# Sample Paper 26

## Class X 2026-27

## Science (086)

**Time: 3 Hours** **Max. Marks: 80**

**General Instructions:**

1. This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.
2. All questions are compulsory. However, an internal choice is provided in some-questions. A student is expected to attempt only one of these questions.

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# SECTION-A

**1.** An artificial kidney (dialyser) cleans the blood of patients with kidney failure. The process works on the principle of:
(a) Diffusion of solutes across a selectively permeable membrane.
(b) Active transport of waste products using ATP.
(c) Phagocytosis of waste particles by the machine.
(d) Transpiration pull created by the dialysing fluid.

**2.** What is the primary function of the dendrites in a neuron?
(a) To acquire or receive information.
(b) To transmit the nerve impulse over long distances.
(c) To form a protective insulating layer.
(d) To release chemical messengers.

**3.** A potato tuber has several "eyes" on its surface from which new plants can grow. These "eyes" are actually:
(a) Roots
(b) Flowers
(c) Seeds
(d) Buds

**4.** The offspring formed as a result of sexual reproduction exhibit more variations because:
(a) The process of development is very slow.
(b) The genetic material is contributed by two different parents.
(c) The gametes from the two parents are identical.
(d) The genetic material comes from only one parent.

**5.** Which of the following groups contains only biodegradable items?
(a) Grass, flowers, and plastic
(b) Vegetable peels, cow dung, and wood
(c) Fruit peels, aluminum foil, and cake
(d) PVC, grass, and leather

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**6.** Consider the following statements about the basic concepts of heredity :
(i) Heredity is the process of passing traits from parents to offspring.
(ii) A gene is a segment of DNA that holds the instructions for a specific protein.
(iii) Alleles are the different forms or versions of a single gene.
(iv) An organism's phenotype is determined solely by its genotype, regardless of the environment.
Which of the above statements are correct?
(a) (i) and (iv) only
(b) (i), (ii), and (iii)
(c) (ii) and (iv) only
(d) All are correct.

**7.** Which of the following organs is NOT a part of the human excretory system?
(a) Kidneys
(b) Ureters
(c) Uterus
(d) Urinary Bladder

**8.** **Assertion (A) :** The folding of leaves in a 'touch-me-not' plant upon being touched is a nastic movement.
**Reason (R) :** Nastic movements are directional movements that depend on the direction of the stimulus.
(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

**9.** **Assertion (A) :** In any food chain, the amount of energy available at each successive trophic level decreases.
**Reason (R) :** According to the 10% law, only about 10% of the energy from one trophic level is passed on to the next.
(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

**10.** The small intestine is considered the site of complete digestion. Justify this statement by naming the secretions it receives for this purpose.

**11.** Student to attempt either option A or B.
A. What is lymph? State any two of its functions.

**OR**

B. How are the lungs in humans designed to maximize the area for the exchange of gases?

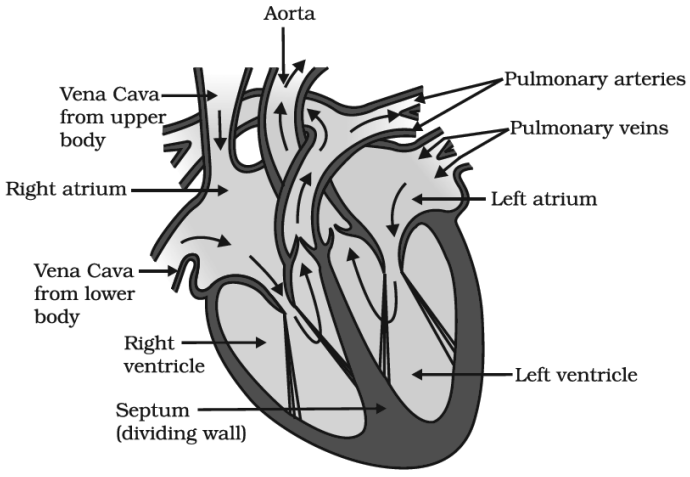
**12.** What is ozone, and why is its depletion a cause for concern? Name the synthetic chemicals mainly responsible for this depletion.

**13.** Differentiate between a reflex action and a voluntary action like walking, giving three points of distinction.

**14.** With the help of a suitable chart, explain the mechanism of sex determination in human beings.

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**15.** Refer to a diagram of the human heart to the following questions.




A. What prevents the back flow of blood inside the chambers of the heart?

**OR**

B. Why do ventricles have thicker muscular walls than the atria?

C. Trace the path of oxygenated blood from the lungs back to the heart and then to the rest of the body.

**16.** Student to attempt either option A or B.

A. (i) Draw a neat labelled diagram of a longitudinal section of a flower.
(ii) Differentiate between unisexual and bisexual flowers, giving one example of each.

**OR**

B. (i) What is the menstrual cycle? Why does it occur?
(ii) List two surgical methods of contraception and explain their basic principle.

# SECTION-B

**17.** In the reaction $CuO + Mg \rightarrow MgO + Cu$, which substance acts as the oxidizing agent?

(a) Mg (b) Cu
(c) MgO (d) CuO

**18.** Our stomach produces an acid that helps in the digestion of food without harming the stomach lining. The acid produced is :

(a) Acetic acid (b) Sulphuric acid
(c) Hydrochloric acid (d) Nitric acid

**19.** Which of the following metals is the most reactive according to the reactivity series?

(a) Iron (Fe) (b) Zinc (Zn)
(c) Potassium (K) (d) Copper (Cu)

**20.** Which of the following is not an allotrope of carbon?

(a) Diamond (b) Graphite
(c) Fullerene (d) Silica

**21.** An aqueous solution of which of the following salts will have a pH value greater than 7?

(a) NaCl (b) $NH_4Cl$

(c) $CH_3COONa$ (d) $K_2SO_4$

**22.** Electrolytic refining is a process used to obtain very pure metals. This method is widely used for the purification of :

(a) Iron (b) Copper

(c) Aluminium (d) Lead

**23.** When lead(II) nitrate powder is heated in a test tube, the emission of brown fumes is observed. These fumes are of which gas?

(a) Oxygen ($O_2$) (b) Lead oxide (PbO)

(c) Nitrogen dioxide ($NO_2$) (d) Nitrogen ($N_2$)

**24.** **Assertion (A) :** Ethene and Propene belong to the alkene homologous series.
**Reason (R) :** Their general formula is $C_nH_{2n}$ and they have similar chemical properties due to the presence of a double bond.

(a) Both A and R are true, and R is the correct explanation of A.

(b) Both A and R are true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**25.** Why is respiration considered an exothermic reaction? Explain.

**26.** Attempt either option A or B.

A. (i) What type of chemical bonds are present in ionic compounds?
(ii) Explain why ionic compounds are generally hard solids.
(iii) Why do they conduct electricity only in their aqueous solution or molten state?

**OR**

B. Define the following terms with reference to metallurgy:
(i) Mineral
(ii) Ore
(iii) Gangue

**27.** Differentiate between soaps and detergents on the basis of the following :

(a) Their general chemical composition.

(b) Their cleansing action in hard water.

(c) Their biodegradability.

**28.** Bleaching powder is a yellowish-white powder with a strong smell of chlorine. It has several applications, from disinfecting water to acting as an oxidising agent.

(a) Write the chemical name and chemical formula of bleaching powder.

(b) Write a balanced chemical equation for the reaction involved in its preparation.

(c) State two important uses of bleaching powder in different industries.

**OR**

(d) What happens when bleaching powder is left exposed to air for a long time? Explain why this happens, with the help of a chemical equation.

**29.** Attempt either option A or B.

A. (a) Draw the electron-dot structure for a molecule of propane ($C_3H_8$).
(b) What are addition reactions? Give a balanced chemical equation for one such reaction.
(c) What are substitution reactions?

**OR**

B. (a) Give the IUPAC names of the following compounds : (i) $CH_3CH_2CHO$ (ii) $CH_3COOH$ (iii) $C_2H_2$
(b) Explain why it is not possible to have a ketone with fewer than three carbon atoms.

# SECTION-C

**30.** A student makes the following statements about the image formed by a concave mirror:

I. When the object is between the center of curvature and the principal focus, the image is real and magnified.
II. When the object is at the principal focus, the image is formed at infinity.
III. The image is always real and inverted.

Choose from the following the correct option that lists the correct statements.
(a) I and II
(b) I and III
(c) I, II and III
(d) II and III

**31.** A student is looking at a fish in a pond and notices that it appears shallower than it actually is. What is the optical phenomenon responsible for this observation?
(a) Scattering
(b) Reflection
(c) Dispersion
(d) Refraction

**32.** **Assertion (A) :** A convex mirror is a diverging mirror.
**Reason (R) :** The light rays reflected by a convex mirror converge at a point.
(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

**33.** State lens formula.

A. Write the mathematical relation.
B. Define each term (u, v, f).
C. State condition of sign convention.

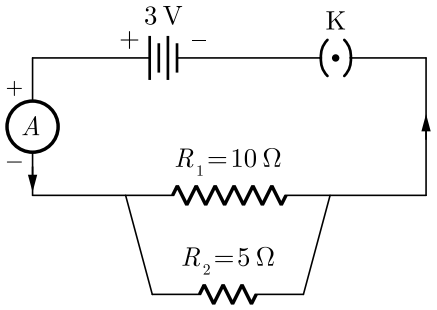
**34.** Attempt either option A or B.

A. (a) Electric fuse is an important component of all domestic circuits. Why ?
(b) An electric oven of rating 2 kW, 220 V is operated in a domestic circuit with a current rating of 5 A. What result would you expect ? Explain.

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**OR**

B. Study the following circuit and answer the following questions :
   (a) State the type of combination of the two resistors in the circuit.
   (b) How much current is flowing through :
      (i) 10 Ω and through,
      (ii) 15 Ω resistors.
   (c) What is the ammeter reading ?

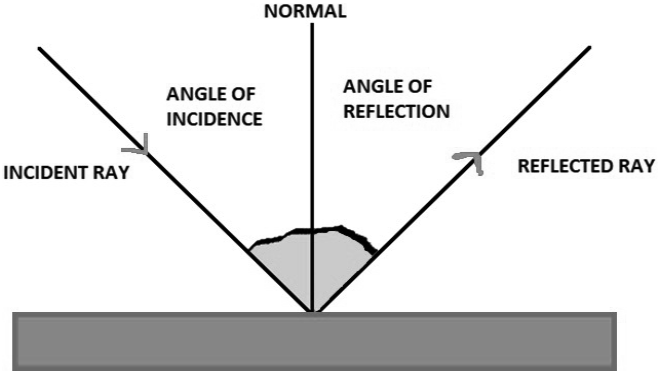



**35.** The near point of a person suffering from hypermetropia is 75 cm. Calculate the focal length and power of the lens required to enable him to read the newspaper which is kept at 25 cm from the eye.

**36.** (a) List the factors on which the resistance of a conductor in the shape of wire depends.
(b) Why are metals good conductors of electricity whereas glass is a bad conductor of electricity? Give reason.
(c) Why are alloys commonly used in electrical heating devices? Give reason.

**37.** (a) Give the significance of the following in a domestic circuit:
   (i) Electric meter
   (ii) Earthing.
(b) List two precautions that should be taken to avoid overloading.

**38.** Mr. Rakesh was helping her daughter Aruna at home understanding about the basics of reflection of light. He found the simplest way to convey the role of curved mirrors using stainless steel teaspoon. Aruna got surprised to know that virtual image is that which can be seen but cannot be obtained on the screen. Mr. Rakesh then explained the formation of image using Ray diagrams.




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A. What do you mean by reflection of light?

B. The angle between incident ray and reflected ray is 60°. What is the value of angle of incidence? Attempt either subpart C or D.

C. A ray of light is incident on a plane mirror at an angle of 30°.what is the angle of reflection?

**OR**

D. What happens to a light ray that is incident normally on a surface?

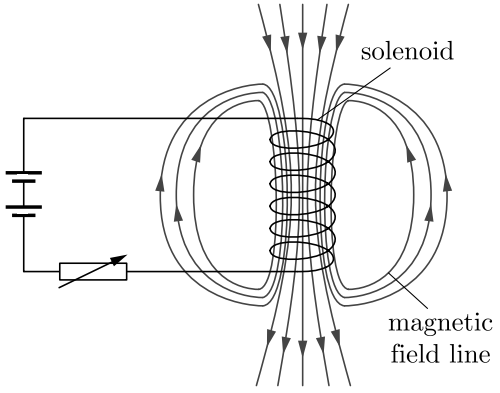
**39.** Attempt either option A or B.

A. (i) Draw magnetic field lines produced around a current carrying straight conductor passing through a cardboard. Name, state and apply the rule to mark the direction of these field lines.

(ii) How will the strength of the magnetic field change when the point where magnetic field is to be determined is moved away from the straight wire carrying constant current? Justify your answer.

**OR**

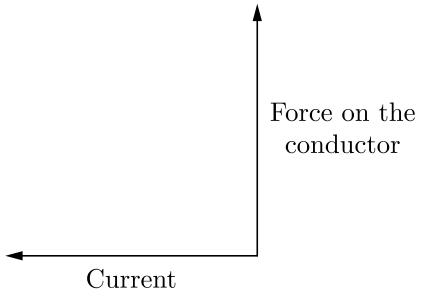
B. (i) A circuit contains a battery, a variable resistor and a solenoid. The figure below show the magnetic field pattern produced by the current in the solenoid.




(a) State how the magnetic field pattern indicates regions where the magnetic field is stronger?

(b) What happens to the magnetic field when the current in the circuit is reversed?

(ii) State the direction of magnetic field in the following case.




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