

General Instructions:

- i. This question paper consists of 39 questions in 5 sections.
- 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.
- iii. **Section A** consists of **20 objective type questions** carrying 1 mark each.
- iv. **Section B** consists of **6 Very Short questions** carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v. **Section C** consists of **7 Short Answer type questions** carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- vi. **Section D** consists of **3 Long Answer type questions** carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- vii. **Section E** consists of **3 source-based/case-based units** of assessment of 04 marks each with sub-parts.

Section - A

1. Which of the following will exhibit Tyndall effect
a. Pure water b. Tobacco smoke c. NaCl solution d. Glucose solution
2. How much Oxygen is required to obtain 4.4 g of CO₂
a. 5.6g b. 4.2g c. 1.8g d. 3.2 g
3. Metallic Sodium is soft to cut with knife. This is a -
a. Physical Change b. Chemical Change c. Both d. None of these
4. The Valency of Fe in FeSO₄ and Fe₂(SO₄)₃ are respectively -
a. 1,1 b. 2,3 c. 2,5 d. 1,3
5. Which of the solutions will have concentration more than 10%
(i) 10g of Ethyl alcohol mixed with 100 g of water
(ii) 5g of Ethyl alcohol mixed with 40 g of water
(iii) 1g of Ethyl Alcohol mixed with 25g of water
(iv) 10 g of Ethyl alcohol mixed with 85 g of water
a. i, ii and iii
b. i, ii and iv
c. ii and iv
d. ii and iii
6. Which fruit resembles Thomson's model of Atom
a. Apple b. Musk melon c. Watermelon d. Papaya
7. The Radioactive Isotope used in the treatment of Cancer is-
a. Sodium -24 b. Iodine- 131 c. Cobalt -60 d. arsenic-74
8. Which of the following is not related to endoplasmic reticulum?
a. it behaves as transport channel for proteins between nucleus and cytoplasm
b. it transport materials between various regions in cytoplasm
c. it can be the site of energy generation
d. it can be the site for some biochemical activities of the cell

9. Bone matrix is rich in
- Fluoride and calcium
 - Calcium and potassium
 - Calcium and phosphorus
 - Phosphorus and potassium
10. In desert plants, rate of water loss gets reduced due to the presence of
- Cuticle
 - Lignin
 - Stomata
 - Suberin
11. Find out the correct sentence
- Hybridization means crossing between genetically dissimilar plants
 - Cross between two varieties is called as inter specific hybridization
 - Introducing genes of desired character into a plant gives genetically modified crops
 - Cross between plants of two species is called as inter-varietal hybridization
- (i) and (iii)
 - (ii) and (iv)
 - (ii) and (iii)
 - (iii) and (iv)
12. Which of the following statement best describes frequency ?
- the maximum disturbance caused by a wave
 - the number of complete vibrations per second
 - the distance between one crest of a wave and the next one
 - the distance travelled by a wave per second
13. Each of the following statement describes a force acting. Which force is causing work to be done ?
- the weight of a book at rest on a table
 - the pull of a moving railway engine on its coaches
 - the tension in an elastic band wrapped around a parcel
 - the push of a person's feet when standing on the floor
14. A rectangular wooden block has length, breadth and height of 50 cm, 25 cm and 10 cm, respectively. This wooden block is kept on ground in three different ways, turn by turn. Which of the following is the correct statement about the pressure exerted by this block on the ground?
- the maximum pressure is exerted when the length and breadth form the base
 - the maximum pressure is exerted when length and height form the base
 - the maximum pressure is exerted when breadth and height form the base
 - the minimum pressure is exerted when length and height form the base
15. Two particles are placed at some distance from each other. If, keeping the distance between them unchanged, the mass of each of the two particles is doubled, the value of gravitational force between them will become :
- 1/4 times
 - 1/2 times
 - 4 times
 - 2 times
16. Which of the following situations involves the Newton's second law of motion ?
- A force can stop a lighter vehicle as well as a heavier vehicle which are moving.
 - A force can accelerate a lighter vehicle more easily than a heavier vehicle which are moving.

(c) A force exerted by a lighter vehicle on collision with a heavier vehicle results in both the vehicles coming to a standstill.

(d) A force exerted by the escaping air from a balloon in the downward direction makes the balloon to go upwards

Q, no 17 to 20 are Assertion – Reasoning based questions.

These consist of two statements- Assertion (A) and Reason (R). Answer these question 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

17. Assertion - Germanium , Boron and Antimony are classified as Metalloids.

Reason -Germanium ,Boron and Antimony possess some properties of Metals and some of non Metals.

18. Assertion: Fumigation of the grains using chemicals is done before storage in warehouses.

Reason: Fumigation gives a nice colour to the grains.

19. Assertion: Cattle are fed with roughage and concentrates.

Reason: Roughage provides fibres while concentrates provide proteins and other nutrients.

20. Assertion:- Echo is reflection of sound.

Reason:- Sound Travels through the material medium.

Section - B

21. An atom of an element has electronic Configuration 2,8,18,7

- 1. What is the Atomic number of this element
- 2. To which of the following it would be chemically similar
 ${}_7\text{N}$, ${}_{17}\text{Cl}$, ${}_{15}\text{P}$, ${}_{18}\text{Ar}$
- 3. What is the valency of this element
- 4. Is it a Metal or a Non-Metal

22. Classify the following in different groups based on their atomicity.

He, CO₂, NH₃, S₈, O₃, CH₄, PCl₃, O₂

23. Water Hyacinth floats on water surface. Explain.

24. Write the characteristic features of one voluntary and one involuntary muscles with the help of examples and diagrams.

25. Name the quantity which is measured by the area occupied under the velocity-time graph with the help of suitable Velocity-time graph.

26. Answer the following tissues:

- a. Differentiate between meristematic and permanent tissue.
- b. Name any two simple and two complex permanent tissues in plants.

Section - C

27. a) What is a Sol ? Give 2 examples.
- b) Name the 3 Isotopes of Hydrogen and Tabulate the main Sub atomic particles found in them
28. a) What conclusion would be derived from the observation that in Rutherford's Scattering experiment most of the alpha particles passed through the gold foil without deflecting and few particles were bent by larger angles.
- b) Write the Molecular formula for the following compounds Aluminium chloride, Calcium hydroxide, Copper(I) oxide, Sodium sulphide
29. Give one word from the following:
- a) Farming without the use of chemicals as fertilizers, herbicides and pesticides is known as.....
- b) Growing of wheat and groundnut on the same field is called as.....
- c) Planting soybean and maize in alternate rows in the same field is called as.....
- d) Growing different crops on a piece of land in pre-planned succession is known as.....
- e) Xanthium and Parthenium are commonly known as.....
- f) Causal organism of any disease is called as.....
30. A sound source sends a sound pulse, which returns from an underwater cliff in 1.02 s. If the speed of sound in salt water is 1531 m/s, how far away is the cliff ?
31. Calculate the force of gravitation between the earth and the sun, given that the mass of the earth = 6×10^{24} kg and of the sun = 2×10^{30} kg. The average distance between the two is 1.5×10^{11} m.
32. A 8000 kg engine pulls a train of 5 wagons, each of 2000 kg, along a horizontal track. If the engine exerts a force of 40000 N and the track offers a friction force of 5000 N, then calculate :
- (a) the net accelerating force,
- (b) the acceleration of the train, and
- (c) the force of wagon 1 on wagon 2.
33. If cells of onion peel and RBC are separately kept in hypotonic solution, what among the following will takes place?
- a. Both the cells will swell
- b. RBC will burst easily while cells of onion peel will resist the bursting to some extent.
- c. a and b both are correct
- d. RBC and onion peel cells will behave similarly.

Explain the reason by your answer.

Section - D

34. a) A sample of Neon contains it's isotopes ^{20}Ne (90.92%), ^{21}Ne (0.26%) and ^{22}Ne (8.82%). Find the average Atomic Mass of Neon.
- b) List any 2 Bohr -Bury Rules for electron distribution in atoms.

OR

34. a) State the law of conservation of Mass. Who gave this law and when?

b) When 0.0976 Mg. Was heated in air, 0.1618 MgO was produced. What is the mass of Oxygen needed to produced 0.1618 g of MgO. Which law is verified by the given data and how?

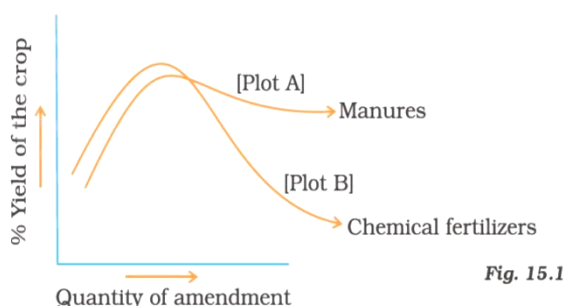
35. Answer the following questions:

- Draw an animal cell and label all the important parts found in it.
- Name one organelle that can make some of its protein found in plant cell only. Mention its function in the cell.

OR

35. Figure 15.1 shows the two crop fields [Plots A and B] have been treated by manures and chemical fertilizers respectively, keeping other environmental factors same. Observe the graph and answer the following questions.

- Why does plot B show sudden increase and then gradual decrease in yield?
- Why is the highest peak in plot A graph slightly delayed?
- What is the reason for the different pattern of the two graphs?



36. Illustrate the law of conservation of energy by discussing the energy changes which occur when we draw a pendulum bob to one side and allow it to oscillate. Why does the bob eventually come to rest ?.

OR

- Define Kinetic energy.
- Derive an expression for Kinetic energy.
- Calculate the velocity of a car of mass 1000 Kg. having Kynetic energy of 50000 J.

Section - E

37. An atom or group of atoms can lose or gain electrons to form Ions. When an atom gains electron negative ion is formed. When an atom loses electron positive ion is formed.

A molecule is a neutral particle, composed of set number of atoms bonded together.

Ionic compounds are made of ions. The particle of the ionic substance remains an ion.

- What is an Ion ?
- Give one word for -
 - Negatively charged ions
 - Positively charged ions
- Identify the cation and anion present in KCl
- Give 2 examples of Polyatomic ions.

38. Pragati went to attend a wedding reception with her grandfather. There was a good variety of food items. She tasted many items and left many items in the plate. This was also done by many guests attending the party. Her grandfather drew her attention to the amount of food wasted in this manner.

i) Why was grandfather concerned about the wastage of food?

ii) What steps you can suggest to ensure food security?

39. Ramesh and Sandeep are two very close friends who study in classes IX and X respectively. One day Ramesh and Sandeep had to go to a neighbouring town on their bicycles for some work. They had to cross a railway line on the way to the neighbouring town. When Ramesh and Sandeep were going in the afternoon, the railway crossing barrier was open, so they did not have to wait for going across it. Their work in the neighbouring town kept Ramesh and Sandeep busy till late in the evening. On their way back home, when Ramesh and Sandeep reached the same railway crossing, it was quite dark in the night and the railway crossing barrier was down (or closed) indicating that some train was expected to pass through soon. Ramesh was in a hurry to go back home. Ramesh told Sandeep that since he could not hear the sound of approaching train, so they did not know when the train would pass through the crossing and barrier would open. He suggested that instead of keeping on waiting, they should cross the railway tracks by going below the closed barrier by tilting their bicycles and lowering their heads. Sandeep did not agree with Ramesh. Sandeep said that they would not cross the railway tracks as long as the barrier was closed. Suddenly, Ramesh slipped through the barrier and put his ear on the railway track. Sandeep pulled him away from the railway track quickly. As soon as Ramesh was pulled away from the railway track, a super-fast train passed through the same track in the darkness of night without blowing any horn. Sandeep was very angry with Ramesh and scolded him for the risk he had taken. After the train passed through the crossing, the barrier was opened by railway staff. Ramesh and Sandeep then crossed the railway track along with their bicycles and reached home safely.

(Attempt Any four)

- a. How many times more is the speed of sound in railway track than the speed of sound in air?
- b. Why did Sandeep not allow Ramesh to cross the closed barrier of railway crossing?
- c. Why did Ramesh put his ear to the railway track ?
- d. Why did Sandeep pull Ramesh away from the railway track ?
- e. What values are displayed by Sandeep in this episode ?