alcohol |
| (b) $C_6H_{14}$ | • Alkyne  |
|                 | • Alkene  |
|                 | • Alkane  |

- (ii) Show the formation of Covalent bond in oxygen molecule. 1
- (iii) Watermelon flower cannot be self-pollinated ? Why ? 1
- (iv) Male-Female sex ratio must be maintained in our society. Give reason. 1

- (B) (i) Do as directed : 2

(a) In Mendeleev's periodic table, some elements with a slightly greater atomic masses were placed before an element with a slightly lower atomic mass. Illustrate with an example.

(b) From the table given below find out which of the group forms a Dobereiner triad. Why ?

Group I (Element)	Atomic Mass	Group II (Element)	Atomic Mass
A	14.0	X	40.1
B	31.0	Y	87.6
C	74.9	Z	137.3

(ii) Answer the following : 2

(a) Ethanol is heated at  $443^{\circ}$  k with excess concentrated sulphuric acid to give an unsaturated Hydrocarbon.

(1) Name the unsaturated hydrocarbon

(2) What is the role of concentrated sulphuric acid in the above reaction ?

(b) Ethanoic acid belongs to a group of acid called carboxylic acid.

(1) State the percentage of ethanoic acid in vinegar.

(2) Give the other name of ethanoic acid.

(C) The elements of the second period of the periodic table are given below : 2

Group	I	II	III	IV	V	VI	VII	VIII
2nd Period	P		Q			R	S	T

(i) Write the electronic configuration of element Q.

(ii) Which element is most metallic ?

(iii) Which element is inert gas ? Why ?

(D) Answer the following : 3

(i) Draw a neat diagram showing the Budding in Hydra (any one stage) and label :

\*Bud and \*Tentacles.

(ii) State any *two* artificial methods of vegetative propagation in plants.

OR

- (D) (i) Draw a neat diagram showing the germination of seed and label : 3
- \*Cotyledon and \*Plumule.
- (ii) The fallopian tube in the female is blocked. How does this help in avoiding pregnancy ?
4. (A) (i) Select the correct alternative given below each statement and write the completed statement : 1
- (a) A three carbon molecule formed from glucose during Respiration in our body is .....
- Lactic acid
  - Acetic acid
  - Ethanol
  - Pyruvate
- (b) Enzyme trypsin convert proteins into .....
- Glycerol
  - Amino acid
  - Citric acid
  - Starch

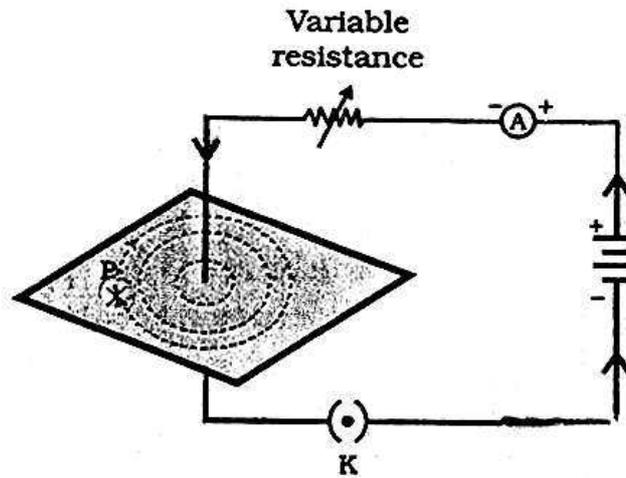
- (ii) State the role of blood platelets at the points of injury : 1
- (iii)  $\text{Pb} + \text{CuCl}_2 \rightarrow \text{PbCl}_2 + \text{Cu}$  1
- (a) Identify the less reactive element in the above chemical reaction.
- (b) Name the above type of reaction.
- (B) (i) Answer the following : 2
- (a) Akbar was suffering from pain and irritation in the stomach.
- What is the cause of pain and irritation in the stomach ?
- (b) The pH of lemon juice and pure water are approximately 2 and 7 respectively.
- State the change in colour of litmus paper when dipped in the above two solutions.
- (ii) Do as directed : 2
- (a) With respect to hydrogen, differentiate between oxidation and reduction.
- (b) Why is it necessary to balance the chemical equation ?
- (iii) Answer the following : 2
- (a) Blue Copper Sulphate crystals when heated turn white. Give scientific reason.
- (b) Why does Plaster of Paris become hard on mixing with water ?

- (C) Do as directed : 4
- (i) Draw a neat diagram showing the stages of nutrition in Amoeba and label :  
 \*Food Vacuole and \*Pseudopodia.
- (ii) Name :  
 (a) A plant parasite  
 (b) Filtration units in the kidney.
- (iii) Carbon dioxide is transported in dissolved form in our blood. Give reasons.
5. (A) (i) Select the most correct alternative given below each statement and write the completed statement : 1
- (a) The far point of a normal eye in human being is .....
- 25 cms
  - 250 cms
  - Infinity
  - 2.5 cms
- (b) The apparent flattening of sun's disc at sunrise and sunset is due to .....
- Dispersion of light
  - Atmospheric refraction
  - Tyndall effect
  - Scattering of light
- (ii) Write the function of rheostat in an electric circuit. 1
- (iii) State *one* most convenient method of inducing a current in a coil. 1
- (iv) A shop in the market was burnt due to fluctuations in supply voltage. Write any *two* causes. 1

(B) Answer the following :

2

- (i) State any *two* ways that can enhance the power of commercial motor.
- (ii) Observe the figure given below and answer the following :



- (a) What do concentric circles represent ?
- (b) What will happen if the current through the conductor is decreased ?

(C) Human eye is the most significant part as it enable us to see the colourful world around us. 3

- (i) What is the colour of the sky when viewed from the earth ?
- (ii) State *one* example of a natural spectrum.
- (iii) Why are danger signals red in colour ?
- (iv) When you are looking at objects closer to the eye, what would be the effect on :
  - (a) Ciliary muscles
  - (b) Curvature of eyelens.

OR

(C) Anupa can see a parrot sitting on a tall coconut tree but cannot read the printed matter from the newspaper clearly. 3

(i) Write the cause of the above effect with respect to (a) Focal length (b) Size of the eyeball.

(ii) What is the role of light sensitive cells on the retina of the eye ?

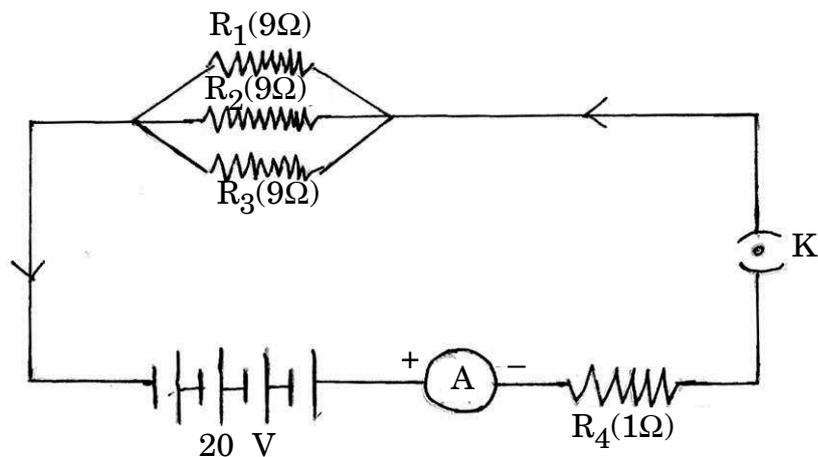
(iii) The peculiar shape of the prism makes the emergent ray bend at an angle to the direction of incident ray :

(a) What is the angle formed between the incident ray and the emergent ray called ?

(b) Which colour of spectrum of light produced by prism bends the most ?

(D) Attempt the following : 4

(i) Observe the circuit diagram and answer :



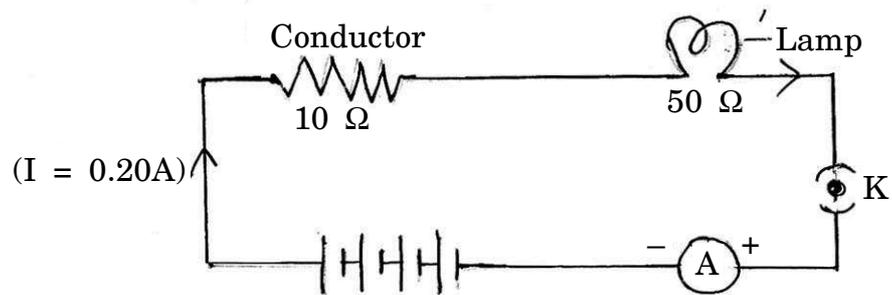
Calculate :

- (a) Total resistance across  $R_1$ ,  $R_2$  and  $R_3$
  - (b) Total resistance across the circuit
  - (c) Total current in the circuit.
- (ii) How does the resistance depend on the area of cross section of a conductor ?
- (iii) To verify Ohm's Law V-I graph is a straight line that passes through the origin. What does this indicate ?

OR

- (D) (i) Observe the circuit diagram and answer :

4



Calculate :

- (a) Potential difference across the lamp and the conductor.
  - (b) Power of the circuit.
- (ii) How does the resistance depend on the length of a conductor ?
- (iii) Why are alloys used in the electric devices like electric iron ?