

2014-III 12

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Seat No.

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Time: 2½ Hours

SCIENCE (E)

Subject Code

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Total No. Of Questions: 5

(Printed Pages: 8)

Maximum Marks: 65

INSTRUCTIONS: (1) The question paper comprises of five questions of 13 marks each.

(2) All questions are compulsory.

(3) 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.

(4) Begin each question on a fresh page.

(5) Figures to the right indicate full marks.

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

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

- * Acidic behaviour.
- * Basic behaviour.
- * Both basic as well as acidic behaviour.
- * Neither acidic nor basic behaviour.

(b) Brass is an alloy of _____.

- * Copper and Zinc.
- * Copper and tin.
- * Lead and tin.
- * Lead and mercury.

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

- (a) The hormone which promotes cell division in fruits.
- (b) The tropism observed when pollen tube grows towards the ovules.

(iii) Ionic compounds do not conduct electricity in solid state. Why? [1]

(iv) Why is the flow of energy in a food chain said to be unidirectional? [1]

(B) (i) Study the given food chain and answer the questions given below it. [2]

Plants → Rat → Snake → Eagle

- (a) Why are plants called producers?
- (b) A food chain does not generally consist of more than four steps. Why?

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

- (a) Name the stakeholder which owns the land and controls forest resources.
- (b) Name the biodiversity hotspot.
- (c) What is meant by sustainable management?

(iii) Extraction of metals from their ores involves many steps. [2]

- (a) What is gangue?
- (b) What is roasting?

(C) (i) The nervous system helps in controlling and coordinating the activities of the body. [3]

- (a) Give one point of difference between central nervous system and peripheral nervous system.
- (b) Withdrawal of hand from a hot flame, is termed as reflex arc action. Why?
- (c) Why is the brain covered by a bony box?

Q.2 (A) (i) Observe the correlation in the first pair and complete the second pair. [1]

(a) Hydra: Budding:: Amoeba: _____

(b) Ovules : Seeds :: Ovary: _____

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

(a) The functional group having the formula -OH.

(b) Compounds having same molecular formula but different structures.

(iii) C_2H_4 , C_3H_6 , C_4H_8 are termed as a homologous series. Why? [1]

(iv) The atomic number of an element is 3. [1]

(a) Write the period to which it belongs.

(b) Write the group to which it belongs.

(v) A metal, such as Aluminium with atomic number 13 is said to be electropositive. Why? [1]

(B) (i) Answer the following questions: [2]

(a) Write the structural formula of Butane.

(b) Give one point of difference between alkanes and alkenes with reference to bonding between carbon atoms.

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

(b) Write one limitation of Dobereiners law of Triads.

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

* Pollen tube.

* Stigma.

(b) Give one point of difference between a unisexual flower and a bisexual flower.

(c) A papaya flower cannot be self pollinated. Why?

OR

- (C) (i) (a) Draw a neat diagram of the Human Female Reproductive system and label. [4]

* Ovary.

* Uterus.

- (b) Why should reckless female foeticide be stopped?

- (c) The vas deferens in males is blocked by surgery. Give a reason.

- Q.3 (A) (i) Observe the correlation in the first pair and complete the second pair. [1]

- (a) Tallness trait in peas in F1 generation: Dominant trait :: Shortness trait in peas in F1 generation: _____

- (b) Arrested flowers: Broccoli :: Sterile flowers: _____

- (ii) Name the following: [1]

- (a) The major constituent of biogas.

- (b) The expensive metal used for interconnection of cells in a solar panel.

- (iii) Genes inherited from the parents determines the sex of a child. [1]

- (a) Which sex chromosome is inherited by a girl child from her mother?

- (b) Which sex chromosome is inherited by a boy child from his father?

- (B) (i) Inbuilt tendency for variations during reproduction is the basis for evolution. [2]

- (a) What is speciation? (With reference to beetles)

- (b) What is genetic drift?

- (ii) As our demand for energy increases we should look for more sources of energy. [2]

- (a) Large scale use of nuclear energy is prohibitive. Give any two reasons.

- (b) The maintenance cost of wind energy farms is high. Give reason.

- (iii) The bottom of a water tank appears to be raised. [2]

- (a) Name the phenomenon due to which the bottom of a tank appears to be raised.

- (b) How does a 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 does light travel the fastest?

(C) (i) Attempt the following:

[4]

- (a) Draw a ray diagram to show the formation of an image when the object is placed beyond $2F_1$ of a convex lens.
- (b) Give one point of difference between a concave lens and a convex lens.
- (c) Find the focal length of a lens of power +4.0D.

OR

(C) (i) (a) Draw a neat diagram to show the formation of an image when the object is placed between 'C' and 'F' of a concave mirror. [4]

- (b) Why are convex mirrors used as rear view mirrors in vehicles?
- (c) The radius of curvature of a convex mirror is 28 metres. Find the focal length of the mirror.

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

- (a) Current: Ampere :: Potential difference: _____
- (b) Series connection: Ammeter :: Parallel connection: _____

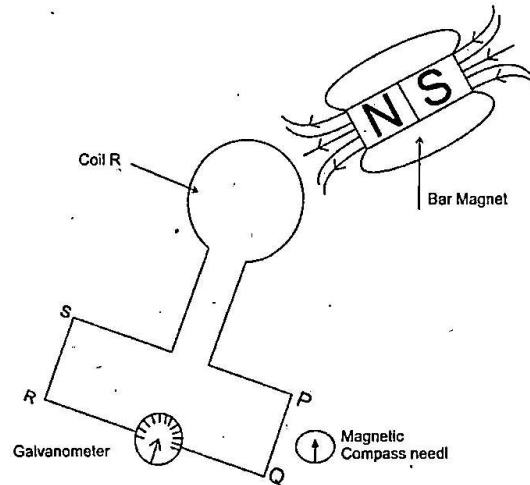
(ii) Name the following: [1]

- (a) The thin membrane through which light enters the eye.
- (b) The phenomenon of splitting of white light into its component colours.

(iii) What is a commutator? [1]

(iv) The metallic body of a microwave is connected to the earth wire. Why? [1]

- (B) (i) A coil 'R' is connected to a galvanometer as shown in the figure. The North Pole of a bar magnet is moved near the coil 'R' and a magnetic compass needle is kept near the wire PQ. [2]



- (a) Why is a deflection seen in the galvanometer, when the North Pole of a bar magnet is moved near the coil 'R'?
- (b) What will happen to the compass needle, kept near the wire PQ, when the magnet is moved near the coil 'R'?
- (C) (i) The twinkling of stars can be seen on a clear night. [3]
- (a) Why do stars appear to twinkle at night?
- (b) The sky appears dark, to astronauts at very high altitudes. Give reason.
- (c) The Sun appears reddish at sunrise. Why?

OR

- (C) (i) 15 years old Steffi, holds reading materials much beyond 25 cm for reading comfortably. [3]

- (a) Write two causes of the defect of vision, Steffi suffers from.
- (b) Why do people in the middle age suffer from Presbyopia?
- (c) Why are concave lenses prescribed for a certain defect of vision?

(D) (i) Attempt the following: [4]

- (a) Draw a circuit diagram as described below. Connect three resistors R_1 , R_2 and R_3 in series and connect them with a battery, an ammeter and a plug key. Insert a voltmeter across the resistors. Show the direction of the flow of current.
- (b) If the resistance of each resistor is 4Ω , 8Ω and 12Ω respectively. Find the total resistance in the above circuit.
- (c) In a domestic electric circuit, the fans and tube lights are always connected in parallel. Why?

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

- (a) Respiration which gives out heat is an example of _____.

- * An exothermic reaction.
- * An endothermic reaction.
- * A combination reaction.
- * A displacement reaction.

- (b) A reaction in which there is an exchange of ions between reactants is called a _____.

- * Combination reaction.
- * Decomposition reaction.
- * Displacement reaction.
- * Double displacement reaction.

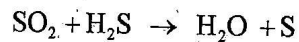
(ii) Name the following: [1]

- (a) The gas given out when an acid reacts with a metal.
- (b) The substance used by doctors as plaster to support fractured bones.

(iii) Differentiate between acids and bases with respect to formation of ions. [4]

(iv) What is the purpose of making urine? [1]

(B) (i) Study the given chemical equation and answer the question given below it. [2]



(a) Name the reactants in the chemical equation.

(b) Balance the above equation.

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

(ii) Answer the following: [2]

(a) Why does lime water turn milky when carbon dioxide is passed through it?

(b) Blue copper sulphate crystals turn white, on heating. Give reason.

(iii) Attempt the following: [2]

(a) Why do the walls of alveoli, contain an extensive network of blood vessels?

(b) Carbon dioxide is mostly transported in the dissolved form. Why?

(C) (i) The muscular walls of the stomach secrete digestive juices. [3]

(a) Why is hydrochloric acid secreted in the stomach?

(b) Gastric glands secrete mucus. Give reason.

(c) Why do herbivores need a longer small intestine?

OR

(C) (i) A proper transport system is essential in animals as well as plants. [3]

(a) Why do arteries have thick elastic walls?

(b) Platelets are present in blood. Why?

(c) Write one point of distinction between xylem and phloem.

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