PT-2/HALF YEARLY EXAMINATION, 2022-23

SCIENCE

Time - 3 Hours **Class – IX** **M.M. * 80**

Date – 16.09.2022 (Friday)

Name of the student _____ Section _____

General Instructions

- There are 30 questions in the question paper. All questions are compulsory. Question paper comprises three sections – A, B and C.
- **Section A** – Question no. 1 to 14 are of one mark each. These questions comprise multiple choice questions (MCQ), very short answer type questions (VSA), Assertion-Reason type questions and Case based questions. Answer to these questions should be given in one word or one sentence.
- **Section B** – Question no. 15 to 24 are short answer (SA)type questions, carrying 3 marks each. Answer to these questions should not exceed 50 to 60 words.
- **Section C** – Question no. 25 to 30 are long answer type questions, carrying 5 marks each. Answer to these questions should not exceed 80 to 90 words.
- There is no overall choice in the question paper. However, an internal choice has been provided in some questions in each section. Only one of the choices in such questions have to be attempted.
- In addition to this, separate instructions are given with each section and question, wherever necessary.

SECTION – A

Q.1 When the distance traveled by a body is directly proportional to time, it is travelling with: (1)

a) Uniform acceleration b) Non – uniform acceleration

c) Constant speed d) Displacement of the particle

Q.2 Which of the following statements is incorrect for an object moving along a straight path in an accelerated motion? (1)

a) Its speed keeps changing b) Its velocity always changes

c) Its momentum is zero d) A force is always acting on it.

Q.3 The atmosphere is held to the earth by: (1)

a) Gravity b) Wind c) Clouds d) Earth's magnetic field

Q.4 An example of colloid in which dispersed phase is gas and dispersion medium is solid is (1)

a) Pumice stone b) Smoke c) Gemstone d) Jellies

Q.5 Cartilage is not found in (1)

a) nose b) ear c) kidney d) trachea

OR

Which of the following helps in repair of tissue and fills up the space inside the organ?

a) Tendon b) Adipose tissue c) Areolar d) Cartilage

Q.6 Flexibility in plants is due to (1)

a) collenchyma b) sclerenchyma c) parenchyma d) chlorenchyma

Q.7 The phenomenon in which cytoplasm shrinks in a hypertonic medium is called- (1)

a) Frontolysis b) Plasmolysis c) Acidolysis d) Allolysis

Q.8 What is the C.G.S. unit of mass? [1]

OR

Is mass a scalar or vector quantity?

Q.9 Zinc dissolves in Hydrochloric acid with the evolution of hydrogen gas. Classify the above change as physical or chemical change with proper justification. (1)

Q.10 What is endocytosis? (1)

Directions: In question no. **11 and 12**, a statement of **Assertion** is given and a corresponding statement of **Reason** is given just below it. Of the statements, given below, mark the correct answer as:

a) Both assertion and reason are true and reason is the correct explanation of assertion.

b) Both assertion and reason are true but reason is not the correct explanation of assertion.

c) Assertion is true but reason is false.

d) Assertion is false and Reason is true.

e) Both Assertion and Reason are false.

Q11. **Assertion** : When saturated solution of KCl is heated it becomes super saturated.

Reason : Solubility of KCl increases with rise in temperature. (1)

Q.12 **Assertion :** Meristematic tissues constitute the major portion of the plant body.
Reason : Meristematic tissues consist of differentiated cells. (1)

Q.13 **(CASE) Muscular** tissue makes up our muscles which are responsible for almost all the movements that take place in the body.

Striated/Skeletal Muscles :All the voluntary movements in our body is carried out by the striated or skeletal muscles. They are called skeletal because these tissues are mostly attached to the bones. They are long, cylindrical, unbranched with striations and are multinucleated.

Unstriated/Smooth Muscles: Almost all the involuntary movements in the body are carried out by the smooth or unstriated muscles. They are long, smooth, spindle shaped and uninucleated. We can find them in places like alimentary canal, urinary bladder and blood vessels.

Cardiac Muscles: Cardiac muscles make up our entire heart. These muscles are involuntary in nature and show rhythmic contractions and relaxations. Structurally they may look quite similar to striated muscles but they are branched, uninucleated and have intercalated discs.

Answer the questions given below-

(i) The muscle whose contraction is under our control is - (1)

a) Skeletal muscle b) Smooth muscle c) Cardiac muscle d) Both a) & b)

(ii) The smooth muscles are found in walls of - (1)

a) urinary bladder b) blood vessels c) alimentary canal d) All of above

(iii) Intercalated discs are present in- (1)

a) Skeletal muscles b) Smooth muscles c) Cardiac muscles d) all the above

(iv) During a performance, if a dancer wants to stop her dancing, which muscle will execute this decision? (1)

a) Striated muscle b) Smooth muscle

c) Cardiac muscle d) Involuntary muscle

Q14. **(CASE)** All the materials we see in our daily lives (from ice-cream to chairs to water) are made up of matter. Matter can be classified into different states such as solid, liquid and gas on the basis of intermolecular forces and the arrangement of particles.

On the basis of chemical properties, matter is classified as elements, compounds and mixtures. These are further categorized based on their other properties like reactivity, inflammability, combustion etc**.**

Answer the following questions-

(i) An unknown substance 'A' on thermal decomposition produces 'B' and 'C'. What is 'A'—an element, a compound or a mixture? (1)

(ii) Write the name of non –metal which exists as a liquid at room temperature. (1)

(iii) Homogenous mixture of two or more metals is called? (1)

a. Metalloid b. Alloy c. Allotropes d. Colloid

(iv) When a mixture of iron fillings and sulphur powder is heated in china dish, a black coloured substance is formed. What is the name and formula of this substance? (1)

SECTION –B

Q15. Derive the relation $v^2 = u^2 + 2as$ by graphical method. (3)

OR

Derive the relation $s = ut + \frac{1}{2}at^2$ by graphical method.

Q.16 From a rifle of mass 4 kg, a bullet of mass 50 g is fired with an initial velocity of 35 m/s. Calculate the initial recoil velocity of the rifle. What is the direction of the recoil velocity? (3)

Q.17 What is the value of universal gravitational constant in S.I. system? The centers of two identical spheres of masses 1 kg each are kept at a distance 1 m apart. What is the gravitational force between the spheres? (3)

Q.18 Define acceleration due to gravity. Derive an expression for acceleration due to gravity in terms of mass of the earth (M) and universal gravitational constant (G). (3)

Q.19 a) Calculate the mass of potassium sulphate required to prepare 10 percent solution in 200g water. (3)

b) What type of colloid is milk?

Q.20 Which phenomenon occurs during the following changes? (3)

(i) Heating of ammonium chloride

(ii) Drying of wet clothes

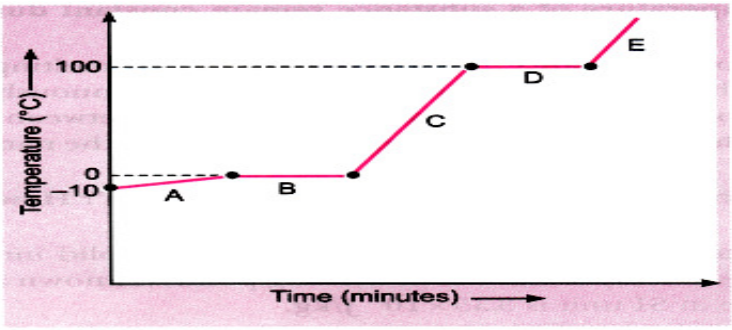
(iii) Getting smell of food from several metres away.

OR

Differentiate the three states of matter on the basis of

a) Density b) Volume c) Kinetic energy

Q.21 Analyse the temperature versus time graph of water, given below. (3)



a) Which region contains all liquids?

b) Why does the temperature become constant at B and D?

c) Define latent heat of fusion.

Q.22 a) What will happen if plants lack chlorenchyma tissue? (1+2=3)

b) Which plastid gives bright colours (other than green) to plants? Name the plastid which stores food in plants.

Q.23 a) What will happen to an animal cell kept in a Hypotonic solution? Name the phenomenon involved in it. (3)

b) What is an Isotonic solution?

OR

What is membrane biogenesis? Which cell organelle is involved in it? Why?

Q.24 Differentiate between meristematic tissue and permanent tissue in at least three points. (3)

SECTION – C

Q.25 a) What is the quantity which is measured by the area occupied below the velocity – time graph?

b) A train is travelling at a speed of 90 km/h. Brakes are applied so as to attain a uniform retardation of 0.5 m/s^2. Find how far the train will go before it is brought to rest.

c) Explain, why is it difficult for a fireman to hold a hose, which ejects a large amount of water at a high velocity. (5)

Q.26 a) Using Newton's second law of motion derive a relation between force and acceleration.

b) How much force needed to be applied on a body of mass 5 kg to accelerate it from velocity of 5 m/s to 8 m/s in 6 sec? (5)

OR

a) Two objects of mass 1.5 kg each are moving in the same straight line but in opposite direction. The velocity of each object is 2.5 m/s before the collision during which they stick together. What will be the velocity of the combined object after collision?

b) 'Action and reaction are equal and opposite but even then they do not cancel each other'- explain why?

c) Define '1 N' force.

Q.27 a) Answer the following question from the given table:- (5)

Salt dissolved	Temperature in Kelvin				
	290K	313K	323K	343K	353K
	Solubility				
X	22	34	40	93	109
Y	43	43	46	50	50
Z	27	30	34	37	40
T	25	38	42	54	64

(i) Which salt has the highest solubility at 343 K?

(ii) A student prepared a saturated solution of Z at 290 K and then added 200 g water to it. What mass of Z must be added to again make the solution saturated?

(iii) What mass of 'T' would be required to make saturated solution in 50 g of water at 353 K?

b) Three students X, Y and Z prepared mixtures using muddy water, starch powder and glucose respectively in water. Whose mixture:

(i) would have size of particles less than 1nm ?

(ii) would show Tyndall effect?

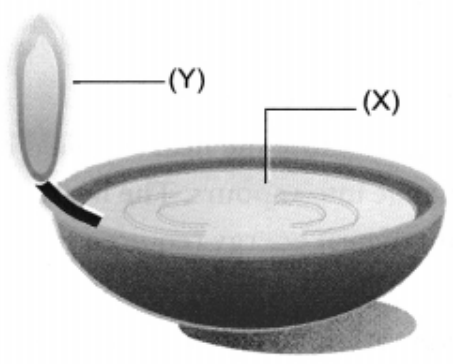
Q.28 a) Give reasons – (5)

(i) We can sip hot tea faster from a saucer than from a cup.

(ii) Rate of evaporation decreases with increase in humidity in atmosphere.

(iii) Water at room temperature is liquid.

b) The diagram below shows burning of an oil lamp.



Draw the arrangement of particles of position 'X' and 'Y' when the lamp is burning

OR

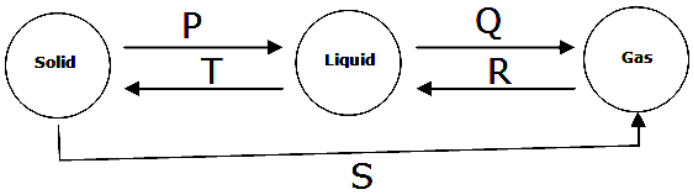
a) Comment on the following statements:

(i) Evaporation causes cooling.

(ii) Rate of evaporation of an aqueous solution increases with increase in wind speed.

(iii) Sugar crystals dissolve faster in hot water than in cold water.

b)



(i) Name the process in the terms of R and S?

(ii) Which of the processes are exothermic and endothermic in P and T ?

Q.29 a) Some aquatic plants can float in water. Name the tissue which helps them float. Which feature of this tissue helps in this process? (2)

b) Compare Ligament and Tendon. (2)

c) Why are Xylem and Phloem tissues called as complex permanent tissues? (1)

Q.30 a) Explain Cell theory. (3)

b) Compare between a Prokaryotic cell and a Eukaryotic cell in any four points.(2)

OR

a) Draw the structure of a mitochondria and label its various parts. (3)

b) Why is mitochondria semiautonomous in nature? (1)

c) What are genes? (1)