

SAMPLE PAPER**TIME : 3 HRS.****MAX. MARKS : 80****GENERAL INSTRUCTIONS :**

1. The question paper comprises four Sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.
2. Section A: Qns. 1 to 20 all questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion-reason type questions. Answers to these should be given in one word or one sentence.
3. Section B: Qns. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should in the range of 30 to 50 words.
4. Section C: Qns. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should in the range of 50 to 80 words.
5. Section D: Qns. 34 to 36 are long answer type question carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.
6. There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions
7. Wherever necessary, neat and properly labelled diagrams should be drawn.

SECTION-A

1. Write chemical equation for the reactions taking place when, iron oxide is heated with aluminium powder.
2. Which of the following is a physical change freezing of water or rusting of iron?
3. Which of the following element is not a non-metal?
(1) Carbon (2) Magnesium (3) Sulphur (4) Iodine
4. A lens has a focal length of -50 cm. What type of lens is it?

OR

To a cat on the bank of a lake, where will a fish appear to be in respect to its actual position in water?

5. What is the minimum resistance which can be made using five resistors each of $\frac{1}{5}\Omega$?
6. Which rule gives the direction of force acting on a current-carrying conductor kept in a magnetic field?
7. Which type of mirror is used by dentist?
8. Which phenomena is responsible for twinkling of stars?

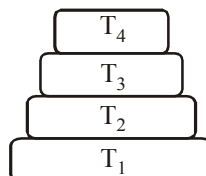
OR

At noon, why does the sun appear white?

9. Name the main excretory product and excretory organ of cockroach.

10. What do you mean by abiotic components of an ecosystem? Give two examples.
11. Name the respiratory pigment in human beings. Where is this pigment found?
12. List any four characters of garden pea plant studied by Mendel.
13. In the given figure the various trophic levels are shown in a pyramid. At which trophic level is maximum energy available ?

- (1) T₄
- (2) T₂
- (3) T₁
- (4) T₃



Directions : Assertion-Reason Type Questions (Q. Nos. 14-16)

In each of the following questions, a statement of Assertion is given by the corresponding statement of Reason. Of the statements, mark the correct answer as :

- (1) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - (2) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
 - (3) If Assertion is true, but Reason is false.
 - (4) If Assertion is false, but Reason is true.
14. **Assertion (A) :** Gas bubbles are observed when sodium carbonate is added to dilute hydrochloric acid.
Reason (R) : Carbon dioxide is given off in the reaction.
 15. **Assertion :** Placenta is connected to the foetus by an umbilical cord.
Reason : Uterus is the site of implantation in human body.

OR

- Assertion :** The zygote developed from sexual reproduction is diploid.
Reason : In sexual reproduction, haploid gametes fuse and form zygote.
16. **Assertion :** Ammeter is connected in series with the device through which current is to be measured.
Reason : The ammeter has very small resistance, so that it has very little effect on the current being measured.

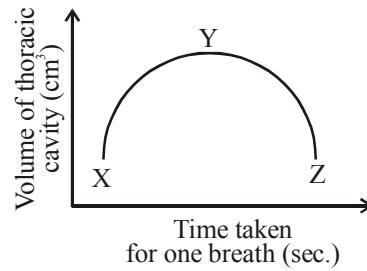
Directions : Q. Nos. 17-20 contain five sub-parts each. You are expected to answer any four sub parts in these questions.

17. **Read the following passage. Answer any four questions from 17 (a) to 17 (e).**

The stage of respiration during which air is inhaled into the lungs through the mouth or nose due to muscle contraction and then exhaled due to muscle relaxation is called breathing. Inhalation is intake of fresh air from outside into the alveoli of the lungs. The mechanism of breathing out of carbon dioxide is called exhalation.

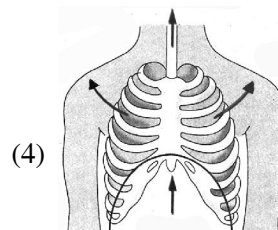
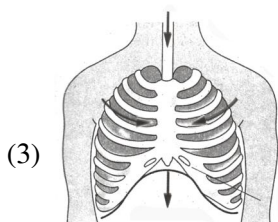
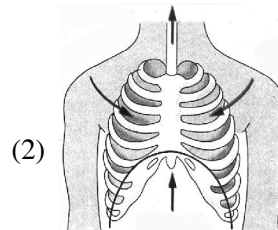
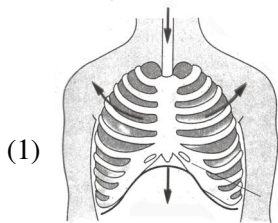
- (a) The breathing movements of the lungs in mammals are governed by
 - (1) muscular walls of lung
 - (2) diaphragm
 - (3) intercostal muscles
 - (4) both (2) and (3)

- (b) The given graph shows changes in the volume of thoracic cavity in a normal human being while breathing.



Select the correct option regarding this.

- (1) From X to Y pressure in lungs increases whereas from Y to Z pressure in lungs decreases.
 - (2) From X to Y ribs move upward and outward whereas from Y to Z ribs move downward and inward.
 - (3) At point Y diaphragm is dome shaped whereas at points X and Z it is flat.
 - (4) X to Y represents exhalation and Y to Z represents inhalation.
- (c) Diaphragm is a thin muscular membrane that separates abdominal cavity from thoracic cavity. When diaphragm of man is completely dome shaped it shows _____
- (1) End of expiration and beginning of inspiration
 - (2) Beginning of expiration and end of inspiration
 - (3) Increased rate of breathing
 - (4) Decreased rate of breathing
- (d) When we breathe in, we inhale many gases, including oxygen. What happens to the gases that the body can't use ?
- (1) They are exhaled.
 - (2) They are changed into oxygen by the lungs.
 - (3) They circulate through the body and are disposed off later.
 - (4) They are absorbed into the digestive system and used to create energy.
- (e) Which figure illustrates the process of inhalation?



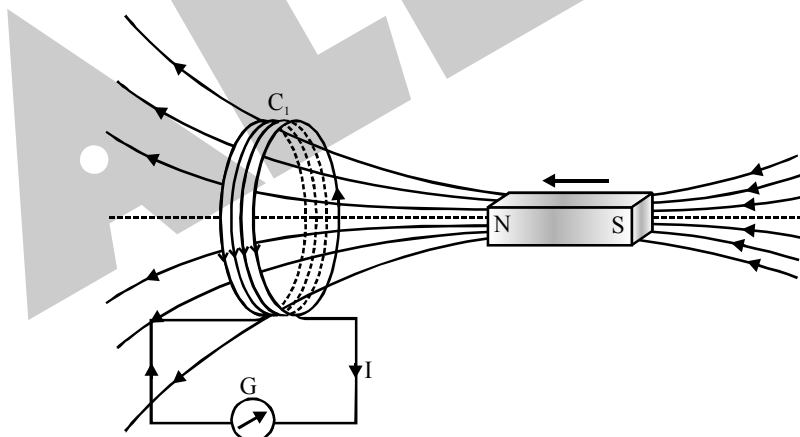
18. Read the following passage. Answer any four questions from 18 (a) to 18 (e).

The phenomenon of existence of an element in two or more forms which have different physical properties but identical chemical properties is called as Allotropy. The different forms are called allotropes. Carbon forms three crystalline allotropes which are Diamond, Graphite and Fullerene.

- (a) What is the atomic symbol of diamond?
 (1) S (2) D (3) I (4) C
- (b) Which of the following substances is used in pencil leads?
 (1) Diamond (2) Graphite (3) Coal (4) Coke
- (c) Which of the following is not an use of diamond?
 (1) In jewellery (2) As a dry lubricant
 (3) In cutting glass (4) In heat sensitive thermometers
- (d) Why graphite is used for making electrodes for cells?
 (1) It is transparent (2) It is colourless
 (3) It is opaque (4) It is a good conductor of electricity
- (e) Which of the following has tetrahedral arrangement of atoms in its structure?
 (1) Diamond (2) Graphite (3) Fullerene (4) All

19. Read the following passage. Answer any four questions from 19 (a) to 19 (e).

Figure shows a coil C_1 connected to a galvanometer G. When the North-pole of a bar magnet is pushed towards the coil, the pointer in the galvanometer deflects, indicating the presence of electric current in the coil. The deflection lasts as long as the bar magnet is in motion. The galvanometer does not show any deflection when the magnet is held stationary.



When the magnet is pulled away from the coil, the galvanometer shows deflection in the opposite direction, which indicates reversal of current's direction. Moreover, when the South-pole of the bar magnet is moved towards or away from the coil, the deflection in the galvanometer are opposite to that observed with the North-pole for similar movements. Further, the deflection (and hence current) is found to be larger when the magnet is pushed towards or pulled away from the coil faster. It shows that it is the relative motion between the magnet and the coil that is responsible for generation (induction) of electric current in the coil.

It is clear from the above experiment that when magnetic flux changes through a coil, a current is induced in the coil. Quicker the relative motion between the magnet and the coil, greater is the rate of change of magnetic flux through the coil and larger is the current induced in it. This is the elementary idea of electromagnetic induction.

- (a) Which of the following gives the direction of the induced current in a conductor?
- (1) Ampere's law (2) Ohm's law
 (3) Fleming's right hand rule (4) Fleming's left hand rule
- (b) If the bar magnet is held fixed and coil C_1 is moved towards or away from the magnet, then
- (1) induced current will not be produced
 (2) induced current will be produced
 (3) induced current will only be produced if a battery is attached near galvanometer
 (4) data insufficient
- (c) If the coil C_1 has an open loop structure instead of closed loop, the induced current will
- (1) be produced during relative motion between coil and magnet.
 (2) not be produced during relative motion between coil and magnet.
 (3) the galvanometer will show deflection.
 (4) none of these.
- (d) If the magnet is pushed or pulled slowly away from the coil
- (1) there will be no deflection in galvanometer.
 (2) there will be small deflection in galvanometer.
 (3) there will be large deflection in galvanometer.
 (4) none of these
- (e) The galvanometer _____ in circuit.
- (1) detects the presence of current (2) detects the voltage
 (3) detects the amount of current (4) none of these

20. Read the following passage. Answer any four questions from 20 (a) to 20 (e).

Renu adjusts a mirror in her hand to obtain a clear but smaller image of a candle flame on a white screen placed in front of the mirror.

Raman, a friend of Renu conducts an experiment using Renu's mirror and obtains the image of very distant object clearly when screen is placed at 5 cm in front of the this mirror.

- (a) What type of mirror has Renu used ?
- (1) Plane (2) Concave (3) Convex (4) Plane or concave
- (b) What type of image of the candle flame is obtained on the screen ?
- (1) Real and erect (2) Virtual and erect
 (3) Real and inverted (4) Virtual and inverted
- (c) If Renu covers the upper half of the mirror's reflecting surface with a black paper, what will happen?
- (1) Image will disappear
 (2) Only half the image is formed
 (3) Whole image is formed but with less brightness
 (4) Whole image is formed but with more brightness
- (d) Radius of curvature of the mirror is
- (1) 25 cm (2) 5 cm (3) 10 cm (4) 15cm
- (e) If another object is placed at 3 cm from the mirror, the image distance is
- (1) - 7.5 cm (2) - 5cm (3) +5 cm (4) +7.5 cm

SECTION-B

21. (a) Give the chemical names of acids present in
 (i) Ants (ii) Lemon (iii) Milk (iv) Tomato
 (b) Write the chemical names of two salts belonging to sodium family.

OR

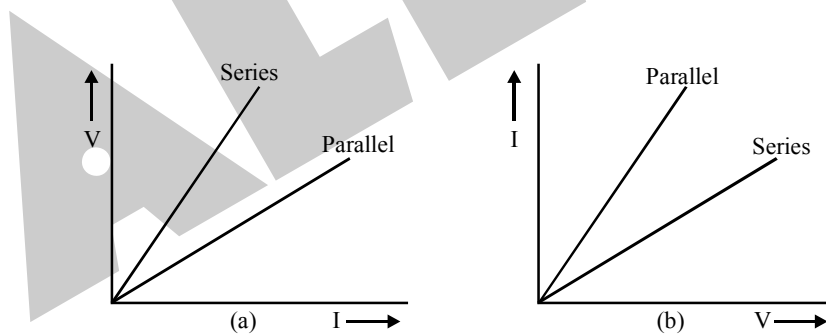
A dry pellet of a common base B when kept in open absorbs moisture and turns sticky. The compound is also a by-product of chlor-alkali process.

- (i) Identify B.
 (ii) What type of reaction occurs when B is treated with an acidic oxide?
 (iii) Write a balanced chemical equation for one such solution.
22. 2 g of silver chloride is taken in a china dish and the china dish is placed in sunlight for sometime. What will be your observation in this case? Write the chemical reaction involved in the form of a balanced chemical equation. Identify the type of chemical reaction.
23. Give any two function of lymph.

OR

Give any two function of blood.

24. What is fertilisation ? Where does it occur in a human female ?
 25. Explain the phenomena of advanced sunrise and delayed sunset.
 26. Two students perform the experiment on series and parallel combinations of two given resistors R_1 and R_2 and plot the following V-I graphs (a) and (b).



Which of the graphs is (are) correctly labelled in terms of the words 'series' and 'parallel'? Justify your answer.

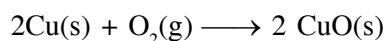
SECTION-C

27. (a) What is homologous series?
 (b) What is isomerism. How many isomers of pentane (C_5H_{12}) exists?
 (c) How many electrons are shared by each atom if they form triple bond with each other.

OR

What do you mean by double displacement reaction. Give two examples with balanced chemical equation?

28. In the reaction,



Identify

- (a) The substance oxidized
 - (b) The substance reduced
 - (c) Oxidant
29. (a) To which group of the periodic table alkali metals belong.
- (b) Magnesium is an element with atomic number 12.
- (i) Is it a metal or non-metal.
 - (ii) Will its size be more or less than that of sodium.

30. Explain with the help of flow chart - "What determines the sex of a child genetically"?

31. How can we help in reducing the problem of waste disposal ? Suggest any three methods.

OR

Define an ecosystem. Draw a block diagram to show the flow of energy in an ecosystem.

32. (a) Draw the diagram of cross section of a leaf and label the following parts:
- (i) chloroplast
 - (ii) cuticle
- (b) In certain group of plants, stomata remains closed during day. How is food synthesised by such plants?
33. Two lamps, one rated at 40W - 220 V and the other 60 W - 220 V, are connected in parallel to the electric supply at 220 V.
- (i) Draw a circuit diagram to show the connections.
 - (ii) Calculate the current drawn from the electric supply source.
 - (iii) Calculate the total energy consumed by the two lamps together when they operate for one hour.

OR

Why do different colours get separated when a white light passes through a prism? How did Newton show that white light of sun contains seven colours using two identical glass prisms?

Draw a ray diagram to show the path of light when two identical glass prisms are arranged together in inverted position with respect to each other and a narrow beam of white light is allowed to fall obliquely on one of the prisms.

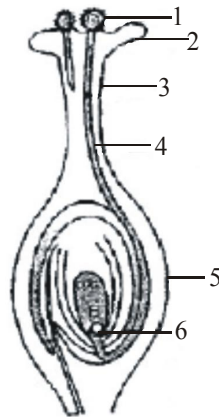
SECTION-D

34. (a) Explain the formation of Magnesium Fluoride (MgF_2) by transfer of electrons.
- (b) Give two properties of ionic compounds.

OR

- (a) Give the reaction of formation of bleaching powder.
- (b) Give three uses of bleaching powder.

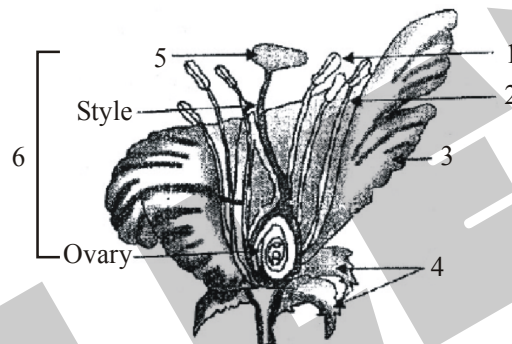
35. (a) In the given figure name the parts marked 1 to 6 :-



- (b) Differentiate between Pollination and Fertilization.

OR

- (a) In the given figure name the parts marked 1 to 6 :-



- (b) Differentiate between self pollination and cross pollination.

36. (i) Draw a ray diagram to show the formation of image by a convex lens when an object is placed in front of the lens between its optical centre and principal focus.
- (ii) In the ray diagram mark the object distance u and the image distance v with their proper signs (+ve or -ve as per the new cartesian sign convention) and state how these distances are related to the focal length f of the convex lens in this case.
- (iii) Find the power of convex lens which forms a real and inverted image of magnification -1 of an object placed at a distance of 20 cm from its optical centre.