

SAMPLE QUESTION PAPER

CBSE
2025-26

SCIENCE

General Instructions :

Read the following instructions very carefully and strictly follow them:

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

Time Allowed : 3 hours

Maximum Marks : 80

SECTION - A

1. Our heart beats continuously to pump blood to different body organs. Which part of heart receives blood through vena cava? (1)
(a) Left atrium (b) Right atrium (c) Left ventricle (d) Right ventricle
2. Which of the following shows correct information? (1)
(a) Glucose (in mitochondria) $\rightarrow$ Pyruvate (in cytoplasm) $\rightarrow$ $\text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$
(b) Glucose (in cytoplasm) $\rightarrow$ Pyruvate (in mitochondria) $\rightarrow$ $\text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$
(c) Glucose (in cytoplasm) $\rightarrow$ Pyruvate + Energy (in mitochondria) $\rightarrow$ $\text{CO}_2 + \text{H}_2\text{O}$
(d) Glucose (in mitochondria) $\rightarrow$ Pyruvate + Energy (in cytoplasm) $\rightarrow$ $\text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$
3. Select the incorrect statement regarding the reflex action. (1)
(a) Reflex arc is less efficient and slow for quick responses because it functions without involving thinking.
(b) Sensory receptors in skin receive stimulus and convert it into impulse.
(c) Muscle cells are effector which carry out muscular contraction in response to the initial stimulus.
(d) Inputs from sensory neuron are analysed in CNS and response output is transmitted through motor neuron.
4. Some plants like pea plant climb up other plants or fences with the help of tendrils. What causes tendrils to coil? (1)
(a) The part of tendril in contact with the object does not grow as rapidly as the part of tendril away from the object.
(b) There is uniform growth throughout the tendril that causes coiling.
(c) The part of tendril away from object does not grow as rapidly as the part in contact with the object.
(d) The part of tendril in contact with the object grow rapidly as compared to the part away from the tendril.
5. Blue eye colour in human is recessive to brown eye colour. The expected children of a marriage between blue-eyed woman and brown-eyed male who had a blue-eyed mother are likely to be in the ratio of (1)

- (a) all blue-eyed
 - (b) three blue-eyed and one brown-eyed
 - (c) all brown-eyed
 - (d) one blue-eyed and one brown-eyed.
6. Select the incorrect statement. (1)
- (i) Green plants capture about 10% of the energy of sunlight and convert it into food energy.
 - (ii) Non-biodegradable substances are not broken down by biological processes.
 - (iii) A garden is a self sustaining ecosystem.
 - (iv) Plastics cannot be broken down by the action of bacteria and other saprophytes.
- (a) (i) only (b) (ii) and (iii) (c) (iii) and (iv) (d) (i), (ii) and (iv)
7. What was the main reason for discontinuation of *Kulhad* cups used for serving tea in trains? (1)
- (a) It was not easy to decompose.
 - (b) It caused pollution.
 - (c) It led to loss of fertile top soil.
 - (d) It was releasing various toxic gases.

The following two questions consist of two statements – **Assertion (A)** and **Reason (R)**. Answer these questions by selecting the appropriate option given below:

- 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.
8. **Assertion (A)** : Mendel successfully postulated laws of heredity. (1)
Reason (R) : Mendel recorded and analysed results of breeding experiments quantitatively.
9. **Assertion (A)**: Ozone is present in the layer of earth's atmosphere. (1)
Reason (R): Ozone is a gas released by burning fuels.
10. The urge to urinate can be controlled. Comment upon the statement with justification. (2)
11. Attempt either option A or B.
- A. Nutrition in *Amoeba* is different from nutrition in *Paramecium*. Explain. (2)

OR

- B. Write one feature common to each of the following :
- (i) Arteries and veins (ii) Xylem and phloem (iii) Blood and lymph
12. Due to uncontrolled hunting, the population of tigers in a forest becomes zero. Discuss the long-term effects of this situation on the population of deer in that forest. (2)
13. A doctor has advised Rohan to reduce sugar intake in his diet and do regular exercise after checking his blood test reports. Which disease do you think Rohan is suffering from? Name the hormone responsible for this disease and the organ producing the hormone. (3)
14. In humans, allele for brown eyes (B) is dominant over that of blue eyes (b).
- (i) If a brown eyed women (BB) marries a blue eyed man (bb), then calculate the ratio of genetic makeup of F_2 generation with the help of suitable cross.
 - (ii) What would be the ratio of brown eyed and blue eyed offspring if mother is heterozygous for brown eyes and father has blue eyes. (3)
15. After eating a meal of rice and *dal*, Riya started wondering how her body gets energy and strength from the food she eats. She learned that the food must be broken down into the simpler forms so that the nutrients can be absorbed and used by her body. This process is called digestion. Based on your understanding, help her learn more about how digestion takes place. (4)

Attempt either subpart A or B.

A. Which of the two foods is a good source of carbohydrates. Describe how Riya's body digests this food.

OR

B. Which of the two foods is rich in protein? Name the enzymes that help in its digestion. What happens to the digested product?

C. How does the structure of the small intestine help in the proper absorption of the given food?

D. Refer to the given diagram of human digestive system.

Digestive juices X, Y and Z were collected from structures labelled as (i), (ii) and (iii) respectively. The digestive juices were then mixed with a buffer solution of pH = 2. Small drops of these juices were then placed on a strip of film coated with protein.

Which digestive juice(s) will be able to digest the protein coat?

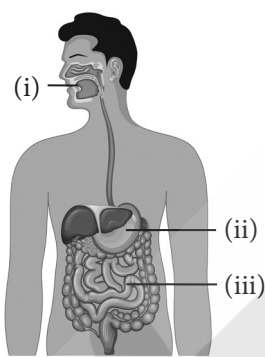


Figure : Human Digestive System

16. Attempt either option A or B.

(5)

A. Priya, a married woman, used a birth control device made of a common metal inserted into her uterus by a trained medical professional to prevent pregnancy. Despite of the insertion, she got pregnant after few months.

(i) What could be the birth control device used by the woman? Explain how it works to prevent pregnancy.

(ii) Suggest possible reasons for the failure of this birth control method. Also, explain why it is important for a woman with such a device to have regular medical check-ups after its insertion.

OR

B. Aarushi noticed that our government launches campaigns to provide information about AIDS prevention, testing and treatment through posters, radio shows and the forms of public communication. She became curious about how such campaigns help people stay healthy and prevent the spread of this disease.

(i) Name the causative organism of AIDS. Explain how awareness campaigns about AIDS contribute to controlling its spread in society.

(ii) Explain the importance of early detection and treatment of STDs in controlling their spread and improving patient outcomes.

SECTION - B

17. A metal ribbon 'X' burns in oxygen with a dazzling white flame forming a white ash 'Y'. The correct description of X, Y and the type of reaction is (1)

(a) $X = \text{Ca}$; $Y = \text{CaO}$; Type of reaction = Decomposition

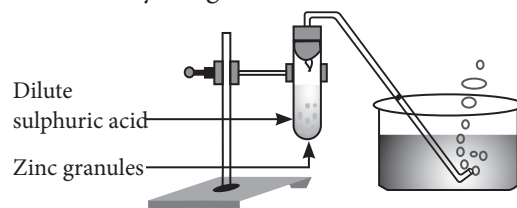
(b) $X = \text{Mg}$; $Y = \text{MgO}$; Type of reaction = Combination

(c) $X = \text{Al}$; $Y = \text{Al}_2\text{O}_3$; Type of reaction = Thermal decomposition

(d) $X = \text{Zn}$; $Y = \text{ZnO}$; Type of reaction = Endothermic

18. The pair(s) which will show displacement reaction is/are (1)
- (i) NaCl solution and copper metal (ii) AgNO₃ solution and copper metal
 (iii) Al₂(SO₄)₃ solution and magnesium metal (iv) ZnSO₄ solution and iron metal.
 (a) (ii) only (b) (ii) and (iii)
 (c) (iii) and (iv) (d) (i) and (ii)

19. Study the diagram given below and identify the gas formed in the reaction. (1)



- (a) Carbon dioxide which extinguishes the burning candle.
 (b) Oxygen due to which the candle burns more brightly.
 (c) Sulphur dioxide which produces a suffocating smell.
 (d) Hydrogen which while burning produces a popping sound.
20. Three test tubes A, B and C contain distilled water, an acidic solution and a basic solution respectively. When red litmus solution is used for testing these solutions, the observed colour changes respectively will be (1)
- (a) A – no change; B – becomes dark red ; C – becomes blue
 (b) A – becomes light red; B – becomes blue; C – becomes red
 (c) A – becomes red; B – no change; C – becomes blue
 (d) A – becomes light red; B – becomes dark red; C – becomes blue
21. Select from the following the statement which is true for bases. (1)
- (a) Bases are bitter and turn blue litmus red.
 (b) Bases have a pH less than 7.
 (c) Bases are sour and change red litmus to blue.
 (d) Bases turn pink when a drop of phenolphthalein is added to them.
22. Consider the following reactions : (1)
- (i) Dilute hydrochloric acid reacts with sodium hydroxide.
 (ii) Magnesium oxide reacts with dilute hydrochloric acid.
 (iii) Carbon dioxide reacts with sodium hydroxide.
- It is found that in each case
- (a) salt and water is formed (b) neutral salts are formed
 (c) hydrogen gas is formed (d) acidic salts are formed.
23. Which of the following statements about the reaction given below are correct? (1)



- (i) HCl is oxidized to Cl₂.
 (ii) MnO₂ is reduced to MnCl₂.
 (iii) MnCl₂ acts as an oxidising agent.
 (iv) HCl acts as an oxidising agent.
 (a) (ii), (iii) and (iv) (b) (i), (ii) and (iii)
 (c) (i) and (ii) only (d) (iii) and (iv) only

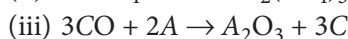
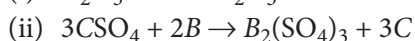
The following question consists of two statements – **Assertion** (A) and **Reason** (R). Answer this question by selecting the appropriate option given below:

- (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.

24. **Assertion (A)** : Esterification is a process in which a sweet smelling substance is produced. (1)

Reason (R) : When esters react with sodium hydroxide, an alcohol and sodium salt of carboxylic acid are obtained.

25. A, B and C are three elements which undergo chemical changes according to following equations : (2)



- (a) Which of these is most reactive?
- (b) Arrange these elements in order of increasing reactivity.

26. Attempt either option A or B. (3)

A. Samples of four metals A, B, C and D were taken and added to the following solutions one by one. The results obtained have been tabulated as follows :

Metal	Solutions to which metal is added			
	Iron (II) sulphate	Copper (II) sulphate	Zinc sulphate	Silver nitrate
A	No reaction	Displacement	–	–
B	Displacement	–	No reaction	–
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

Use the table given above to answer the following questions :

- (a) Which is the most reactive metal?
- (b) What would you observe when B is added to solution of copper(II) sulphate?
- (c) Arrange the metals A, B, C and D in order of increasing reactivity.

OR

B. A yellow brittle element on burning produces a suffocating gas. The solution of this gas in water turns blue litmus red. Answer the following questions:

- (a) Is the solution of gas in water acidic or basic?
- (b) Is the yellow substance a metal or a non-metal?
- (c) Name the gas and the yellow brittle element.

27. Mention with reason the colour changes observed when : (3)

- (i) silver chloride is exposed to sunlight.
- (ii) copper powder is strongly heated in the presence of oxygen.
- (iii) a piece of zinc is dropped in copper sulphate solution.

28. Acids turn blue litmus red but have no effect on red litmus. Bases turn red litmus blue but have no effect on blue litmus. The sample in which phenolphthalein remains colourless while methyl orange changes to pink/red are acids while the samples in which phenolphthalein colour changes to pink and methyl orange changes to yellow are bases. Some observations of different sample solutions in litmus, phenolphthalein and methyl orange indicator are given in the table. (4)

Sample solution	Red litmus solution	Blue litmus solution	Phenolphthalein indicator	Methyl orange indicator
HCl	No colour change	Red	Colourless	Red/ Pink
H ₂ SO ₄	No colour change	Red	Colourless	Red/Pink
HNO ₃	No colour change	Red	Colourless	Red/Pink
CH ₃ COOH	No colour change	Red	Colourless	Red/Pink
NaOH	Blue	No colour change	Pink	Yellow
Ca(OH) ₂	Blue	No colour change	Pink	Yellow
KOH	Blue	No colour change	Pink	Yellow
Mg(OH) ₂	Blue	No colour change	Pink	Yellow
NH ₄ OH	Blue	No colour change	Pink (Becomes colourless after sometime)	Yellow (Becomes colourless after sometime)

- A. Which of the following acids are edible?
 (I) Citric acid (II) Tartaric acid
 (III) Hydrochloric acid (IV) Carbonic acid
 (a) (I) and (II) only
 (b) (I), (II) and (IV) only
 (c) (I), (II) and (III) only
 (d) (I), (II), (III) and (IV)
- B. Blue litmus solution is added to two test tubes A and B containing dilute HCl and NaOH solution respectively. In which test tube a colour change will be observed? State the colour change and give its reason.

OR

Solution A gives pink colour when a drop of phenolphthalein indicator is added to it. Solution B gives red colour when a drop of methyl orange is added to it. What types of solutions are A and B and what type of pH would they have?

- C. Study the given table carefully.

S. No.	Solution	Effect on phenolphthalein indicator	Effect on blue litmus paper
1.	P	Remains colourless	Turns red
2.	Q	Remains colourless	No effect
3.	R	Changes to pink	No effect

Based on the information given in the table, identify the correct statement about the solutions P, Q and R.

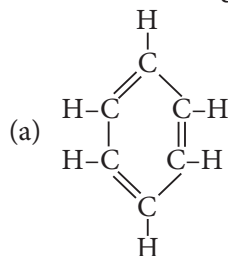
- (a) Solution P gives dark pink colour with China rose indicator and it could be lime water.
 (b) Solution Q gives dark pink colour with China rose indicator and it could be a neutral solution like that of common salt.
 (c) Solution R gives green colour with China rose indicator and it could be window cleaner.
 (d) Solution P gives red colour with turmeric solution and it could be lemon juice.

29. Attempt either option A or B.

(5)

- A. (i) Draw two structural isomers of butane.
 (ii) Draw the structures of propanol and propanone.
 (iii) Which is the third homologue of
 (a) alcohols (b) aldehydes?

(iv) Name the following:

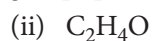
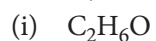


(v) Show the covalent bond formation in nitrogen molecule.

OR

B. (a) Draw electron dot structure of methane molecule.

(b) Identify the functional groups present in the following compounds :



(c) A mixture of oxygen and ethyne is burnt for welding. Why do you think a mixture of ethyne and air is not used for welding ?

SECTION - C

30. A convex mirror used for rear-view on an automobile has a radius of curvature of 3.00 m. If a bus is located at 5.00 m from this mirror, find the magnification of bus. (1)

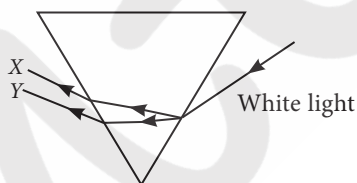
(a) 0.32

(b) 0.23

(c) 0.87

(d) 1.15

31. In the diagram given below, X and Y are the end colours of the spectrum of white light. The colour of 'Y' represents the (1)



- (a) colour of sky as seen from earth during the day (b) colour of the sky as seen from the moon
(c) colour used to paint the danger signals (d) colour of sun at the time of noon.

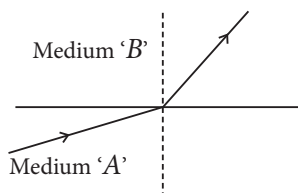
The following question consists of two statements – **Assertion** (A) and **Reason** (R). Answer this question by selecting the appropriate option given below:

- (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.

32. **Assertion (A) :** The image of a virtual object formed by a thin converging lens is always real.

Reason (R) : In the case of a thin lens, $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$. (1)

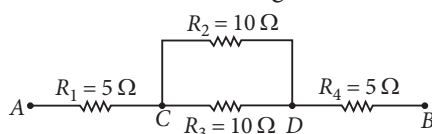
33. A light ray enters from medium A to medium B as shown in the figure. (2)



- (a) Which one of the two media is denser w.r.t. other medium ? Justify your answer.
- (b) If the speed of light in medium A is v_a and in medium B is v_b , what is the refractive index of B with respect to A.

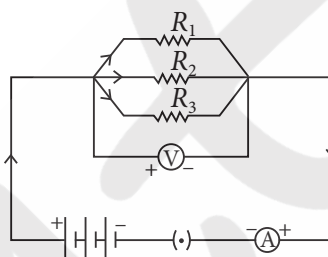
34. Attempt either option A or B. (2)

- A. (i) Three resistors R_1 , R_2 and R_3 are connected in parallel and the combination is connected to a battery, an ammeter, a voltmeter and a key. Draw suitable circuit diagram to show the arrangement of these circuit components along with the direction of current flowing.
- (ii) Calculate the equivalent resistance of the following network :

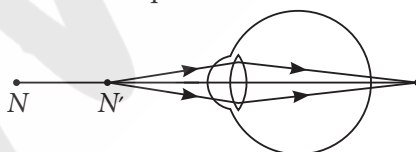


OR

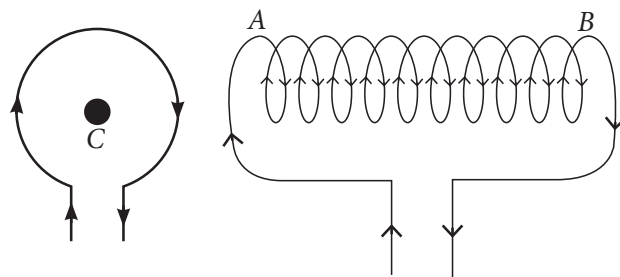
- B. In the circuit given below, the resistors R_1 , R_2 and R_3 have the values $10\ \Omega$, $20\ \Omega$ and $30\ \Omega$ respectively, which have been connected to a battery of 12 V. Calculate
- the current through each resistor,
 - the total circuit resistance, and
 - the total current in the circuit.



35. Study the diagram given below and answer the questions that follow : (3)



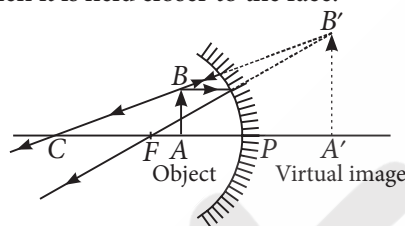
- Name the defect of vision depicted in this diagram stating the part of the eye responsible for this condition.
 - List two causes of this defect.
 - Name the type of lens used to correct this defect and state its role in this case.
36. (i) List the factors on which the resistance of a conductor in the shape of a wire depends. (3)
- (ii) Why are metals good conductors of electricity whereas glass is a bad conductor of electricity ? Give reason.
- (iii) Why are alloys commonly used in electrical heating devices ? Give reason.
37. A circular loop C and a solenoid AB carrying a current I each are shown below. Find the
- polarity of the loop face facing us, (3)
 - polarity of the end B of the solenoid and
 - also find the direction of the magnetic field at the centre of the loop.



38. A spherical mirror in which the outer bulged surface is silvered polished and the reflection of light take place from the inner hollow surface is called a concave mirror. (4)

The formula $\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$ is applicable to all concave and convex mirrors, whether the image formed is real or virtual.

A concave mirror is used as shaving or make-up mirror. As shown in the given figure it forms a magnified and erect image of the face (object) when it is held closer to the face.



- A concave mirror is held in water. What should be the change in focal length?
- An object is placed 10 cm in front of a concave mirror of radius of curvature 15 cm. What is focal length of the mirror?

Attempt either subpart C or D.

- Find the focal length of a convex mirror whose radius of curvature is 32 cm.

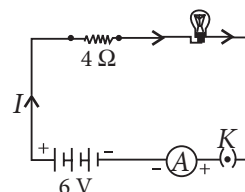
OR

- An object 20 cm from a spherical mirror give rise to a virtual image 15 cm behind the mirror. identify type of the mirror and find its focal length.

39. Attempt either option A or B. (5)

- An electric lamp of resistance $20\ \Omega$ and a conductor of resistance $4\ \Omega$ are connected to a 6 V battery as shown in the circuit. Calculate

- the total resistance of the circuit
- the current through the circuit,
- the potential difference across the
 - electric lamp and
 - conductor, and
- power of the lamp.



OR

- How two resistors, with resistances $R_1\ \Omega$ and $R_2\ \Omega$ respectively are to be connected to a battery of emf V volts so that the electrical power consumed is minimum?

Compare the power used in $2\ \Omega$ resistor in each of the following circuits.

