2014 X 13 | 1430 | Seat No. | | | | | |

Time: 2½ Hours

SCIENCE (E)
(New Pattern)

Subject Code

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Total No. Of Questions: 5 **(Printed Pages: 11)** **Maximum Marks: 65**

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 question 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.

Q. 1 (A) (i) Select the most correct alternative given below each statement and write the completed statement - **[1]**

(a) Burning of magnesium in air to form magnesium oxide is an example of _____.

- Decomposition reaction
- Displacement reaction
- Double displacement reaction
- Combination reaction

(b) Reaction in which energy is absorbed is known as _____.

- An exothermic reaction
- A Combination reaction
- A redox reaction
- An endothermic reaction

(ii) Name the following - **[1]**

(a) A gas evolved when an acid reacts with metal.

(b) A sodium compound used in soap industry.

(iii) Distinguish between an acid and a base with reference to litmus papers. **[1]**

(iv) What are Nephrons? **[1]**

(B) (i) Study the given reaction and answer the question given below. **[2]**

$Fe_2O_3 + C \rightarrow Fe + CO$

(a) Name the reactants.

(b) Balance the above equation.

(c) Which substance is oxidised in the above reaction?

(ii) Answer the following - **[2]**

(a) Why an acid must always be added slowly, to water with constant stirring?

(b) Why blue colour copper sulphate turns white, when heated?

(iii) Attempt the following - [2]

(a) Breathing rate in aquatic animals is much faster, than terrestrial animals? Give reasons.

(b) During sudden activity muscles develop cramps. Why?

(C) (i) Digestion takes place with the help of enzymes. [3]

(a) Gastric glands secrete mucus. Give reason.

(b) Why pancreas secrete pancreatic juice?

(c) Why are villi present, in the lining of the small intestine?

OR

(C) (i) Materials are transported in human by the circulatory system and in plants by vascular system. [3]

(a) Distinguish between Arteries and veins. Give one point.

(b) Plants have xylem. Give reason.

(c) Why blood has platelets?

Q. 2 (A) (i) Select the most correct alternative given below each Statement and write the completed statement - [1]

(a) Aluminium oxide is an amphoteric oxide because it shows._____.

- Acidic behaviour
- Basic behaviour
- Neither acidic nor basic behaviour
- Both acidic and basic behaviour

(b) Solder is on alloy of _____.

- Copper and Zinc
- Copper and Tin
- Lead and Tin
- Lead and Mercury

(ii) Give one term for **[1]**

(a) Tropism observed in growth of shoots in response to sunlight.

(b) The hormone which helps in the growth of stem.

(iii) Ionic compounds conduct electricity in molten state. Why? **[1]**

(iv) Use of Chlorofluorocarbon (CFC's) has been banned since 1987. Why? **[1]**

Q. 2 (B) Attempt the following and answer the question given below - **[2]**

(i) Study the given food chain -

Aquatic plant → small fish → big fish → Bird.

(a) Why is small fish, called a primary consumer?

(b) Food chain generally consists of four steps- Give reason.

(ii) Forest and wildlife are our important natural resources. **[2]**

(a) Name the stakeholders who use various forests produce like wood to make paper.

(b) Name the "biodiversity hot spots".

(c) What is meant by sustainable management?

(iii) Several steps are involved in extraction of metals from ores. **[2]**

(a) What is meant by "gangue"?

(b) What is calcination?

(C) (i) In animals, control and co-ordination is due to the central nervous system and peripheral nervous system. **[3]**

(a) Distinguish between central nervous system and peripheral nervous system. Give one point.

(b) Reflex arcs are evolved in animals. Why?

(c) Inside the bony box the brain is contained in a fluid filled balloon. Why?

Q. 3 (A) (i) Observe the Correlation in the first pair and carefully complete the second pair. **[1]**

(a) Spirogyra: Fragmentation:: Plasmodium:_____.

(b) Male reproductive part: Stamen:: Female reproductive part: _____

(ii) Name / Give a term for - **[1]**

(a) Compounds with identical molecular formula but different structures.

(b) The functional group of the formula $\overset{O}{\overset{||}{C}}-OH$

(iii) CH_4, C_2H_6, C_3H_8, C_4H_{10}, are called homologous series. Why? **[1]**

(iv) Atomic number of an element is 4. Write the - **[1]**

(a) Period to which it belongs

(b) Group to which it belongs

(v) Non-metal like Chlorine with atomic number (Z)=17 is electronegative. Why? **[1]**

(B) (i) Answer the following question. **[2]**

(a) Write the structural formula of Hexane.

(b) Give one point of distinction between alkanes and alkynes, with reference to bonding between carbon atoms.

(ii) (a) What are metalloids? [2]

(b) Write one limitation of Mendeleev's periodic table.

(C) (i) (a) Draw a neat diagram to show the germination of pollen on stigma, and label [4]

- Pollen tube
- Female germ cell

(b) Give one point of difference between self pollination and cross pollination.

(c) Mustard is called bisexual flower. Give reason.

OR

(C) (i) (a) Draw a neat diagram of human female reproductive system and label. [4]

- Oviduct
- Uterus.

(b) Reckless female foeticides must be stopped. Why?

(c) Fallopian tubes in females are blocked surgically. Why?

Q. 4 (A) (i) Observe the correlation in the first pair and carefully complete the second pair - [1]

(a) Tallness and round seed trait in peas : Dominant trait :: Short and wrinkled Seed trait in peas :_____.

(b) Selected for very short distance between the leaves : Cabbage :: selected for very large leaves :_____.

(ii) Name / give a term for. **[1]**

(a) Residue left when wood is burnt in limited supply of oxygen.

(b) A number of windmills erected over large area.

(iii) X and Y are Sex Chromosomes. **[1]**

(a) Which sex chromosome is contributed by the mother, for the birth of a girl child?

(b) Which sex chromosome is contributed by the father, for birth of a boy child?

(B) Answer the following - **[2]**

(i) Inbuilt tendency for variation during reproduction is the basis for evolution.

(a) What is Speciation? (explain with reference to beetles)

(b) What is meant by genetic drift?

(ii) Technologies developed to capture energy from natural resources have advantages and disadvantages. **[2]**

(a) Why is a Solar cooker fitted with a mirror?

(b) Why there was opposition, to the construction of Tehri dam, on river Ganga? (any 2 points).

(iii) A lemon kept in water in a glass tumbler appears to be bigger than its actual size. **[2]**

(a) Name the phenomenon due to which the lemon appears big?

(b) How will the ray of light bend, with respect to the normal, when it enters obliquely from

- Rarer to denser medium?
- Denser to rarer medium?

(c) In which medium clues the light travel faster? In air or glass?

(C) Attempt the following -

(i) Spherical Lenses can be concave and convex. **[4]**

(a) Draw a neat diagram to show the formation of an image when the odject is placed between F_1 and $2F_1$

(b) Give one point of difference between convex lens and concave lens.

(c) Find the focal length of the lens of power 2D.

OR

(C) (i) Spherical mirrors can be concave and convex. **[4]**

(a) Draw a neat diagram to show the formation of an image, when the object is placed beyond C of a concave mirror.

(b) Why is a convex mirror used as rear view mirror, in vehicles?

(c) The radius of curvature of a convex mirror is 40 meters. Find the focal length of the mirror.

Q. 5 (A) (i) Observe the correlation in the first pair and carefully complete the second pair - **[1]**

(a) S.I. unit of Current: Ampere:: S.I. unit of charge : _____

(b) Voltmeter: Parallel:: Ammeter :_____.

(ii) Name / give a term for. [1]

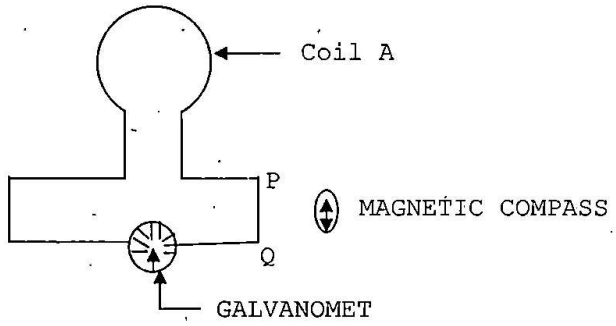
(a) Part of the eye that controls the size of the pupil.

(b) Splitting of light into its component colours.

(iii) What is a solenoid? [1]

(iv) We do not receive direct current [D.C] from power stations in our homes. Why? [1]

(B) (i) A coil A is connected to a galvanometer and a magnetic compass needle is kept below the wire PQ as shown in the figure. [2]



(a) How will you induce, a current in coil A?

(b) What will happen, if a magnetic compass needle is kept near, the wire PQ of the circuit, when the current is induced?

(C) (i) Nisha observed the following wonders in the late evening sky. [3]

(a) Planets do not twinkle. Why?

(b) Why are danger signal lights red in colour?

(c) Sun appears reddish at sunset. Why?

OR

(C) (i) The three common refractive defects of vision can be corrected by using suitable lenses. **[3]**

(a) Why Peter keeps the reading material beyond 25cm?

(b) Sheena uses concave lens of suitable power. Why?

(c) Fifty five year old Shekhar uses bifocal lenses. Why?

(D) (1) Attempt the following - **[4]**

(a) Draw the circuit diagram as described below. Connect three resistors R_1, R_2, R_3 in series and connect them with a battery, ammeter, and a plug key. Insert a Voltmeter across the resistors. Show the direction of flow of current.

(b) If the Resistance of $R_1 = 5\Omega$, $R_2 = 4\Omega$, $R_3 = 6\Omega$, find the total resistance in the above circuit.

(c) In the domestic electric circuit, the microwave, and refrigerator are always connected in parallel. Why?
