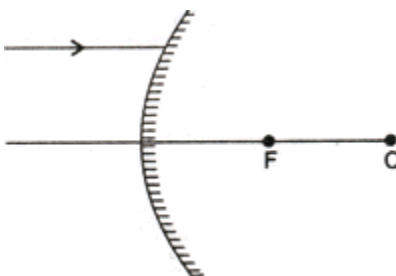


## SECTION A

**Q. 1.** A ray of light is incident on a convex mirror as shown on.



Redraw the diagram after completing the path of the light ray after reflection from the mirror. (1)

**Q. 2.** How can you show that the magnetic field produced by a given electric current in the wire decreases as the distance from the wire increases? (1)

**Q. 3.** Name the product other than water formed on burning of ethanol in air. (1)

**Q. 4.** Why does magnesium powder react much more rapidly than magnesium ribbon with dilute sulphuric acid? (1)

**Q. 5.** Name the type of nuclear reaction by which the Sun produces its energy. List two conditions which are present at the center of the sun responsible for this reaction.

**Q. 6.** Given below are the pH values of four different liquids:

7.0, 14.0, 4.0, 2.0

Which of these could be that of:

- i. lemon juice,
- ii. distilled water,
- iii. 1 M sodium hydroxide solution,
- iv. tomato juice? (2)

**Q. 7.** An object is placed at a distance of 12cm in front of a concave mirror. It forms a real image four times larger than the object. Calculate the distance of the image from the mirror. (2)

**Q. 8.**

- i. Draw a diagram to show how two resistors  $R_1$  and  $R_2$  are connected in series.
- ii. In a circuit if the two resistors of 5 ohm and 10 ohm are connected in series, how does the current passing through the two resistors compare? (2)

Or

A bulb is rated at 5.0 volt, 100 mA. Calculate its

- i. power and
- ii. resistance.

**Q. 9.**

- i. How is methanal obtained from methanol?
- ii. Write the chemical equation of the reaction involved in the preparation of methanal from methanol
- iii. Mention one use of an aqueous solution of methanal in the biology laboratory. (3)

Or

Complete the following reaction equations:

- i.  $\text{CH}_3\text{CH}_2\text{OH}$
- ii.  $\text{HCHO} + \text{H}_2$
- iii.  $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH}$

**Q. 10.**

- i. Name the four gases commonly present in biogas.
- ii. List two advantages of using biogas over fossil fuels. (3)

**Q. 11.**

- i. Name the raw materials used in the manufacture of sodium carbonate by Solvay process.
- ii. How is the sodium hydrogen carbonate formed during Solvay process separated from a mixture of  $\text{NH}_4\text{Cl}$  and  $\text{NaHCO}_3$ ?
- iii. How is sodium carbonate obtained from sodium hydrogen carbonate? (3)

**Q. 12.**

- a. What is the action on litmus of:
  - i. Dry ammonia gas

- ii. Solution of ammonia gas in water.
- b. State the observations you would make on adding ammonium hydroxide to aqueous solutions of:
  - i. Ferrous sulphate
  - ii. Aluminium chloride.

**Or**

Explain the following terms by giving one example of each: (3)

- i. Mineral
- ii. Ore
- iii. Gangue.

**Q. 13.** What is a nuclear reactor? State one function each of

- i. coolant and
- ii. moderator in a nuclear reactor. (3)

**Q. 14.** Distinguish between natural and artificial satellites.

To launch an artificial satellite in an orbit around the Earth what is the minimum:

- i. Horizontal velocity required for the push?
- ii. Height to lift the satellite from the ground? (3)

**Q. 15.**

- a. What is an electromagnet? What does it consist of?
- b. Name one material in each case which is used to make a
  - i. Permanent magnet
  - ii. Temporary magnet.
- c. Describe an activity to show how you can make an electromagnet in your school laboratory. (5)

**Q. 16.** What is an alloy? How is an alloy made? List two purposes of making alloys. Mention the constituents and two properties of each of the following alloys: (5)

- i. Stainless steel
- ii. Brass.

## **SECTION - B**

**Q. 17.** Write the expanded form of AIDS. (1)

**Q. 18.** Name the type of fission carried out by Amoeba. (1)

**Q. 19.** “Rapid increase of population disturbs the biotic environment” Justify this statement taking any two aspects. (2)

**Q. 20.** Differentiate between tropic and nastic movements in plants. Give one example of each. (2)

**Q. 21.** Write the functions of the following in the digestive process: (3)

- i. Bile
- ii. Bicarbonate secreted by the duodenal wall
- iii. Pancreatic amylase.

**Q. 22.** Give reasons for the following: (3)

- i. The glottis is guarded by epiglottis.
- ii. The lung alveoli are covered with blood capillaries.
- iii. The wall of trachea is supported by cartilage rings.

**Q. 23.** Who proposed the “Theory of Natural Selection”? Explain this theory briefly. (3)

**Q. 24.**

a. Draw a diagram of the human urinary system and label in it:

- i. Kidney
- ii. Ureter
- iii. Urinary bladder
- iv. Urethra.

b. Name the two major components of normal human urine. (5)

**Or**

a. Name the blood groups under ABO system.

b. Differentiate between universal donor and universal recipient under this system.

(5)