Bhavan's Tripura Vidyamandir

2nd Terminal Examination : (2024-2025)

Class:- 9 **Subject:- Science**

Time:- 3 Hours Total :- 80 Marks

Name of the student : Roll: Sec:

General instructions:

1. *All the questions are compulsory.*
2. *Please write down the Serial Number of the question before attempting it.*
3. *The question paper consists of 40questions and it is divided into five sections A, B, C and D, E*
4. *Section A comprises of 20 questions carrying 1 mark each.*
5. *Section B comprises of 9 questions carrying 2 marks each.*
6. *Section C comprises of 5 questions carrying 3 marks each.*
7. *Section D comprises of 3 question carries 5 marks each.*
8. *Section E comprises of 3 question carries 4 marks each.*
9. *Using of log table, calculator & smart watch are strictly prohibited.*

Section A [1X20=20]

1. Which of the following is not a property of gas?
   (a) Gases have a definite shape
   (b) Gases have no definite volume
   (c) The rate of diffusion of a gas is higher
   (d) Gaseous particles are in a state of random motion
2. Which of the following phenomena would increase on rising temperature?
   (a) Diffusion, evaporation, compression of gases
   (b) Evaporation, compression of gases, solubility
   (c) Evaporation, diffusion, expansion of gases
   (d) Evaporation, solubility, diffusion, compression of gases
3. In the tincture of iodine, find the solute and solvent?
   (a) alcohol is the solute and iodine is the solvent
   (b) iodine is the solute and alcohol is the solvent
   (c) any component can be considered as solute or solvent
   (d) tincture of iodine is not a solution
4. Sol and gel are examples of ————————
   (a) Solid-solid colloids
   (b) Sol is a solid-liquid colloid and gel is liquid-solid colloid
   (c) Sol is solid- solid colloid and gel is solid-liquid colloid
   (d) Sol is a liquid-solid colloid and gel is a solid-liquid colloid
5. What is the chemical formula of sodium carbonate?
   (a) Na_2CO_3 (b) $NaHCO_3$ (c) $NaCO_3$ (d) Na_2HCO_3
6. Who discovered the electron?
   (a) Goldstein (b) J.J Thomson (c) Chadwick (d) Eugen Goldstein
7. Who proposed the concept of fixed energy levels around the nucleus?
   (a) Ernest Rutherford (b) Niels Bohr (c) J.J. Thomson (d) all of them
8. Colorless plastid are known as-
   (a) Leucoplast (b) Chloroplast (c) Protein (d) Both a and c
9. Ribosomes are made up of-
   (a) RNA (b) Lipoprotein (c) Protein (d) Both a and c
10. The high yielding disease assistant variety of plant can be produced by
    (a) Sowing good seeds (b) Hybridization
    (c) Proper irrigation (d) Multiple cropping
11. Which of the following does not affect the value of acceleration due to gravity ?
    (a) The mass of the object. (b) The altitude above the Earth's surface.
    (c) The latitude of the location. (d) The distance from the center of the Earth.

12) A ball is thrown vertically upward. At the highest point of its motion:
(a) Its velocity is zero, and acceleration is zero.
(b) Its velocity is maximum, and acceleration is zero.
(c) Its velocity is zero, and acceleration is downward.
(d) Its velocity and acceleration are both zero.

13) A machine does 500 J of work in 10 seconds. What is its power?
(a) 50 W (b) 500 W (c) 5 W (d) 5000 W

14) A cyclist starts from rest and accelerates uniformly to a speed of 10 m/s in 10 seconds. What is the acceleration of the cyclist?
(a) 0.5 m/s^2 (b) 1 m/s^2 (c) 1.5 m/s^2 (d) 2 m/s^2

15) The frequency of a sound wave is doubled, but the speed of sound remains constant. What happens to the wavelength?
a) It remains the same. b) It doubles. c) It becomes half. d) It becomes four times.

16) Which of the following phenomena proves that sound waves are longitudinal in nature?
a) Echo b) Refraction of sound
c) Compression and rarefaction d) Reflection of sound

Question number (17-20) these consist of two statements-Assertion(A) and Reason(R). Answer the 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 (A):** The size of the nucleus is very small as compared to the size of the atom.
Reason (R): The electrons revolve around the nucleus of the atom

18. **Assertion (A):** Arenchyma occurs in aquatic plants
Reason (R): It is specialized to perform photosynthesis

19. **Assertion (A):** Columner epithelium occurs in the living of the intestine
Reason (R): It is specialized to absorb nutrients

20. **Assertion (A):** The weight of an object decreases as we move from the equator to the poles.
Reason (R): The radius of the Earth is maximum at the equator and minimum at the poles.

Section B [2x9=18]

21. How many atoms are present in a
(i) H_2S molecule and (ii) PO_4^{3-} ion?

22. If the number of electrons in an atom is 8 and the number of protons is also 8, then
(i) What is the atomic number of the atom?
(ii) What is the charge on the atom? (1+1)

23. Write two differences between nuclear region and in chromosome number present in prokaryotic and in eukaryotic cell.

24. Define tissue and what is the ability of tissue in multicellular organism?

25. What will happen if:
(i) Apicalmeristem is damaged or cut? (ii) Cork is not formed
OR Where is the apicalmeristem formed? Draw the location of meristematic tissue in plants.

26. Ramesh is planning to grow maize in his filed for best production, in which method he should saw seeds and why?

27. State which of the following situations are possible and give an example for each of these:
(i) An object with a constant acceleration but with zero velocity.
(ii) An object moving in a certain direction with an acceleration in the perpendicular direction.

28. Name and state the law of motion which gives the measure of force?

29. Draw a diagram to show the wave pattern of high pitch note and a low pitch note, but of the same loudness.

OR Why do we can hear the sound produced by the humming bees while the sound of vibrations of pendulum are not heard?

SECTION C [3X5=15]

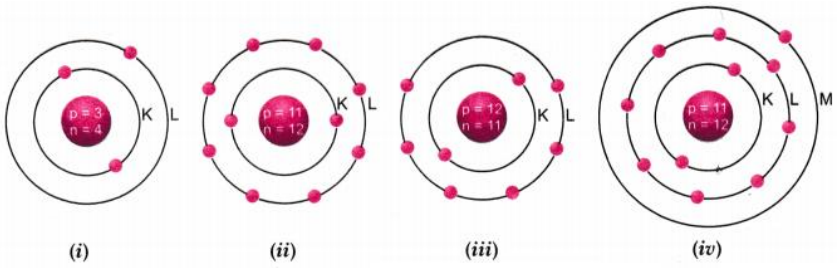
30. (a) Differentiate between homogenous and heterogeneous mixtures with examples.
(b) How are sol, solution and suspension different from each other? (2+1=3)

31. Give reasons-

a) A gas fills completely the vessel in which it is kept.
b) A gas exerts pressure on the walls of the container.
c) A wooden table should be called a solid

OR

Identify the Na^+ ion from the following figures. What is the valency of sodium atom? Give reason.



Why do isotopes show similar chemical properties? (2+1=3)

32. (a) How do biotic factors and abiotic factors affect crop production?
(b) Why should preventive measure and biological control methods be preferred for protecting crops?

33. Draw a diagram to show animal cell and level the following parts:
a. Power house of the cell
b. Suicidal bag
c. Organelle which helps in cell division
d. Organelle which helps in transportation

34. A stone is allowed to fall from the top of a tower 100 m high and at the same time another stone is projected vertically upwards from the ground with a velocity of 25 m/s. Calculate when and where the two stones will meet.

OR A ball is thrown vertically upwards. The speed of the ball was 10 m/s when it had reached one- half of its maximum height.
(a) How high does the ball rise?
(b) Find the velocity and acceleration 1s after it is thrown.

SECTION –D [5X3=15]

35. (a) Draw a sketch of Bohr's model of an atom with three shells.
(b) If the number of electrons in an atom is 8 and the number of protons is also 8, then-
(i) What is the atomic number of the atom?
(ii) What is the charge on the atom?
(c) Write the electronic configuration of any one pair of isotopes . (2+2+1)

OR (a) Describe Bohr's model of the atom.
(b) If Z=3, what would be the valency of the element? Also, name the element. (3+2)

36. Why is plasma membrane is called as selectively permeable membrane. Cell is called as structural and functional unit of life, explain. (2+3)

OR

In a village 3 to 4 variety of fishes are cultured in a single pond.
a. What could be the name of that fish culture process?
b. Name the variety of fishes that are generally cultured in the single pond and how?
c. What is the problem that may arise in this type of fish culture? (1+1.5+1.5+1)

37. (a) An automobile vehicle has a mass of 1500 kg. What must be the force between the vehicle and road if the vehicle is to be stopped with a negative acceleration of 1.7 ms^{-2}.

b) Explain, why is it difficult for a fireman to hold a hose, which ejects a large amount of water at a high velocity.

OR

a) (i) Why does the rider fall in the forward direction when a running horse stops suddenly?

(ii) Why is it easier to stop tennis ball in comparison to a cricket ball moving with the same speed?

(iii) An athlete always runs some distance before taking a jump. Why?

(b) Which is having a higher value of momentum A bullet of mass 10 g moving with a velocity of 400 m/s or a cricket ball of mass 400g thrown with the speed of 90 km/h?

SECTION – E [4x3=12]

Case Study:

Read the following paragraph and answer the questions.

38. The simplest compounds which are made up of two different elements are termed as binary compounds. While writing the chemical formulae for compounds, the constituent elements and their valencies are written.

a) Deduce molecular formulae for aluminium chloride.

b) Deduce molecular formulae for ammonium hydrogen carbonate.

c) Write significance of molecular formulae.

OR

d) Deduce molecular formulae for ammonium sulphate and calculate it's molecular mass. (1+1+2)

39. Sclerenchyma is a dead tissue. It occurs over vascular bindles, hypodermis of monocot stem, veins of leaves and in hard of covering of seeds and nuts. The cell has deposition of lignin. It has narrow cell cavity cause lumen. The cell is generally elongated and spindled shaped. It provides mechanical strength.

a) Define the shape sclerenchyma tissue

b) Where the sclerenchyma tissue found?

c) Write about the major function of sclerenchyma tissue.

OR

c) What is lignin? What is lumen? (1+1+2)

40. Kinetic energy of an object is the measure of the work an object can do by virtue of its motion. It is a scalar quantity and it is entirely described by magnitude alone. Simple act like walking, jumping, throwing and falling involves kinetic energy. The kinetic energy of a body is directly proportional to the mass of the body and to the square of velocity of the body (or square of the speed of the body).

a) If the speed of a motor bike decreases by 4 times. How does its kinetic energy will change?

b) On what factors kinetic energy of a body depends?

c) Two bodies have their masses $\frac{m_1}{m_2}$ = 3 and their kinetic energies $\frac{KE_1}{KE_2} = \frac{1}{3}$. What will be the ratio of their velocities?

OR

c. An object of mass 500 g falls from a height of 2 m. If g = 9.8 m/s^2, what is its kinetic energy just before touching the ground? [1+1+2]