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

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**Total No. of Questions : 5****(Printed Pages : 15)****Maximum Marks : 65**

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**INSTRUCTIONS :** (i) The question paper comprises 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 question on a fresh page.

(v) Figures to the right indicate full marks.

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

(a) The thinking part of the brain is the .....

- Hindbrain
- Forebrain
- Midbrain
- Spinal Cord

(b) The movement of the roots of a plant towards the water is termed .....

- Hydrotropism
- Chemotropism
- Phototropism
- Geotropism

(ii) Give one term for the following : 1

(a) The gap between two neurons.

(b) Receptors responsible for taste.

(iii) The thinking process of animals is not fast enough. How do animals manage to react to a stimulus ? 1

(iv) Hari had a problem with carbohydrate, protein and fat metabolism in his body : 1

(a) Name the element he must include in his diet to overcome this problem.

(b) Give one symptom of the deficiency disease caused in the above.

(B) (i) Answer the following : 2

(a) Why are highly reactive metals such as Aluminium used as reducing agents ?

(b)  $MgCl_2$  does not conduct electricity in the solid state. Give reasons.

(ii) Answer the following : 2

(a) Name :

(1) Water harvesting structures in Karnataka.

(2) The movement to protect trees in the Himalayas.

(b) The forest department has converted vast tracts of forests into monocultures. What are the disadvantages of this procedure ?

(iii) Attempt the following : 2

(a) The metal sodium is kept immersed in Kerosene oil in the school laboratory. Why is it not kept in the open ?

(b) Solder is an alloy of lead and tin :

(1) Give one property of solder.

(2) State and important use of solder.

(C) Attempt the following : 3

(i) Construct a Food Chain with the help of the organisms given below :

Hawk, Grass, Snake, Hen.

(ii) Why is it not advisable to have a six step food chain ?

(iii) If Pesticides enter the above food chain.

(a) In which organism will it be found in the maximum amount ?

(b) What is this phenomenon called ?

2. (A) (i) Select the most correct alternative from those given below each statement and write the completed statement : 1

(a) Electrolysis of water is an example of a ..... reaction.

- Combination
- Double displacement
- Decomposition
- Displacement

(b) Decomposition of Lead Nitrate produces ..... gases.

- $O_2$  and  $CO_2$
- $O_2$  and  $NO_2$
- $NO_2$  and  $NO_3$
- $NO$  and  $NO_2$

(ii) State : 1

(a) The difference between the number of water molecules in Gypsum and Plaster of Paris.

(b) The compound found in tooth enamel.

- (iii) An indicator is added to Potassium Hydroxide and the solution turns pink : 1
- (a) Name the indicator that is added.
- (b) What is the colour change you will observe if you add Litmus to the same solution ?
- (iv) Baking soda is used to make cakes light and fluffy. Give any *two* other uses of Baking soda. 1
- (v) Four solutions A, B, C and D have pH of 2, 6, 7 and 13 respectively : 1
- (a) Which of the above solutions is a strong acid ?
- (b) Which solution will have the highest number of Hydronium ions ?
- (B) (i) Answer the following : 2
- (a) In the chemical reaction given below :
- $$\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$$
- (1) Identify the Oxidising agent
- (2) Name the substance which is reduced.
- (b) Two chemicals mixed by the laboratory assistant in the laboratory are Barium chloride and Potassium Sulphate. Write a balanced Chemical Equation for the above reaction.

(ii) Answer the following : 2

(a) Differentiate between Translocation and transpiration.

(b) A rabbit has a longer small intestine than a tiger. Give scientific reason.

(C) Attempt the following : 4

(i) Glucose is broken down into a three carbon compound during Respiration. Name :

(a) The three carbon compound

(b) The type of respiration in which  $\text{CO}_2$  and Ethanol are the end products.

(ii) Why are the gills of Fish fine and delicate ?

(iii) The human heart is the pump of the body.

(a) From which chamber is the oxygenated blood pumped to all parts of the body ?

(b) Name the blood vessel in the heart which carries blood to the lungs.

(iv) What does the term double circulation mean ?

OR

- (C) Attempt the following : 4
- (i) Food is broken down in the alimentary canal into smaller molecules :
- (a) What is the importance of HCl in the stomach of man ?
- (b) What is the role of Bile Salts in the Emulsification of Fats ?
- (ii) Excretion of Nitrogenous wastes is carried out by the Kidneys.  
Name :
- (a) The opening through which the urine is released.
- (b) The basic filtration units in the kidney.
- (iii) State *two* factors on which the amount of water reabsorbed in the kidney depends on.
3. (A) (i) Observe the correlation in the first pair and complete the second pair : 1
- (a)  $\text{CH}_3\text{OH}$  : Methanol ::  $\text{CH}_3\text{CH}_2\text{COOH}$  : .....
- (b) Saturated hydrocarbons : substitution reactions ::  
Unsaturated hydrocarbons : .....
- (ii) A housewife notices that the cooking vessels she uses are getting blackened. What can she do to prevent this from happening ? 1
- (iii) What do you understand by Cross Pollination ? 1

- (B) (i) Chlorine, Bromine and Iodine form a Dobereiners Triad. If the approximate atomic mass of Chlorine is 35 and that of iodine is 127 : 2
- (a) Find the atomic mass of Bromine.
- (b) Give any *two* limitations of Mendeleev's periodic classification.
- (ii) Answer the following : 2
- (a) Give a chemical equation for the reaction of Ethanol with excess hot conc. Sulphuric acid.
- (b) Draw the structural formula of Butanone.
- (iii) Four elements W, X, Y and Z have atomic numbers 12, 18, 4 and 16 : 2
- (a) Which of the above will form an acidic oxide ?
- (b) Which element represents an inert gas ?
- (c) Which element belongs to the second period ?
- (d) Which element will be larger in size W or Z ?
- (C) Attempt the following : 4
- (i) Draw a neat scientific diagram of the Female Reprdouctive System and label :
- (a) Vagina and
- (b) Oviduct.



- (ii) Write two changes that occur in teenage boys during the period of Adolescence.
- (iii) Tying of the Fallopian tubes is a method of Contraception. How does this method prevent pregnancy ?

OR

- (C) Attempt the following : 4
- (i) Draw a neat scientific diagram showing budding in Hydra (two stages) and label . Bud. Tentacles.
- (ii) Name the following :
- (a) An organism that reprodouces by Fragmentation.
- (b) The types of asexual reproduction seen in Planaria.
- (iii) If the copying of DNA during sexual reproduction is not accurate, what will be the consequences ?
4. (A) (i) Select the correct alternative from those given below each statement and write the completed statement : 1
- (a) The power of a convex lens is +4D, then its focal length will be .....
- 0.40 m
  - 400 cm
  - 0.25 m
  - 250 cm

(b) In a Solar Furnace, sunlight is concentrated at the ..... of the Concave mirror.

- Centre of Curvature
- Optical Centre
- Pole
- Focus

(ii) Answer the following : 1

(a) A ray of light travelling in air enters obliquely into a glass slab. Does the ray move towards the normal or away from it ?

(b) Name the law represented by the formula :

$$n = \sin i / \sin r.$$

(iii) Vimal combs her hair in front of a plane mirror. Write *two* characteristics of her image. 1

(iv) What is the condition necessary for Ocean Thermal power plants to operate ? 1

(B) (i) The fossil of a Dinosaur was found only a few years ago in the Narmada valley : 2

(a) What is a fossil ?

(b) Give *two* ways by which you can find the age of a fossil.

(ii) Biogas plants are considered to be a boon to the farmers. 2

(a) Why is Biogas said to be an excellent fuel ?

(b) Name the *two* elements present in the slurry which is used as a manure.

(iii) Answer the following : 2

(a) Name :

(i) The sex chromosome boys inherit from their father.

(ii) Organs having different structures but performing the same function.

(b) Gauri hurts her hand in an accident and two fingers had to be cut off. Her child is born with all the fingers on his hand. What conclusion can you draw from this ?

(C) Attempt the following : 3

(i) Draw a Ray diagram to show the formation of an image when the object is placed between the pole and the focus of a Concave Mirror.

(ii) If the Magnification produced by a Convex Lens is  $-1.5$ , what would be the position and nature of the image.

OR

Answer the following :

3

(i) Draw Ray diagram to show the formation of an image when the object is placed between  $F_1$  and  $2F_1$  of a convex lens.

(ii) An object is placed at a distance of 15 cm in front of a Concave Mirror. If an image of its is formed at 30 cm from the mirror, find the focal length of the mirror.

5. (A) (i) Select the most correct alternative given below each statement and write the completed statement : 1

(a) An appliance like an electric iron takes a current from circuit rated .....

- 15 A
- 220 A
- 110 A
- 5 A

(b) An electric fuse is used to .....

- Increase the current flowing through a circuit
- Allow the connection of many appliances in a socket
- Provide a low resistance conducting path for current
- Stop the flow of unduly high electric current

- (ii) Match the items in Column A with items in Column B and write the corrected pairs : 1

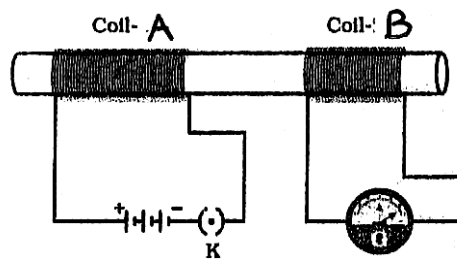
**Column A**

**Column B**

- |                                     |  |
|-------------------------------------|--|
| <p>(a) Right Hand Thumb Rule</p>    | <ul style="list-style-type: none"> <li>• Direction of induced current</li> </ul>   |
| <p>(b) Flemings Right hand rule</p> | <ul style="list-style-type: none"> <li>• Direction of force produced due to magnetic field</li> <li>• Direction of magnetic field in a straight conductor</li> </ul> |

- (iii) When Mars is viewed through a telescope it does not appear to twinkle. Comment. 1
- (iv) Soham uses a 600 W Music System for 5 hours daily. Calculate the electrical energy consumed in kWh for 30 days. 1

- (B) Answer the following : 2



- (a) Observe closely the above diagram and answer the following questions :
- (1) Name the instrument used to detect current.
  - (2) Name the process by which change in magnetic field in Coil A produces a current in Coil B.
- (b) Kunal draws magnetic field lines close to the axis of a current carrying circular loop. As he moves away, towards the centre of the circular loop, he observes that the lines keep on diverging. How will you explain his observation ?
- (C) Amey can read printed matter on sign boards on the roadside but cannot read his textbook well : 3
- (i) Name the eye defect he is suffering from.
  - (ii) Which lens can be used to correct this defect ?
  - (iii) Give *two* causes of this defect.
  - (iv) How is the near point of the eye affected by this defect ?

*OR*

- (C) Mr. Sudhakar a 60 year old man, visits the eye doctor because he cannot see clearly. The doctor finds that his eye lens is cloudy : 3
- (i) Name the eye defect he is suffering from.
  - (ii) How can he regain his vision ?
  - (iii) Why do some people require Bi-focal lenses ?
  - (iv) The Power of Accommodation usually decreases in elderly people. Give *two* reasons for the same.

(D) Answer the following :

4

(i) Draw a neat circuit diagram as described below :

Connect three Resistors  $R_1$ ,  $R_2$  and  $R_3$  in Parallel, connect them with a battery, ammeter and a plug key, insert a voltmeter across the resistors. Show the direction of the flow of current.

(ii) In the circuit diagram given below, find :

(a) The total resistance in the circuit.

(b) The total current flowing in the circuit.

