



Devesh Jindal's

The Weavers Institute

Let's Change the Future

TARGET: CBSE Boards 2024-25
Science (Complete Syllabus)

BATCH: 10th

DURATION: 3 HR

MAX. MARKS: 80

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose

INSTRUCTIONS

Section A – From question 1 to 16 are MCQs and 17-20 are assertion and reason based of 1 mark each.

Section B – Question no. 21 to 26 are Very Short Answer Type Questions, carrying 2 marks each.

Answer to each question should not exceed 40 words.

Section C contains Q.27 to Q.32 are Short Answer Type Questions, carrying 3 marks each.

Answer to each question should not exceed 60 words

Section D – Question no. 33 to 36 are long answer type questions, carrying 5 marks each.

Answer to each question should not exceed 120 words.

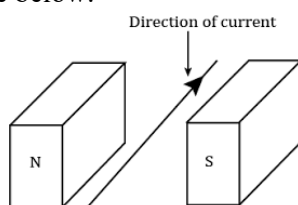
Section-E - Questions no 37 and 38 are case based questions with three sub questions and are of 5 marks each.

Section-A

- Identify the type of reaction in the given chemical equation:
$$4\text{NH}_3(\text{g}) + 5\text{O}_2(\text{g}) \rightarrow 4\text{NO}(\text{g}) + 6\text{H}_2\text{O}(\text{g})$$

(A) Double Displacement reaction (B) Redox reaction
(C) Both A and B (D) Oxidation reaction
- How many covalent bonds are there in the molecule of butane?
(A) 11 (B) 13
(C) 12 (D) 3
- Sodium hydroxide is termed an alkali while Ferric hydroxide is not because :
(a) Sodium hydroxide is a strong base, while Ferric hydroxide is a weak base.
(b) Sodium hydroxide is a base which is soluble in water while Ferric hydroxide is also a base but it is not soluble in water.
(c) Sodium hydroxide is a strong base while Ferric hydroxide is a strong acid.
(d) Sodium hydroxide and Ferric hydroxide both are strong base but the solubility of Sodium hydroxide in water is comparatively higher than that of Ferric hydroxide.

4. A metal having electronic configuration of 2, 8, 8, 2 will make covalent compounds with:
 (A) Carbon (B) Sulphur
 (C) Neither A or B (D) Both A and B
5. Which combination of statements is correct?
 (i) When an acid reacts with a metal, hydrogen gas is evolved and a corresponding salt is formed.
 (ii) On heating gypsum at 373 K, it loses water molecules and becomes Plaster of Paris.
 (iii) When solid sodium hydrogen carbonate is heated, it decomposes to give sodium carbonate with evolution of hydrogen gas.
 (iv) Sodium hydrogen carbonate is a mild non-corrosive base.
 (v) Gypsum possesses water of crystallisation.
- (A) I, II, IV and V only (B) I and II only
 (C) I, II, III and IV only (D) II, III and IV only
6. What products are formed when ethanoic acid reacts with sodium carbonate?
 (A) Sodium acetate and water (B) Sodium ethanoate water and carbon dioxide
 (C) Sodium acetate and carbonate dioxide (D) Sodium, carbon dioxide and water
7. What is indicated by crowding of magnetic field lines in a given region?
 (A) Magnetic Force (B) Uniform Magnetic Field
 (C) Stronger Magnetic Field (D) Weaker magnetic Field
8. If a magnification of unity is to be obtained. Which of the following optical device need to used.
 (i) Convex Lens (ii) Plane Mirror
 (iii) Concave Mirror (iv) Glass Slab
- (A) (i) and (ii) Only (B) (i), (ii), (iii) and (iv)
 (C) (i), (ii) and (iii) (D) (ii) Only
9. A current flows in a wire running between the S and N poles of a magnet lying horizontally on a table as shown in the figure below:

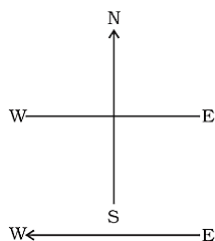


What will be the direction of force on the wire due to the Magnet?

- (A) In the table (B) Out of the table
 (C) Towards the right magnet (D) Towards Left Magnet

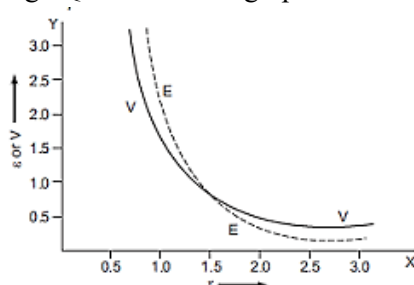
OR

A constant current flows in a horizontal wire in the plane of the paper from North to South as shown in the figure.



- (A) North
(B) East
(C) West
(D) South

10. The graph below shows the variation of electric field (E) and the electric potential (V) with distance (r) due to a point Charge Q. Observe the graph and answer the question that follows:

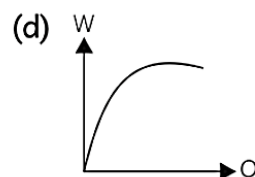
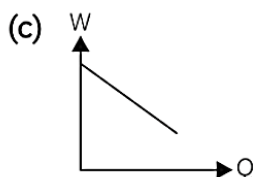
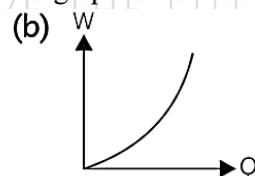
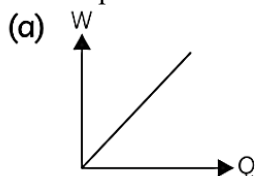


The electric potential due to a given charge:

- (A) increase linearly with distance
(B) decrease linearly with distance
(C) does not change with distance
(D) None of these

OR

Study the graphs drawn below which show the variation of work done and Charge moved for a given electric potential. Select the option showing the correct graph.



11. The work done in moving a charge of 5 C across two points having a difference of Potential 12 V is:
(A) 2.4 J
(B) 12 J
(C) 60 J
(D) 0.4 J

OR

The table below shows the work done (W) and charge moved (Q) across two points having a potential difference of 6 V. Study the table and select the row that has the incorrect information.

	Charge Moved (Coulomb)	Work done (joule)
(a)	1 C	6 J
(b)	2.5 C	12 J
(c)	5 C	30 J
(d)	8 C	48 J

12. The table below gives the refractive index of a few materials and the speed of light in that medium.

Material	Refractive index	Speed of light/ ms^{-1}
Air	1.00	3.0×10^5
Water	1.33	2.3×10^5
Perspex	1.49	2.0×10^5
Glass	1.50	2.0×10^5
Diamond	2.42	1.2×10^5

The speed of light in a medium 'A' having refractive index 2.00 with respect to Air:

(A) $1.5 \times 10^8 \text{ m/s}$

(B) $2.0 \times 10^8 \text{ m/s}$

(C) $3.0 \times 10^8 \text{ m/s}$

(D) $6.0 \times 10^8 \text{ m/s}$

13. Which one of the following pairs of brain part and its function is in matched?

(A) Pons – Consciousness

(B) Cerebrum – Memory and intelligence

(C) Cerebellum – Balance and posture.

(D) Medulla Oblongata – Involuntary activities.

14. If a girl child does not exactly resemble her father, what might be the possible reason?

(a) X chromosome of father is recessive trait.

(b) X chromosome from mother will also show its effect.

(c) Sexual reproduction leads to variation.

(d) Children always resemble their mother than father.

15. Which among the following statements are true for unisexual flowers?

(i) They possess both stamen and pistil.

(ii) They possess either stamen or pistil.

(iii) They exhibit cross pollination.

(iv) Unisexual flowers possessing only stamens cannot produce fruits.

(A) (i) , (iv)

(B) (ii), (iii), (iv)

(C) (iii), (iv)

(D) (i), (iii), (iv)

16. Height of a plant is regulated by:
- (A) DNA which is directly influenced by growth hormone.
 - (B) Genes which regulate the proteins directly.
 - (C) Growth hormones under the influence of the enzymes coded by a gene.
 - (D) Growth hormones directly under the influence a gene.

For Question Number 17-20 two statements are given: One labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) are given below.

- (a) Both (A) and (R) are true, and (R) is correct explanation of the assertion.
 - (b) Both (A) and (R) are true, but (R) is not the correct explanation of the assertion.
 - (c) (A) is true, But (R) is false.
 - (d) (A) is false, but (R) is true.
 - (e) Both (A) and (R) are false.
17. Assertion (A): Yeast is a parasitic organism.
Reason (R): Yeast breaks down the food material outside the body and then absorbs it.
18. Assertion (A): Red colour is used in danger signals.
Reason (R): The scattering of red colour is less as its frequency is more.
19. Assertion (A) : Veins have thick walls to collect blood from different organs.
Reason (R): Blood in veins are under low pressure due to ventricular compression.
20. Assertion (A) : Food chains generally consist of only three to four steps.
Reason (R) : Autotrophs capture solar energy and convert it into chemical energy.

SECTION -B

21. What is lymph? Why is it called 'tissue fluid'?
- OR**
- Plants absorb water from the soil. How does this water reach the tree tops?
22. What is the role of seminal vesicles and the prostate gland?
23. The table below gives the melting and boiling points of some common compounds:

Compound	Melting point ($^{\circ}\text{C}$)	Boiling point ($^{\circ}\text{C}$)
Ethanol, $\text{C}_2\text{H}_5\text{OH}$	-144	+78.3
Ammonia, NH_3	-77.7	-33.3
Cesium bromide, CsBr	+636	+1300
Hydrogen, H_2	-259	-253
Hydrogen Chloride, HCl	-144	-85
Magnesium oxide, MgO	+2825	+3600
Methan, CH_4	-182	-161
Nitrogen, N_2	-210	-196
Sodium chloride, NaCl	+801	+1465
Water, H_2O	0	+100

Giving reason, comment on the melting on the melting and boiling points of covalent compounds.

24. Rohan observed that if a small piece of sodium is added to water, it catches fire, whereas a piece of calcium added to the water does not catch fire. Can you explain his observations with the help of the chemical equations?

OR

Explain the following:

(A) Sodium Chloride is an ionic compound which does not conduct electricity in solid state, whereas it does conduct electricity in molten state as well as in aqueous solution.

(B) Reactivity of aluminium decrease if it is dipped in nitric acid.

25. Explain giving reasons why the sky appears blue to an observer from the surface of earth? What will the colour of the sky be for an astronaut staying in the international space station orbiting the earth? Justify your answer.

26. Draw the pattern of magnetic field lines through a circular loop. Make the direction of
(A) Electric current in loop (B) Magnetic field lines.

SECTION -C

27. What are the three categories of contraception method? Write briefly about each.

28. Why is kitchen garden known as an artificial ecosystem?

Study the given data and answer the questions that follow:

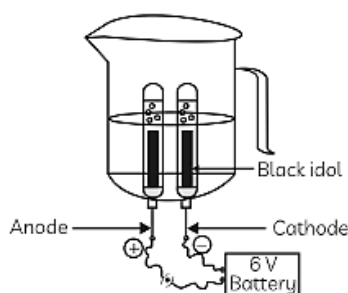
Parental plants cross fertilised and seeds collected	F ₁ generation (First generation offspring)	F ₂ generation (offspring of self-pollination of F ₁ generation)
Male parents always tall	88 seeds sown and observed	88 seeds sown and observed
Female parents always dwarf	All 88 plants appeared tall	66 plants appeared tall and 22 appeared short.

(A) What is the term used for this type of cross?

(B) What does the data for the column marked F₁ indicate?

(C) Express the genotype of the (i) Parents (ii) F₁ Progeny (iii) F₂ Progeny.

29. In the schematic diagram for the electrolysis of water, the two gases evolved are collected by the method shown in the diagram.



Answer the following questions

- (A) Name the gas evolved at cathode.
(B) Why is the amount of gas collected in one of the test tubes is double of the amount collected in the other?
(C) What type of reaction is taking place?
30. A compound which is prepared from gypsum has the property of pH hardening when mixed with right quantity of water.
(A) Identify the compound and write its chemical formula.
(B) Write the chemical equation for its preparation.
(C) List any two uses of the above compound.
31. (A) Name an alcohol with four carbon atoms in its molecule. Also draw its structure.
(B) Name an aldehyde with four carbon atoms in its molecule. Also draw its structure.
32. What is atmospheric refraction? How is it caused? Explain why stars appear higher than they actually are.

OR

List the factors on which the scattering of light depends. Name two phenomena which are based on scattering of light.

SECTION -D

33. A reaction between 'X' and 'Y' forms compound 'Z'. 'X' loses an electron and 'Y' gains on electrons.
34. (A) Show the formation of compounds 'Z'. What type of compound is it? Write two properties shown by Compound Z.
(B) Compare the properties of metal and non-metals on the basis of the following.
(i) Malleability and ductility
(ii) Conductivity
(iii) Nature of the oxide formed by them.
35. (A) Draw a neat diagram of internal structure of human heart and label the following
(i) Muscular wall which separates right and left chambers.
(ii) Blood vessels that carry blood from heart to the lungs.
(iii) Largest blood vessel in our body.
(iv) Chamber where oxygenated blood from lungs is collected.
(B) What is double circulation?
(C) How is oxygen and carbon dioxide transported to tissues?

OR

- (A) Draw the human excretory system and label:
(i) Left Kidney (ii) Ureter (iii) Urinary bladder (iv) Vena cava
(B) What is the main toxic waste kidney filters from the blood?
(C) On what factors the amount of water reabsorbed depends?

36. The brain directs our body's internal functions. It also integrates sensory impulses and information to form perceptions, thoughts, and memories. The brain gives us self-awareness and the ability to speak and move in the world.

- (A) The brain is divided into three major subparts. Name these subparts.
(B) Name the part of the brain that is responsible for maintaining body posture. What other functions are performed by this part of brain.
(C) Name the part of the brain that has the reflex centres for sneezing and vomiting.
(D) The brain is the part of which nervous system?
(E) How is brain protected inside the body?

SECTION -E

37. Read the following and answer any four questions from 19(A) to 19(E)

Reproductive health is important as the process of sexual maturation is gradual and making choices can become very difficult due to pressure from friends, family or government agencies. Also, many diseases can be transmitted sexually as the sexual act is a very intimate connection of bodies. Study the table given below and answer the questions that follow.

Year	Male	Female	Total	M:F
2011	201	36	237	5.58:1
2012	186	50	236	3.72:1
2013	141	28	169	5.03:1
2014	154	48	202	3.20:1
2015	149	74	223	2.01:1

- a. Which of the following sexually transmitted diseases given below are bacterial infections?
(i) AIDS (ii) Gonorrhoea (iii) Syphilis (iv) Warts

Select the correct option:

- (A) Both (i) and (ii) (B) Both (ii) and (iii)
(C) Both (i) and (iii) (D) Both (ii) and (iv)

- b. Which of the statements regarding oral pills are incorrect?

- (i) Oral pills is a type of contraceptive method
(ii) Oral pills change the hormonal balance of the body
(iii) Oral pills can prevent sexually transmitted diseases
(iv) Oral pills can be taken by both males and females.

- (A) Only (i) (B) Both (i) and (iii)
(C) Both (ii) and (iv) (D) Both (iii) and (iv)

- c. The table below lists some common contraceptive methods. Select the row containing incorrect information.

	Method of Contraception	Example
(a)	Mechanical barrier method	Condom or similar worn in vagina

(b)	Chemical methods	Oral pills
(c)	Intra Uterine Contraceptive Devices	Tubectomy
(d)	Surgical methods	Vasectomy

d. The advantages of adopting contraceptive methods are:

- (i) helps in avoiding frequent and unwanted pregnancy
- (ii) keeps population and hence birth rate under control
- (iii) helps in preventing the spread of sexually transmitted diseases
- (iv) helps in improving the sex ratio.

Select the correct option:

- (A) Both (i) and (ii) (B) Both (ii) and (iii) (C) (i), (ii) and (iii) (D) (i), (ii) and (iv)

e. The child sex ratio (female per 1000 males) of a few Indian states is given below:

A student analyses the reasons for the declining child sex ratio and writes the following statements:

- (i) Female-male sex ratio must be maintained for a healthy society .
- (ii) Pre-natal sex determination is legal
- (iii) Female foeticide is illegal sex-selective abortion of female foetuses.
- (iv) Main reason for declining child sex ratio is reckless female foeticide

Choose the incorrect statement(s) from the following:

- (A) Only (i) (B) only (ii) (C) Both (i) and (iii) (D) both (ii) and (iv)

38. Read the following and answer any four questions from 20 (A) to 20 (E)

The acidic or basic nature of a liquid is important in determining the uses of the liquid. The enzymes in stomach liquids, which are acidic, aid in digestion. The strong acidic or basic nature of toilet bowl cleaners promotes effective cleaning. The acidity of automobile battery fluids makes the productive of electrical energy possible. Sometimes there is too much of one or the other and problems arise as a result. For Example, if our stomachs are too acidic we get a stomach-ache. Whether a liquid is acidic, basic, or neutral is measured by a quantity called pH. pH is an important quantity that reflects the chemical conditions of a solution. The pH can control the availability of nutrients, biological functions, microbial activity. And the behaviour of chemicals. Given below are pH values of some common substances:

S. No	Substance	pH value
(1)	Battery acid	1.0
(2)	Vinegar	2.2
(3)	Pickles	3.5 to 3.9
(4)	Tomatoes	4.5
(5)	Black Coffee	5.0
(6)	Cheddar Cheese	5.9
(7)	Milk	6.6
(8)	Human Blood	7.4
(9)	Baking soda	8.3
(10)	Milk of Magnesia	10.5
(11)	Lime	12.4

- a) The pH value of a neutral solution is:
(A) Less than 7 (B) equal to 7 (C) greater than 7 (D) Between 0 and 14
- b) The increase in pH value from 7 to 14 indicates:
(A) Increase in concentration of OH^- ions (B) increase in concentration of H^+ ions
(C) Decrease in concentration of OH^- ions (D) no change in Concentration of OH^- ions
- c) Select the incorrect statement when Hydrochloric acid or acetic acid of same concentration are taken:
(i) pH of Hydrochloric acid = pH of acetic acid
(ii) pH of Hydrochloric acid > pH of acetic acid
(iii) pH of Hydrochloric acid < pH of acetic acid
(iv) pH of not related to concentration of acid

(A) Only (iii) (B) Both (i) and (iv)
(C) Both (ii) and (iv) (D) (i),(ii) and (iv)
- d) Which of the following in increasing order of their pH values – Saliva (before meal). Lemon juice, Milk of Magnesia, Tap Water.
Select the row which has the substances arranged in correct order.
(A) Saliva (before meal) < Lemon juice < Milk of Magnesia < Tap water
(B) Lemon juice < Saliva (Before meal) < Tap water < milk of Magnesia
(C) Saliva (before meal) < Tap water < Lemon juice < Milk of Magnesia
(D) Lemon juice < Tap Water < Saliva (before meal) < milk of magnesia
- e) Out of battery acid, tomatoes, human blood and quicklime, the substance having least concentration of hydrogen ions (H^+) is:
(A) Battery acid (B) Tomatoes
(C) Human Blood (D) Quicklime