

Self Assessment Paper

SECTION A

1. Why are magnetic field lines more crowded towards the pole of a magnet ? 1

OR

State the conclusions that can be drawn from the observation that a current carrying wire deflects a magnetic needle placed near it.

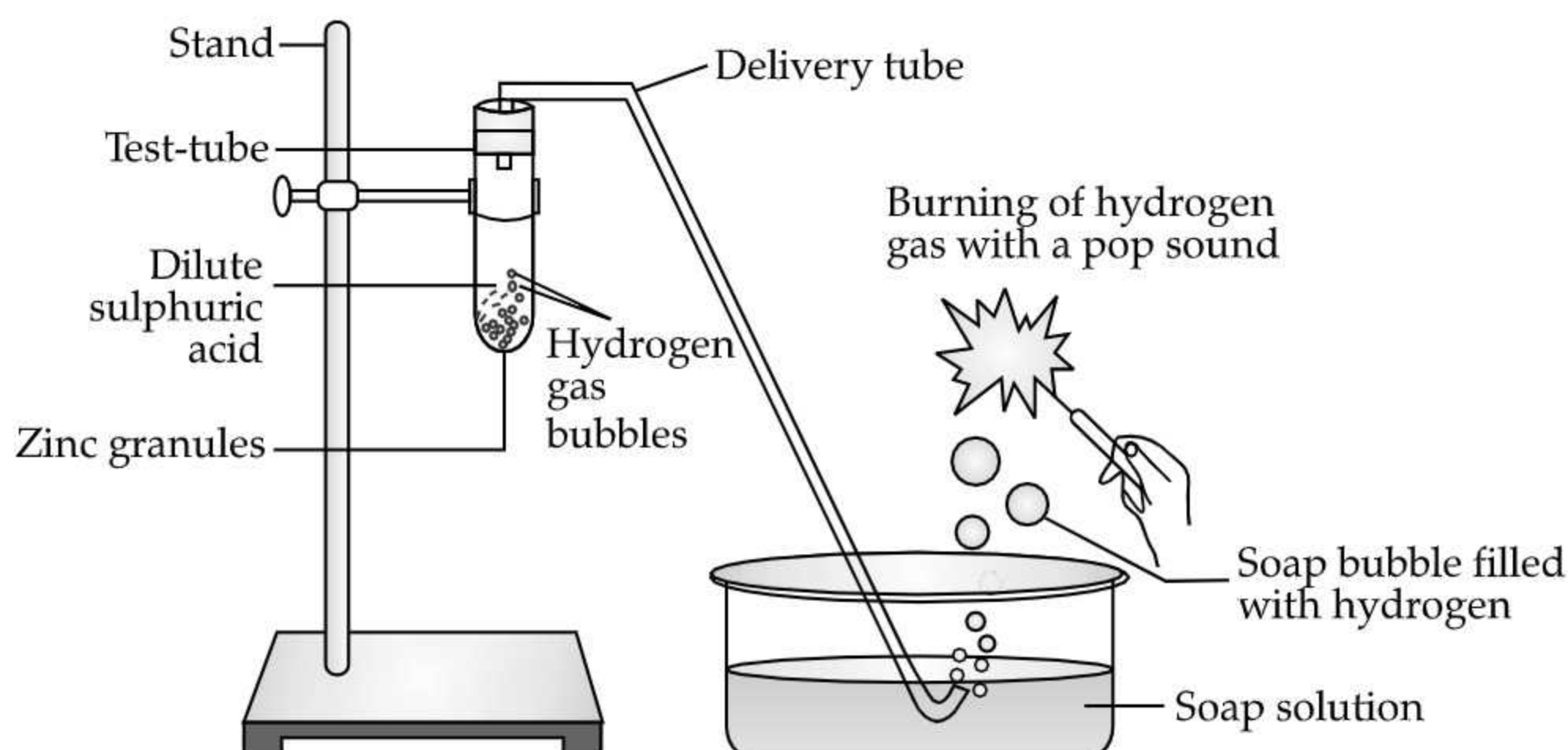
2. Why is forest considered as a natural ecosystem ? 1
3. Answer question numbers 3(a) - 3(d) on the basis of your understanding of the following paragraph and the related studied concepts.

Oxygen-rich blood from the lungs comes to the thin-walled upper chamber of the heart on the left. The left upper chamber (A) then relaxes. It then contracts and the blood is allowed to enter the next chamber (B), as it expands. When the muscular left lower chamber of heart contracts, the blood is pumped out to the body via aorta.

Deoxygenated blood reaches from the body to the upper chamber on the right side of heart (C) and it expands. As this part contracts, the corresponding lower chamber (D) dilates. This transfers the blood to right ventricle, which in turn pumps it to the lungs for oxygenation. 4

- (a) What does A, B, C and D represents in the above passage.
- (b) Which chambers of human heart contain oxygenated blood?
 (i) A and B (ii) A and C
 (iii) C and B (iv) C and D
- (c) What is the correct route of blood in a human?
 (i) A → B → Lungs → C → D
 (ii) A → B → D → C → Lungs
 (iii) C → D → B → A → Lungs
 (iv) C → D → Lungs → A → B
- (d) Valves prevent the backflow of blood inside the heart during relaxation. (True or False)

4. Study the given experimental set-up and answer the following questions.



- (a) The above experimental set up shows reaction between metal and
 (i) Acid (ii) Metal carbonate
 (iii) Metal hydrogen carbonate (iv) Metal oxide
- (b) Which gas is liberated during the process?
 (i) Hydrogen gas (ii) Carbon dioxide gas
 (iii) Nitrogen gas (iv) Hydrogen sulphide gas

- (c) Write a balanced chemical equation for the given reaction.
- (d) What will happen if NaOH is used in place of dil sulphuric acid and the test tube is heated. 4
5. Which of the following metals are obtained by electrolysis of their chlorides in molten state? 1
- (i) Na (ii) Ca
 (iii) Fe (iv) Cu
- (a) (i) and (iv) (b) (iii) and (iv)
 (c) (i) and (iii) (d) (i) and (ii)
6. In the soap micelles : 1
- (a) the ionic end of soap is on the surface of the cluster while the carbon chain is in the interior of the cluster.
 (b) ionic end of soap is in the interior of the cluster and the carbon chain is out of the cluster.
 (c) both ionic end and carbon chain are in the interior of the cluster.
 (d) both ionic end and carbon chain are on the exterior of the cluster.

OR

- Which of the following elements would lose an electron easily ? 1
- (a) Mg (b) Na
 (c) K (d) Ca
7. Which of the following statements are true for flowers? 1
- (i) Flowers are always bisexual.
 (ii) They are the sexual reproductive organs.
 (iii) They are produced in all groups of plants.
 (iv) After fertilization, they give rise to fruits.
- (a) (i) and (iv) (b) (ii) and (iii)
 (c) (i) and (iii) (d) (ii) and (iv)
8. The maleness of a child is determined by 1
- (a) the X chromosome in the zygote.
 (b) the Y chromosome in zygote.
 (c) the cytoplasm of germ cell which determines the sex.
 (d) sex is determined by chance.
9. A student obtains a blurred image of a distant object on a screen using a convex lens. To obtain a distinct image on the screen, he should move the lens 1
- (a) away from the screen.
 (b) towards the screen.
 (c) to a position very far away from the screen.
 (d) either towards or away from the screen depending upon the position of the object.
10. Which of the following ray diagrams is correct for the ray of light incident on a concave mirror as shown in figure ? 1

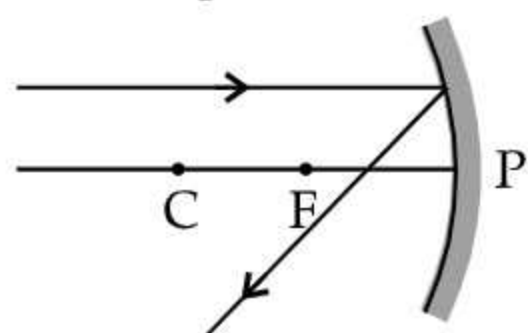


Fig. A

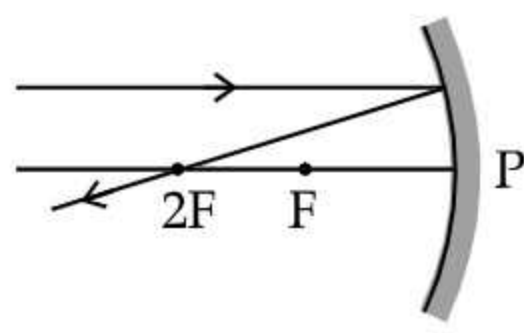


Fig. B

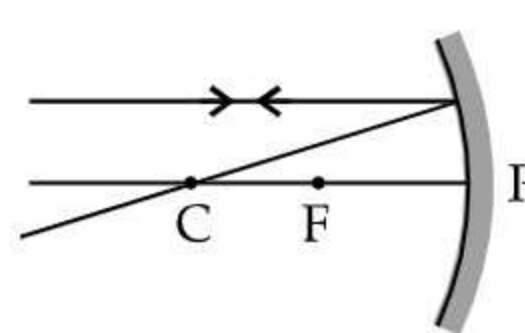


Fig. C

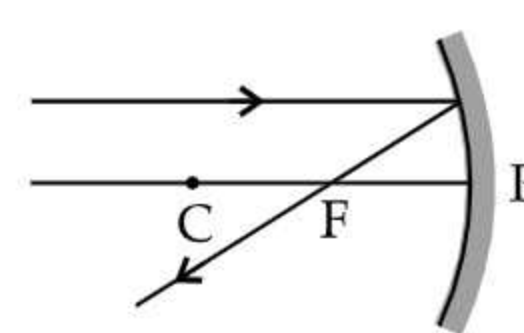


Fig. D

- (a) Fig. A (b) Fig. B
 (c) Fig. C (d) Fig. D

11. The clear sky appears blue because : 1
- (a) blue light gets absorbed in the atmosphere.
 - (b) ultraviolet radiations are absorbed in the atmosphere.
 - (c) violet and blue lights get scattered more than lights of all other colours by the atmosphere.
 - (d) light of all other colours is scattered more than the violet and blue colour lights by the atmosphere.

12. Choose the incorrect statement : 1
- (a) Fleming's right-hand rule is a simple rule to know the direction of induced current.
 - (b) The right-hand thumb rule is used to find the direction of magnetic fields due to current-carrying conductors.
 - (c) The difference between the direct and alternating currents is that the direct current always flows in one direction, whereas the alternating current reverses its direction periodically.
 - (d) In India, the AC changes direction after every $1/50$ second.

For question numbers 13 and 14, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below :

- (i) Both A and R are true and R is correct explanation of the assertion.
 - (ii) Both A and R are true but R is not the correct explanation of the assertion.
 - (iii) A is true but R is false.
 - (iv) A is false but R is true.
13. **Assertion (A)** : Digestion breaks large complex molecules to simple smaller molecules which can be easily absorbed. 1
- Reason (R)** : Digestion is necessary for the absorption of all molecules.

OR

Assertion (A) : Mendel chose a number of varieties of garden pea as plant material for his experiments.

Reason (R) : Garden pea has well defined characters and was bisexual.

14. **Assertion (A)** : Magnification of the lens is the ratio of the size of the image to that of the object. 1
- Reason (R)** : Magnification (m) for concave lens is always negative.

SECTION B

15. During the reaction of some metals with dilute hydrochloric acid, the following observations were made by a student : 3
- (a) Silver does not show any change.
 - (b) Some bubbles of a gas are seen when lead is reacted with the acid.
 - (c) The reaction of sodium is found to be highly explosive.
 - (d) The temperature of the reaction mixture rises when aluminium is added to the acid.

Explain these observations giving appropriate reason.

16. On heating blue coloured powder of copper (II) nitrate in a boiling tube, black copper oxide, O_2 and a brown gas X is formed. 3
- (a) Identify the type of reaction and the gas X.
 - (b) Write balanced chemical equation of the reaction.
 - (c) Write the pH range of aqueous solution of the gas X.

OR

AI What is cinnabar ? How is a metal extracted from cinnabar ? Explain briefly.

- AI** 17. Na, Mg and Al are the elements of the 3rd period of the Modern Periodic Table having group number 1, 2 and 13 respectively. Which one of these elements has the (a) highest valency, (b) largest atomic radius, and (c) maximum chemical reactivity ? Justify your answer stating the reason for each. 3

AI 18. What is carpel ? Write the function of its various parts. 3

19. What is transpiration ? List its two functions. 3

OR

AI (a) What is translocation ? Why is it essential for plants ?

(b) Where do the substances in plants reach as a result of translocation ?

AI 20. An object is placed perpendicular to the principal axis of a convex lens of focal length 8 cm. The distance of the object from the lens is 12 cm. Find the position and nature of the image. 3

OR

How does refraction of light take place in the atmosphere ? Explain the reason why stars appear to twinkle and the planets do not twinkle.

21. A bulb is rated at 200V – 40W. What is its resistance ? If 5 such bulbs are lighted for 5 hours. Calculate the electrical energy consumed ? Find the cost if the rate is 5.10 per kWh. 3

22. Write the three ways to produce magnetic field. 3

23. List three environmental consequences of using fossil fuels. Suggest three steps to minimise the pollution caused by various energy sources. 3

AI 24. Define a food chain. Design a terrestrial food chain of four trophic levels. If a pollutant enters at the producer level, the organisms of which trophic level will have the maximum concentration of the pollutant in their bodies? What is this phenomenon called? 3

SECTION C

AI 25. A carbon compound 'P' on heating with excess conc. H_2SO_4 forms another carbon compound 'Q' which on addition of hydrogen in the presence of nickel catalyst forms a saturated carbon compound 'R'. One molecule of 'R' on combustion forms two molecules of carbon dioxide and three molecules of water. Identify P, Q and R and write chemical equations for the reactions involved. 5

OR

Soaps and detergents are both types of salts. State the difference between the two. Write the mechanism of the cleansing action of soaps. Why do soaps not form lather (foam) with hard water ? Mention any two problems that arise due to the use of detergents instead of soaps.

26. Write the chemical name and formula of common salt. List two main sources of common salt in nature. Write any three uses of common salt. How is it connected to our struggle for freedom ? 5

27. (a) What is pollination ? Give its two types. 5

(b) Draw a longitudinal section of female reproductive part of a flower showing germination of pollen grain. Label on it the following :

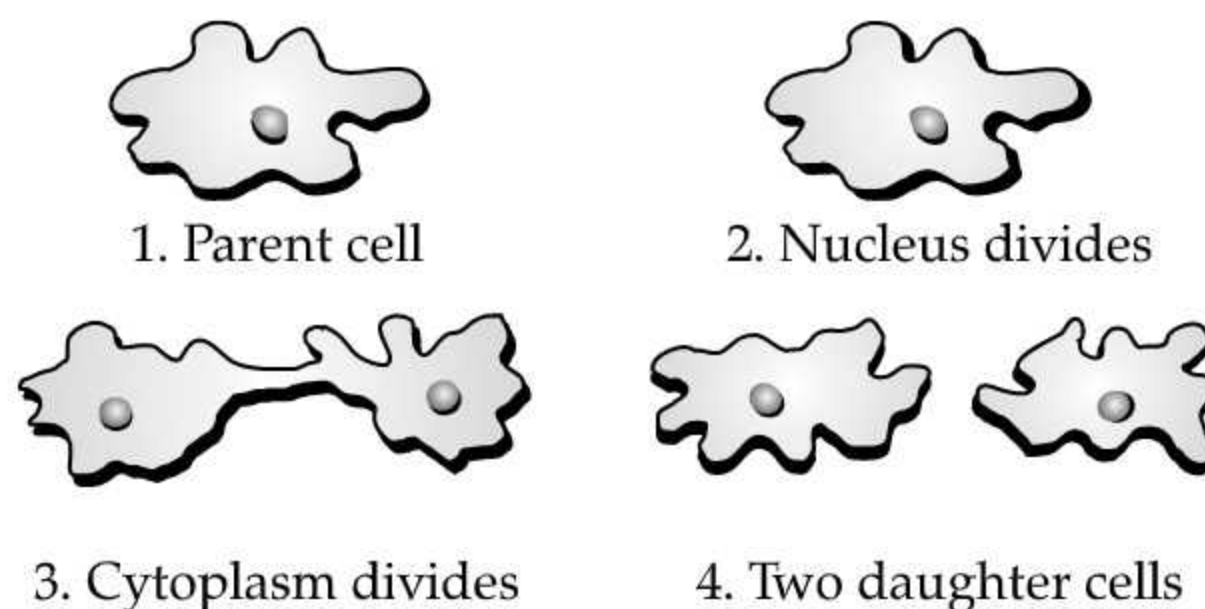
(i) Stigma;

(ii) Pollen tube with a male germ cell;

(iii) Female germ cell.

OR

(i) Identify the process depicted in the picture given below :



(a) Name the organism that divides by the above process.

(b) Compare the above process with multiple fission.

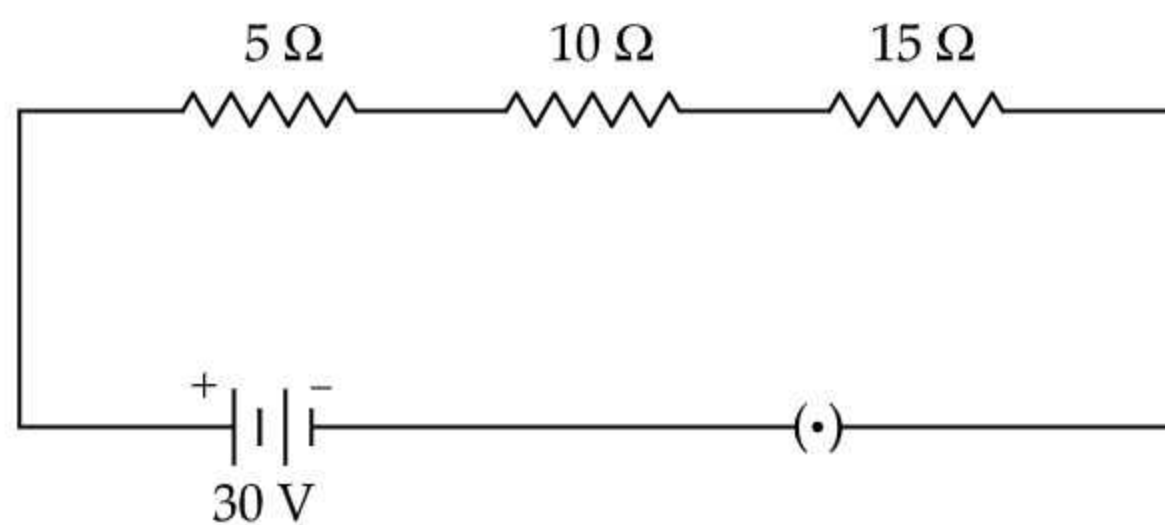
(c) State the type of reproduction in the above process and define it.

(ii) Differentiate between fission in *Amoeba* and *Leishmania*.

28. What are plant hormones ? Give four different types of plant hormones and state their functions briefly. 5

AI 29. (a) How will you infer with the help of an experiment that the same current flows through every part of a circuit containing three resistors in series connected to a battery ?

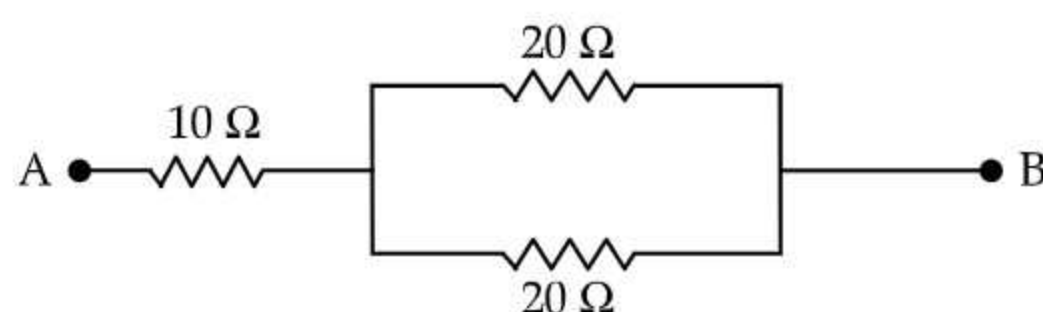
(b) Consider the given circuit and find the current flowing in the circuit and potential difference across the $15\ \Omega$ resistor when the circuit is closed. 5



OR

(a) Three resistors R_1 , R_2 and R_3 are connected in parallel and the combination is connected to a battery, ammeter, voltmeter and key. Draw suitable circuit diagram and obtain an expression for the equivalent resistance of the combination of the resistors.

(b) Calculate the equivalent resistance of the following network :



AI 30. (a) What is scattering of light ? Explain how the colour of the scattered light depends on the size of the scattering particles.

(b) Explain the reddish appearance of the Sun at sunrise or sunset. Why does it not appear red at noon ? 5