jeeinfo
Your JEE Guide

CBSE Class X · Science (086)

Sample Question Paper 6 · Session 2026-27

Time allowed: 3 hours **Maximum marks: 80**

© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission.
This is an original practice paper written to the official CBSE 2026-27 design; it is not issued by CBSE.

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 the alternatives in such questions.

Section A — Biology

1.	The energy currency of the cell is: (A) ATP (B) starch (C) glucose (D) pyruvate	1
2.	Finger-like projections called villi are found in the: (A) large intestine (B) small intestine (C) oesophagus (D) stomach	1
3.	Which of the following is a reflex action? (A) walking to school (B) writing a letter (C) reading a book (D) pulling the hand away from a hot object	1
4.	Which gland acts both as an endocrine and as an exocrine gland? (A) thyroid (B) pituitary (C) pancreas (D) adrenal	1
5.	In human females, the egg is released by the: (A) oviduct (B) vagina (C) uterus (D) ovary	1
6.	In a cross Tt × Tt, the fraction of offspring expected to be homozygous tall (TT) is: (A) 1/2 (B) 1/4 (C) 3/4 (D) 0	1
7.	Which of the following pairs consists only of non-biodegradable substances? (A) DDT and plastic (B) paper and cotton (C) fruit peels and paper (D) wood and leather	1

8.	**Assertion (A):** Desert plants open their stomata at night. **Reason (R):** They take in carbon dioxide at night and store it, which reduces water loss during the hot day. (A) Both Assertion (A) and Reason (R) are true and R is the correct explanation of A. (B) Both A and R are true but R is not the correct explanation of A. (C) A is true but R is false. (D) A is false but R is true.	1
9.	**Assertion (A):** The testes lie outside the abdominal cavity, in the scrotum. **Reason (R):** The testes secrete the hormone testosterone. (A) Both Assertion (A) and Reason (R) are true and R is the correct explanation of A. (B) Both A and R are true but R is not the correct explanation of A. (C) A is true but R is false. (D) A is false but R is true.	1
10.	State the role of (i) chlorophyll and (ii) stomata in photosynthesis.	2
11.	What happens at a synapse between two neurons? **OR** Why do the roots of a plant grow towards water? Name this type of movement.	2
12.	Why are decomposers called the cleaning agents of the environment?	2
13.	Describe an experiment to show that chlorophyll is necessary for photosynthesis.	3
14.	What are sexually transmitted diseases? Name two caused by bacteria and two caused by viruses. How can their spread be reduced? **OR** Explain, using a cross involving seed shape and seed colour in pea plants, how Mendel showed that two traits are inherited independently.	3
15.	**Case study.** A student counted her breathing rate at rest and then immediately after running for two minutes. At rest it was 16 breaths per minute; after running it was 26 breaths per minute. (i) Why did the breathing rate increase after running? *[1]* (ii) What happens in the leg muscles if they do not get enough oxygen during heavy exercise? *[1]* (iii) Why is it useful that the lungs always contain some residual air? *[2]* **OR** (iii) How are the alveoli suited for the exchange of gases? *[2]*	4
16.	State the role of each of the following in human digestion: (a) teeth and tongue, (b) peristalsis, (c) sphincter muscle at the exit of the stomach, (d) bile, (e) villi. **OR** (a) Name four plant hormones and state one function of each. (b) Where is auxin synthesised?	5

© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.

Section B — Chemistry

17.	Which of the following is a displacement reaction? (A) $2KClO_3 \rightarrow 2KCl + 3O_2$ (B) $CaO + H_2O \rightarrow Ca(OH)_2$ (C) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$ (D) $BaCl_2 + Na_2SO_4 \rightarrow BaSO_4 + 2NaCl$	1
18.	The colour of methyl orange in an acidic solution is: (A) yellow (B) red (C) blue (D) pink	1
19.	Which of the following is commonly used as an antacid? (A) washing soda (B) sodium hydroxide (C) milk of magnesia (D) bleaching powder	1
20.	Which metal is a liquid at room temperature? (A) sodium (B) gallium (C) bromine (D) mercury	1
21.	Which of the following is a carbonate ore? (A) calamine (B) haematite (C) zinc blende (D) cinnabar	1
22.	The number of structural isomers of butane, C_4H_{10}, is: (A) 1 (B) 4 (C) 3 (D) 2	1
23.	The molecular formula of the third member of the alkene series is: (A) C_5H_{10} (B) C_3H_6 (C) C_4H_8 (D) C_4H_{10}	1
24.	**Assertion (A):** Detergents work well even in hard water. **Reason (R):** Detergents do not form insoluble scum with calcium and magnesium ions. (A) Both Assertion (A) and Reason (R) are true and R is the correct explanation of A. (B) Both A and R are true but R is not the correct explanation of A. (C) A is true but R is false. (D) A is false but R is true.	1
25.	What is water of crystallisation? Write the formulas of two salts that contain it.	2
26.	Write balanced equations for the reactions of dilute hydrochloric acid with (i) magnesium ribbon, (ii) sodium hydroxide, (iii) copper(II) oxide. What would you observe in (iii)?	3

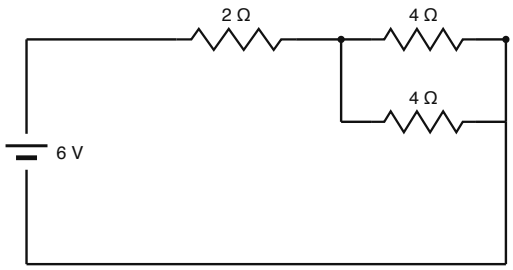
© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.

27.	A metal X is stored under kerosene and burns with a golden-yellow flame. (i) Identify X. (ii) Write equations for its reaction with oxygen and with water. (iii) What is the nature of its oxide? **OR** (i) What is galvanisation? (ii) What is an alloy? Give the composition and one use of solder. (iii) Why is pure gold mixed with silver or copper to make jewellery?	3
28.	**Case study.** pH is important in everyday life. Our stomach makes hydrochloric acid for digestion; plants need soil of a particular pH; a bee sting or a nettle sting injects methanoic acid, which causes pain and irritation; and rain with a pH below 5.6 is called acid rain. (i) What can be used to treat a bee sting? Why? *[1]* (ii) Why do plants need soil of a particular pH? *[1]* (iii) How is the sting of a nettle plant usually treated, and why does it work? *[2]* **OR** (iii) How does acid rain affect aquatic life? *[2]*	4
29.	(a) Give two physical properties of ethanol. (b) Write the equation for the reaction of ethanol with sodium. (c) Why is drinking even a small amount of pure ethanol dangerous, and what is denatured alcohol? (d) How is ethanol used as a fuel? (e) Give a chemical test to distinguish ethanol from ethanoic acid. **OR** (a) What is a homologous series? State two of its characteristics. (b) Write the names and formulas of the first three members of the alcohol series. (c) Why do the members of a homologous series have similar chemical properties but different physical properties?	5

Section C — Physics

30.	A magnifying glass is a: (A) convex lens of short focal length (B) convex lens of long focal length (C) concave lens (D) plane glass slab	1
31.	The SI unit of electric power is the: (A) coulomb (B) watt (C) joule (D) kilowatt hour	1

© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.

32.	**Assertion (A):** A ray of light passing through the optical centre of a thin lens goes on without deviation. **Reason (R):** Near the optical centre, the two faces of a thin lens are nearly parallel, like a very thin glass slab. (A) Both Assertion (A) and Reason (R) are true and R is the correct explanation of A. (B) Both A and R are true but R is not the correct explanation of A. (C) A is true but R is false. (D) A is false but R is true.	1
33.	Give two differences between a real image and a virtual image. **OR** What is the radius of curvature of a spherical mirror? How is it related to the focal length?	2
34.	How does the resistance of a wire change if (i) its length is halved, (ii) its area of cross-section is doubled?	2
35.	An object is placed 5 cm from a convex lens of focal length 10 cm. Find the position, nature and magnification of the image, and draw the ray diagram. Why is a lens used this way called a magnifying glass?	3
36.	State the function of each of the following parts of the human eye: cornea, iris, pupil, eye lens and retina.	3
37.	In the circuit shown, find (i) the equivalent resistance, (ii) the current from the cell, (iii) the current through each 4 Ω resistor.  **OR** An electric oven rated 2 kW is used in a domestic circuit (220 V) whose current rating is 5 A. What result do you expect? Explain.	3

© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.

<table>
<tr>
<td>38.</td>
<td>Case study. In 1820 Hans Christian Oersted noticed that a compass needle near a wire was deflected whenever a current passed through the wire. This showed that electricity and magnetism are linked.
(i) What happens to a compass needle placed near a current-carrying wire? [1]
(ii) What happens if the direction of the current is reversed? [1]
(iii) How does the deflection change if (a) the compass is moved farther from the wire, (b) the current is increased? [2]
OR
(iii) Draw the pattern of field lines around a straight wire carrying current upwards through a horizontal card. [2]</td>
<td>4</td>
</tr>
<tr>
<td>39.</td>
<td>(a) Draw a labelled diagram to show the refraction of light through a rectangular glass slab. Mark the angles of incidence, refraction and emergence. (b) Why is the emergent ray parallel to the incident ray? (c) The refractive index of diamond is 2.42. What does this mean? (d) Find the speed of light in diamond (speed in air = 3×10^8 m/s).
OR
The current I through a resistor was measured for different potential differences V:
<table>
<tr><td>I (A)</td><td>0.5</td><td>1.0</td><td>2.0</td><td>3.0</td><td>4.0</td></tr>
<tr><td>V (V)</td><td>1.6</td><td>3.4</td><td>6.7</td><td>10.2</td><td>13.2</td></tr>
</table>
(a) Plot a graph of V against I. (b) Use the graph to find the resistance. (c) State the law that the graph illustrates.</td>
<td>5</td>
</tr>
</table>

© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.

Answers and Marking Scheme

Marks for each step are shown in brackets. Any correct alternative method gets full credit.

Section A — Biology

1. **(A)** ATP. *Working:* Energy released in respiration is stored in ATP and used for cell activities.

2. **(B)** small intestine. *Working:* Villi increase the surface area for absorption of digested food.

3. **(D)** pulling the hand away from a hot object. *Working:* It is a quick, automatic response controlled by the spinal cord.

4. **(C)** pancreas. *Working:* The pancreas secretes digestive juice into a duct and insulin into the blood.

5. **(D)** ovary. *Working:* One egg is released by one of the ovaries every month.

6. **(B)** 1/4. *Working:* TT : Tt : tt = 1 : 2 : 1, so TT is one-quarter.

7. **(A)** DDT and plastic. *Working:* DDT and plastics are not broken down by decomposers.

8. **(A)** Both Assertion (A) and Reason (R) are true and R is the correct explanation of A. *Working:* Keeping stomata closed by day saves water; the stored CO_2 is used in photosynthesis during the day.

9. **(B)** Both A and R are true but R is not the correct explanation of A. *Working:* Both are true, but the testes lie outside because sperm formation needs a lower temperature than normal body temperature; R does not explain this.

10. (i) Chlorophyll absorbs light energy, which is converted into chemical energy (1). (ii) Stomata let carbon dioxide into the leaf and oxygen out (1).

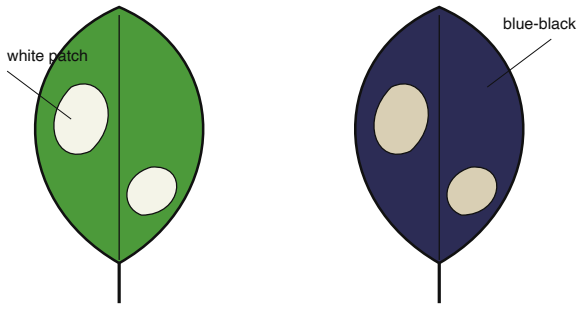
11. The electrical impulse reaching the end of the axon releases chemicals (1). These cross the small gap and start a similar electrical impulse in the dendrite of the next neuron (1).

OR Roots respond to water as a stimulus and grow towards it, which helps the plant obtain water (1). Hydrotropism (1).

12. They break down the dead remains of plants and animals and their wastes into simple substances (1). This clears away dead matter and returns nutrients to the soil for reuse by plants (1).

13. Take a potted plant with variegated leaves (green and white patches), keep it in the dark for three days to remove its starch, and then expose it to sunlight for about six hours (1). Pluck a leaf, boil it in alcohol to remove chlorophyll, wash it and add iodine solution (1). Only the parts that were green turn blue-black, showing that starch was made only where chlorophyll was present (1).

© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.



(a) before: green and white patches (b) after the iodine test

14. Diseases spread through sexual contact (1). Bacterial: gonorrhoea, syphilis; viral: warts, HIV-AIDS (1). Their spread can be reduced by using a condom during sexual contact (1).

OR Mendel crossed plants with round yellow seeds (RRYY) with plants having wrinkled green seeds (rryy); all F1 plants had round yellow seeds (RrYy) (1). In F2 he got round yellow, round green, wrinkled yellow and wrinkled green seeds in the ratio 9 : 3 : 3 : 1 (1). Round green and wrinkled yellow are new combinations, so the two traits are inherited independently (1).

15. (i) The muscles needed more oxygen to release more energy, and more CO_2 had to be removed.
(ii) Pyruvate is converted to lactic acid, which causes cramps.
(iii) Residual air allows enough time for oxygen to be absorbed and for carbon dioxide to be released, even between breaths. **OR** They are numerous, giving a very large surface area (about 80 m² if spread out); their walls are thin and surrounded by a dense network of blood capillaries.

16. (a) Teeth chew the food into small pieces; the tongue mixes it with saliva and helps in swallowing (1). (b) Rhythmic contractions of the muscles of the alimentary canal push the food forward (1). (c) It releases food from the stomach into the small intestine a little at a time (1). (d) Bile makes the food alkaline so that pancreatic enzymes can act, and breaks fats into small globules (1). (e) Villi greatly increase the surface area for absorbing digested food into the blood (1).

OR (a) Auxin: promotes cell elongation, e.g. bending of shoots towards light (1). Gibberellins: help the growth of the stem (1). Cytokinins: promote cell division (1). Abscisic acid: inhibits growth, causes the wilting of leaves (1). (b) At the tip of the shoot (1).

Section B — Chemistry

17. **(C)** $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$. *Working:* Zinc displaces hydrogen from the acid.

18. **(B)** red. *Working:* Methyl orange is red in acids and yellow in bases.

19. **(C)** milk of magnesia. *Working:* Milk of magnesia (magnesium hydroxide) is a mild base that neutralises excess stomach acid.

20. **(D)** mercury. *Working:* Mercury is the only liquid metal at room temperature; bromine is a non-metal.

21. **(A)** calamine. *Working:* Calamine is $ZnCO_3$; zinc blende is ZnS, cinnabar HgS and haematite Fe_2O_3.

22. **(D)** 2. *Working:* n-butane and isobutane (2-methylpropane).

© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.

23. **(C)** C_4H_8. *Working:* Ethene C_2H_4, propene C_3H_6, butene C_4H_8.

24. **(A)** Both Assertion (A) and Reason (R) are true and R is the correct explanation of A. *Working:* Because no scum forms, the detergent is not wasted in hard water.

25. The fixed number of water molecules present in one formula unit of a salt in its crystal (1). Any two: $CuSO_4·5H_2O$, $Na_2CO_3·10H_2O$, $CaSO_4·2H_2O$ (½ + ½).

26. (i) $Mg + 2HCl \rightarrow MgCl_2 + H_2$ (1). (ii) $NaOH + HCl \rightarrow NaCl + H_2O$ (1). (iii) $CuO + 2HCl \rightarrow CuCl_2 + H_2O$; the black powder dissolves and the solution turns blue-green (1).

27. (i) Sodium (1). (ii) $4Na + O_2 \rightarrow 2Na_2O$; $2Na + 2H_2O \rightarrow 2NaOH + H_2$ (1). (iii) Basic: it dissolves in water to form an alkali, NaOH (1).

OR (i) Coating iron or steel with a thin layer of zinc to protect it from rusting (1). (ii) A homogeneous mixture of a metal with other metals or a non-metal; solder is lead and tin, used for welding electrical wires (1). (iii) 24-carat gold is very soft; alloying makes it harder (1).

28. (i) A mild base such as baking soda; it neutralises the methanoic acid.
(ii) Plants grow healthily only within a narrow pH range; too acidic or too basic soil affects their growth.
(iii) By rubbing the area with the leaf of the dock plant, which often grows beside nettles; the dock leaf is basic and neutralises the methanoic acid. **OR** When acid rain flows into rivers it lowers their pH; the survival of aquatic animals becomes difficult because they can live only within a narrow pH range.

29. (a) A colourless liquid at room temperature that mixes with water in all proportions (1). (b) $2CH_3CH_2OH + 2Na \rightarrow 2CH_3CH_2ONa + H_2$ (1). (c) It slows metabolism and depresses the nervous system and can be lethal; denatured alcohol is ethanol made unfit to drink by adding poisonous methanol and a blue dye (1). (d) It burns in air with a clean flame and is mixed with petrol as a cleaner fuel (1). (e) Add sodium hydrogencarbonate: ethanoic acid gives brisk effervescence of CO_2 that turns lime water milky; ethanol does not (1).

OR (a) A series of carbon compounds with the same functional group and the same general formula (1); successive members differ by $–CH_2–$, i.e. 14 u in mass (1). (b) Methanol CH_3OH, ethanol C_2H_5OH, propanol C_3H_7OH (1½). (c) The chemical properties depend on the functional group, which is the same; physical properties such as melting and boiling points change with the size of the molecule (1½).

Section C — Physics

30. **(A)** convex lens of short focal length. *Working:* A convex lens gives a virtual, enlarged image of an object placed within its focal length.

31. **(B)** watt. *Working:* 1 W = 1 J/s.

32. **(A)** Both Assertion (A) and Reason (R) are true and R is the correct explanation of A. *Working:* A thin parallel-sided slab gives no deviation and a negligible sideways shift, which explains A.

33. A real image is formed where the rays actually meet; a virtual image is formed where they only appear to meet (1). A real image can be obtained on a screen and is inverted; a virtual image

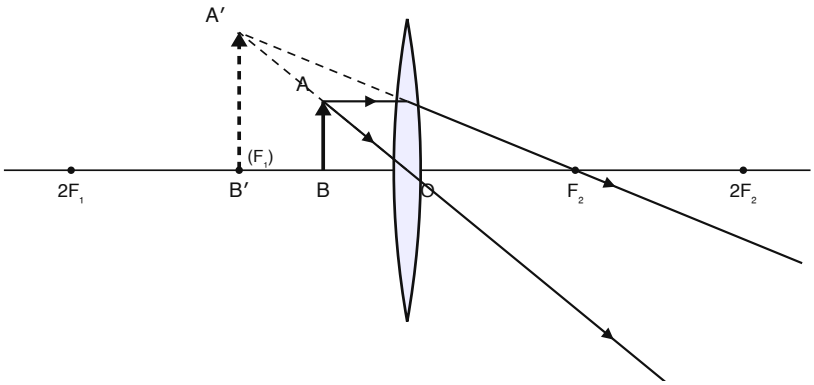
© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.

cannot be obtained on a screen and is erect (1).

OR The radius of the sphere of which the reflecting surface is a part (1). R = 2f (1).

34. (i) R ∝ l, so it becomes R/2 (1). (ii) R ∝ 1/A, so it becomes R/2 (1).

35. $\frac{1}{v} = \frac{1}{10} - \frac{1}{5} = -\frac{1}{10}$, v = –10 cm; m = v/u = 2 (1). The image is virtual, erect and twice the size, on the same side as the object, which is why the lens magnifies (1). Ray diagram (1):

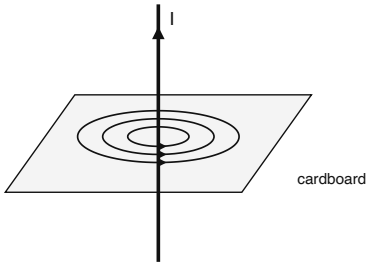


36. Cornea: a transparent bulge through which light enters; most of the refraction occurs here (½). Iris: a muscle that controls the size of the pupil (½). Pupil: regulates the amount of light entering the eye (½). Eye lens: fine-tunes the focal length (with the ciliary muscles) to focus objects at different distances on the retina (1). Retina: a light-sensitive screen whose cells send signals to the brain through the optic nerve (½).

37. (i) The two 4 Ω resistors in parallel give 2 Ω; with 2 Ω in series, R = 4 Ω (1). (ii) I = 6/4 = 1.5 A (1). (iii) The current divides equally: 0.75 A in each (1).

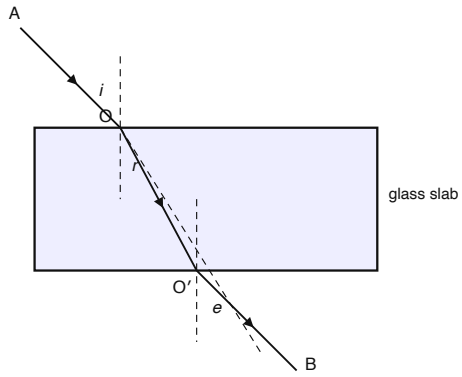
OR Current drawn = 2000/220 ≈ 9.1 A (1). This is more than the 5 A rating (1), so the circuit is overloaded: the fuse will blow (or the MCB will trip) and cut off the supply (1).

38. (i) It is deflected, because the current produces a magnetic field around the wire.
(ii) The needle is deflected in the opposite direction.
(iii) (a) It decreases, as the field becomes weaker with distance. (b) It increases, as the field becomes stronger. **OR** Concentric circles centred on the wire, anticlockwise as seen from above:



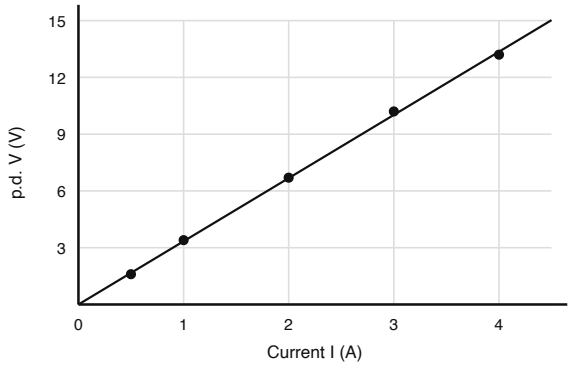
39. (a) Diagram (2):

© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.



(b) The bending at the two parallel faces is equal and opposite, so the angle of emergence equals the angle of incidence (1). (c) The speed of light in air is 2.42 times its speed in diamond (1). (d) $v = 3 \times 10^8 / 2.42 \approx 1.24 \times 10^8$ m/s (1).

OR (a) Graph (2):



(b) The graph is a straight line through the origin; its slope is about 13.2/4 ≈ 3.3 Ω (2). (c) Ohm's law: at constant temperature, V is proportional to I (1).

© 2026 JEEInfo (www.jeeinfo.in). Free for personal study only. Do not copy, sell or republish without written permission. Not an official CBSE paper.