NTSE

IX - CLASS
Sample Paper Science

GENERAL INSTRUCTION:

1) The question paper comprises five sections, A, B, C, D and E.
2) All questions are compulsory.
3) Internal choice is given in section B, C, D, and E.
4) Question numbers 1 and 2 in Section - A are one mark each. These are to be answered in one sentence.
5) Question numbers 3 to 5 in Section - B are two marks each. These are to be answered in about 30 words each.
6) Question numbers 6 to 15 in Section - C are three marks each. These are to be answered in about 50 words each.
7) Question numbers 16 to 21 in Section - D are five marks each. These are to be answered in 70 words each.
8) Question numbers 22 to 27 in Section - E are based on practical skills. Each question is a two marks question. These are to be answered in brief.

SYLLABUS & MARKING SCHEME:

SUBJECT	UNIT	MARKS
PHYSICS	1) Motion 2) Force and Law of motion 3) Gravitation 4) Work, Energy and Power 5) Sound	26
CHEMISTRY	1) Matter in our surroundings 2) Is matter around us pure 3) Atoms & Molecules 4) Structure of atom	26
BIOLOGY	1) Cell: The fundamental unit of life 2) Tissues 3) Diversity 4) Improvement in food resources 5) Why do we fall ill 6) Natural resources	28
	Total	**80**

SECTION – A

1. What are cathode rays? **[1]**

2. When a tree is shaken, apple falls down. Explain. **[1]**

SECTION – B

3. What are pure substances? Write the characteristic of pure substance. **[2]**

4. State Archimedes principle. Give any two applications of Archimedes principle? **[2]**

5. Draw a labeled diagram of the basic unit of nervous tissue.

OR

What are bio-fertilizers? Enlist the major group activities for improving crop yields. **[2]**

SECTION – C

6. Two objects, each of mass 1.5 kg are moving in the same straight line but in opposite directions. The velocity of each object is 2.5 ms^{-1} before the collision during which they stick together. What will be the velocity of the combined object after collision? **[3]**

7. Write all the three Kepler's laws, which govern the motion of planets. **[3]**

OR

(a) An object weight 10 N when measured on the surface of the Earth. What would be its weight when measured on the face of the moon?
(b) Justify that the weight of an object on the moon is 1/6th of its weight on the Earth?

8. What is SONAR? How does it work? **[3]**

9. Why does the temperature of a substance remain constant during its melting point or boiling point? **[3]**

10. (a) Differentiate between true solution, colloid & suspension on the basis of the following properties : (i) Size of particles (ii) Stability
(b) When a beam of light was passed the solution of substance 'A' dissolved in water, the path of light could be seen. What is this phenomenon called? What is the nature of the solution? **[3]**

11. What are the postulates & limitation of Dalton's atomic theory? **[3]**

OR

What are the postulates of Bohr's model of an atom?

12. Differentiate between prokaryotic and Eukaryotic cell. **[3]**

13. Why are antibiotics not effective against viral infections? **[3]**

14. What are the advantages of intercropping and crop rotation? **[3]**

15. Explain nitrogen cycle.

<div align="center">**OR**</div>

Write the location of different types of meristamic tissue? On what basis are they divided? **[3]**

<div align="center">**SECTION – D**</div>

16. (a) What is the law of conservation of energy? **[5]**
(b) What is mechanical energy? Show that total mechanical energy of a freely falling body remain same throughout its free fall.

17. Derive the relations $v = u + at$, $s = ut + \frac{1}{2}at^2$ and $v^2 = u^2 + 2as$. **[5]**

<div align="center">**OR**</div>

(a) A body of mass 2 kg is thrown vertically upward with an initial velocity of 20 m/s. What will be its potential energy at the end of 2 s ? (Assume g = 10 m/s²).
(b) Find the momentum of a body of mass 100 g having kinetic energy of 20 J.
(c) Ram was driving a car of 1500 kg moving at a constant velocity of 60 km/h. Shyam tries to stop the car. Calculate work done by Shyam to stop the car.

18. (a) Define atom. **[5]**
(b) Define molecule. What is basic difference between atoms and molecules ?
(c) 0.24g sample of compound of oxygen and boron was found by analysis to contain 0.096g of boron and 0.144g of oxygen. Calculate the percentage composition of the compound by weight.

19. (a) What conclusions were drawn from Rutherford's α-particle scattering experiment. **[5]**

(b) An ion X^{2-} contains 10 electrons and 8 neutrons. What are the atomic no and mass no. of the element X? Name the element

<div align="center">**OR**</div>

For an activity a class is divided into two groups 'A' and 'B'. Group 'A' was asked to mix crushed iron filings and sulphur powder. Group 'B' was asked to mix crushed iron filings and sulphur powder and then to heat the mixture strongly till red hot. After this they were asked to cool this mixture. Both the groups were asked to observe the properties of their mixtures. Answer the questions:
(a) What will be the difference in the appearance of the material obtained by the two groups?
(b) Which group has obtained a material with magnetic property?
(c) Can both the groups separate the components of the substance obtained? Give reason for your Answer.
(d) On adding dilute sulphuric acid or dilute Hydrochloric acid did both the groups obtain a gas? Did the gas in both cases smell the same or different? Why?
(e) What is the reason for difference in observation of two groups?

20. Differentiate between: **[5]**
(a) Personal health and community health.
(b) Acute diseases and chronic diseases.
(c) Infectious disease and non-infectious disease.
(d) Sign and symptoms

21. (a) Thallophyta, bryophyta and pteridophyta are called as cryptogams Gymnosperms and Angiosperm are called as phanerogams. Discuss why. **[5]**
(b) State five characteristic features of chordates.

<div align="center">**OR**</div>

(a).How does an amoeba obtains its food, Explain with the help of diagram?
(b).What will happen if there is no Golgi body in the cell?
(c) Give reason why lysosomes are known as suicidal bag of the cell?

<div align="center">**SECTION – E**</div>

22. A person is listening to a tone of 500 Hz sitting at a distance of 450 m from the source of the sound. What is the time interval between successive compressions from the source? **[2]**

<div align="center">**OR**</div>

An electric heater is rated 1500 W. How much energy does it use in 10 hours?

23. (a) Define power. What is S.I. unit of power? **[2]**
(b) Define 1 watt.

24. How are clouds formed? **[2]**

<div align="center">**OR**</div>

What is green revolution related to? On what factors growth of crops depends?

25. Mention the significance of osmosis and diffusion. **[2]**

26. Which separation techniques will you apply for the separation of the following? **[2]**
(a) Butter from curd.
(b) Tea leaves from tea.

27. When we dissolve some salt/sugar in water then it disappears and water level doesn't change even. What could be the reason? **[2]**

<div align="center">**OR**</div>

What is dry ice? How is it prepared?