KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION
SESSION ENDING EXAM (2024-25)

CLASS – IX **SUBJECT - SCIENCE**

MAX. M: 80 **TIME: 3Hrs**

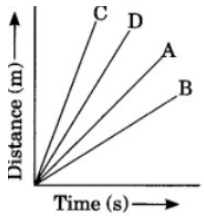
General Instructions: -

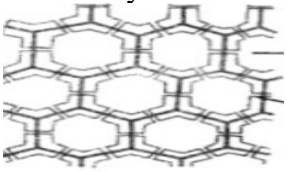
1. This question paper consists of 39 questions in 5 sections. All questions are compulsory.
2. Section A consists of 20 objective type questions carrying 1 mark each.
3. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
4. 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.
5. 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.
6. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

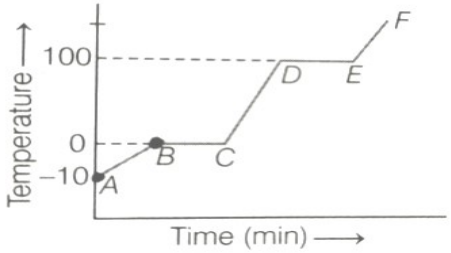
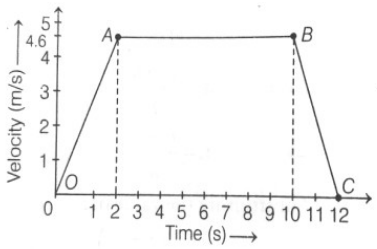
<table>
<tr><th>QUE.</th><th>SECTION-A</th><th>M</th></tr>
<tr><td>Q.1</td><td>Temperature 200^{0}C equals nearly to

a.300K b. 373K c.473K d.73K</td><td>1</td></tr>
<tr><td>Q.2</td><td>Tyndall effect can be observed in a colloidal solution. Consider light scattering in the following:

i. When sunlight passes through the canopy of a dense forest.
ii. When normal light passes through copper sulphate solution.
iii. When normal light passes through milk.
iv. When a fine beam of light enters a room through a small hole.
Tyndall effect is observed in:
a.i and iv b. i, iii, and iv c.ii and iii d. iii and iv</td><td>1</td></tr>
<tr><td>Q.3</td><td>Cooking of food and digestion of food:
a.are both physical processes.
b. are both chemical processes.
c.cooking is physical whereas digestion is chemical.
d. cooking is chemical whereas digestion is physical.</td><td>1</td></tr>
<tr><td>Q.4</td><td>Which among the following is not a postulate of Dalton’s atomic theory?
a. Atoms cannot be created or destroyed.
b. Atoms of different elements have different sizes, masses and chemical properties.
c. Atoms of same elements can combine in only one ratio to produce more than any one compound.
d. Atoms are very tiny particles which cannot be further divided.</td><td>1</td></tr>
<tr><td>Q.5</td><td>
<table>
<tr><th>ATOMS</th><th>MASS NUMBER</th><th>ATOMIC NUMBER</th></tr>
<tr><td>A</td><td>40</td><td>20</td></tr>
<tr><td>B</td><td>7</td><td>3</td></tr>
<tr><td>C</td><td>14</td><td>7</td></tr>
<tr><td>D</td><td>16</td><td>8</td></tr>
</table>
Which of these atoms contain 7 protons?
a. A b.B c.C d.D</td><td>1</td></tr>
</table>

Q.6	Which cell organelle plays a crucial role in detoxifying many poisons and drugs? a. Golgi apparatus b. Lysosomes c. Smooth endoplasmic reticulum d. Vacuoles	1
Q.7	The cell organelle involved in forming complex sugars from simple sugars are a. Golgi apparatus b. ribosomes c. endoplasmic reticulum d. plastids	1
Q.8	Intestine absorbs the digested food materials. What type of epithelial cells are responsible for that? a.stratified squamous epithelium b.columnar epithelium c. spindle fibers d.cuboidal epithelium	1
Q.9	Match the following: A. Lateral — 1. Present at the base of the leaves B. Intercalary — 2. Present at the roots and stem tips C. Apical — 3. Present on the lateral sides of the roots and stems. a.A-3, B-2, C-1 b.A-3, B-1, C-2 c.A-2, B-1, C-3 d.A-1, B-2, C-3	1
Q.10	Suppose a boy is moving with a uniform velocity of 10 m/s on a merry-go-round ride. Which of the following is true of the given scenario? a.The boy is at rest. b.The boy is moving with no acceleration. c.The boy is moving with accelerated motion. d.The boy is moving with uniform velocity.	1
Q.11	Four cars A,B,C and D are moving on a levelled road. Their distance versus time graphs are shown in figure. Choose the correct statement.  a. Car A is faster than car D. b. Car B is the slowest. c. Car D is faster than car C. d.Car C is the slowest.	1
Q.12	A girl stands on a box having 60cm length, 40cm breadth and 20 cm height in three ways. In which of the following cases, pressure exerted on the box will be: a.maximum when length and breadth form the base. b.maximum when breadth and height form the base. c.maximum when height and length form the base. d.the same in all the above three cases.	1
Q.13	When a ship floats in sea water a.The weight of water displaced is greater than the weight of the ship. b. The weight of water displaced is less than the weight of the ship. c. The weight of water displaced is equal to the weight of the ship. d.it displaces no water.	1
Q.14	In case of negative work, the angle between the force and displacement is: a.0 b.45^0 c.90^0 d.180^0	1

Q.15	A boy hears the echo of his own voice from a distant hill after 0.8s. If the speed of sound in air is 340 m/s, calculate the distance of hill from the boy. a.96m b.126m c.136m d.156m	1
Q.16	The frequency of a source of sound is 200 Hz. How many times does it vibrate in 2 min? a.2400 b.24000 c.24500 d.2450	1
Q.17	(Q.nos. 17-20) consist of two statements – **Assertion(A)** and **Reason(R)**. Answer these questions by selecting the appropriate option given below. *a. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.* *b. Both Assertion and Reason are true and Reason is not the correct explanation of Assertion.* *c. Assertion is true but Reason is false.* *d. Assertion is false but Reason is true.* *Assertion(A):* Liquids diffuse less easily as compared to gases. *Reason(R):* Intermolecular forces are greater in gases	1
Q.18	*Assertion(A):* Prokaryotic cells are primitive and larger than eukaryotic cells. *Reason(R)*: Prokaryotic cells lack cytoplasmic organelles.	1
Q.19	*Assertion(A):* If two persons walking or running in opposite direction collide with each other, then both feel hurt. *Reason(R):* Every action applies equal reaction.	1
Q.20	*Assertion(A):* Pesticides are poisonous for living organisms and cause environmental pollution. *Reason(R):* Organic farming is environment-friendly and does not rely much on agricultural chemicals.	1
	SECTION-B	
Q.21	Comment on the following statements: A. Evaporation produces cooling. B. Rate of evaporation of an aqueous solution decreases with increase in humidity.	2
Q.22	Calculate the molecular mass of : A.C_2H_4 B.NH_3	2
Q.23	<u>*Attempt either option A or B*</u> **A**.Draw the diagram of a neuron and mark dendrite, axon and nerve ending on it. **OR** **B.** Identify the tissue and specify its function. 	2
Q.24	Four men lift a 250kg box to a height of 1m and hold it without raising or lowering it. **A.**How much work is done by the man in lifting the box? **B.**How much work do they do in just holding it?	2
Q.25	A 150kg car engine develops 500W for each kg. What force does it exert in moving car at speed of 20 ms^{-1}? **OR** A mass of 10 kg is dropped from a height of 50cm. Find its i.potential energy just before dropping. ii.kinetic energy just on touching the ground.	2
Q.26	An Italian bee variety *Apismallifera*has been introduced in India for honey production. Write about its merit over the other varieties.	2

	SECTION-C	
Q.27	Observe the graph given below and answer the questions:  A.Which region contains only solids? B.Which region contains all liquids? C.Which region shows latent heat of vaporisation?	3
Q.28	**A.**Rama tested the solubility of four substances at different temperatures and found gram of each substance dissolved in 100g of water to form a saturated solution. **Substance dissolved (in gram)** / **293 K** / **313 K** / **333 K** Ammonium chloride / 37g / 41g / 55g Potassium chloride / 35g / 40g / 46g Sodium chloride / 36g / 36g / 37g Potassium nitrate / 32g / 62g / 106g i.Which substance shows maximum change in its solubility when the temperature is raised from 293K to 313K? ii.What is the effect of temperature on the solubility of a salt? iii.What mass of sodium chloride would be needed to make a saturated solution in 10g of water at 293 K? **OR** **B.** Give the formulae of the compounds formed from the following sets of elements: i. Hydrogen and Sulphur ii.Carbon and oxygen iii.Carbon and chlorine	3
Q.29	**A.**Name the organelles, which show the analogy written as under: i.Storage sac of the cell ii.Digestive bag of cell iii.Control room of the cell iv. Powerhouse of the cell **B.** The functional segments of DNA are genes. Give reasons.	3
Q.30	A. Write two differences between striated and smooth muscles. B. Draw a well labelled diagram of cardiac muscles found in the human body.	3
Q.31	The v-t graph of an object is as shown below: i.Identify the type of motion by line BC. ii.Velocity at t = 8s iii.Calculate acceleration **a.**between 3rd and 10th second **b.**during last 2s.  	3
Q.32	**A.** Write the formula to find the magnitude of gravitational force between the earth and an object on the earth's surface.	3

	B. Derive how does the value of gravitational force between two objects change when: i. Distance between them is reduced to half. ii. Mass of an object is increased four times.	
Q.33	**A.** Which factors are responsible for causing loss of storage grains? **B.** State some preventive measures for storage of food grains. **C.** State two advantages of animal husbandry.	3
	SECTION-D	
Q.34	i. What do you understand by Octate state of an atom ?? ii. Make a schematic atomic structure of Magnesium and Phosphorus. iii. Write the difference between isotopes and isobars with examples. **OR** **i.** On the basis of Rutherford's model of an atom, which subatomic particle is present in the nucleus of an atom? **ii.** From Rutherford's alpha particle scattering experiment, give the experimental evidence for deriving the conclusion that: a. most of the space inside the atom is empty. b. the nucleus of an atom is positively charged **iii.** An element has mass number = 32 and atomic number = 16, find a. the number of neutrons in the atom of the element. b. the number of electrons in the outermost shell of the atom.	5
Q.35	i. Why cell membrane called selectively permeable membrane? ii. State any two differences between Plasma membrane and cell wall. iii. Give one similarity and one difference between mitochondria and plastids. **OR** Make a comparison and write down the ways in which plant cells are different from animal cells.	5
Q.36	i. What changes can force bring on object? ii. On what factors do the following physical quantities depend? a.Inertia b.force iii. If the engine of a car provides an acceleration of $2m/s^2$ to start it from rest, then assuming the mass to be roughly 1000 kg. Calculate a. force provided by the engine b.velocity after 10s. **OR** i. On what factors does the momentum of a body depend? ii.Calculate the change in momentum of a body weighing 5 kg when its velocity decreases from 20 m/s to 0.20 m/s. iii.What is the momentum in kg m/s of a 10 kg car travelling at (a) 5 m/s (b) 20 cm/s.	5
	SECTION- E	
Q.37	The molecular mass of a substance is the sum of the atomic masses of all the atoms in a molecule of the substance. It is therefore, the relative mass of a molecule expressed in atomic mass units (u). Depending upon the number of atoms of same or different elements present in the molecule, it can be monoatomic, diatomic, triatomic, tetra-atomic or polyatomic molecule. The formula unit mass is calculated in the same manner as the molecular mass calculated. It is a sum of the atomic masses of all atoms in a formula unit of compound. i.What is the relative molecular mass of H_2O? ii.Explain polyatomic molecule with example. iii.How many atoms are present in a molecule of H_2S and PO_4^{3-}ion? **OR** iii.Calculate the ratio by mass of the combining elements in the compound CO_2 and NH_3.	4

Q.38	Anuj in his science class, learnt about the tissues that help a plant to survive. He learnt that all living organisms need some method of moving substances from one part to other parts of the body. Plants have a transport system to move things around. The xylem moves water and solutes from roots to leaves through transportation. The phloem moves glucose and amino acids from the leaves of the plant through translocation. The xylem and phloem are arranged in groups called vascular bundles. The xylem is constituted in 4 elements, i.e., tracheid's, vessels, parenchyma and fibers, while phloem is constituted by sieve tube, companion cells, phloem fibers and parenchyma. i.All phloem cells are living with one exception. Which component is this exception? ii.What is the function of companion cells of phloem tissue? iii.Why are xylem and phloem classified as complex permanent tissues?Write one difference between tracheid's and vessels.	4
Q.39	Hearing range describes the range of frequencies that can be heard by humans or other animals though it can also refer to the range of levels. Children under the age of five and some animals, such as dogs can hear up to 25 kHz.As people grow older, their ears become less sensitive to higher frequencies.It is observed that some animals get disturbed before earthquakes . Earthquakes produce low-frequency infrasound before the main shock waves begin which possibly alert the animals.There are sounds of frequencies below 20 Hz and also higher than 20 kHz. There is a device used by people who are hard of hearing. i. Name the sound having frequency range less than 20 Hz. ii. In which range do the whales and elephants produce frequency of sound? iii. What do you mean by audible range for human beings? What is the audible range for humans?	4