



परमाणु ऊर्जा शिक्षण संस्था  
Atomic Energy Education Society

टर्म-1/आवधिक परीक्षा-2 2023-24 Term-I/PT-II Examination 2023 - 24

कक्षा / Class :IX

अवधि / Duration : 3 hrs.

विषय / Subject :Science

अधिकतम अंक/ Maximum Marks : 80

**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 Answer type 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. Answers 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**

Select and write the most appropriate option out of the four options given for each of the questions 1-20.

- 1 Particles of matter are continuously moving, that is they possess \_\_\_\_\_energy [1]  
(a) Chemical (b) potential (c) mechanical (d) kinetic
- 2 On Kelvin scale 0°C is equal to [1]  
(a) 273K (b) -273K (c) 100K (d) 0K
- 3 Which of the following will show "Tyndall effect" [1]  
(a) Sugar solution (b) milk (c) sea water (d) vinegar
- 4 Name a non metal which exist as a liquid at room temperature [1]  
(a) Mercury (b) Boron (c) Bromine (d) Iodine
- 5 The chromatin material that is responsible for transmitting hereditary information is [1]  
(a) RNA (b) DNA (c) cytoplasm (d) sugar
- 6 Which organelle serves as a channel for transport of materials between cytoplasm and nucleus? [1]  
(a) Plastid (b) Ribosome (c) Golgi apparatus (d) Endoplasmic reticulum
- 7 If cells of onion peel and RBC are separately kept in a hypotonic solution what among the [1]  
following will take 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) both (a) and (b) are correct.  
(d) RBC and onion peel cells will behave similarly.
- 8 Which one of the following statement is /are true [1]  
(a) Enzymes packed in Lysosomes are made through RER (rough endoplasmic reticulum)  
(b) Rough endoplasmic reticulum and smooth endoplasmic reticulum produce lipid and protein respectively  
(c) Endoplasmic reticulum is related to the destruction of the plasma membrane  
(d) Nucleoid is present inside the nucleoplasm of the eukaryotic nucleus
- 9 Usually herbs and shrubs grow in open places and are exposed to forceful wind. But they do not break because the younger part of these plants possess \_\_\_\_\_ [1]  
(a) Parenchyma (b) collenchyma (c) aerenchyma (d) sclerenchyma
- 10 In desert plants, rate of water loss get reduced due to the presence of [1]  
(a) cuticle (b) stomata (c) lignin (d) suberin
- 11 The numerical ratio of displacement to distance for a moving object is: [1]  
(a) Always less than 1 (b) equal to or more than 1  
(c) Always more than 1 (d) equal to or less than 1
- 12 When a car driver traveling at a speed of 10 m/s applies brakes and brings the car to rest in 10 s, then retardation will be: [1]  
(a)  $1 \text{ m/s}^2$  (b)  $-1 \text{ m/s}^2$  (c)  $0.5 \text{ m/s}^2$  (d)  $-0.5 \text{ m/s}^2$
- 13 In annual sports day Class IX wins the tug of war, this is an example of: [1]  
(a) Balanced force (b) Centripetal force  
(c) Unbalanced force (d) Centrifugal force
- 14 A fielder pulls her hands backwards after catching the cricket ball. This enables the fielder to: [1]  
(a) exert larger force on the ball (b) reduce the force exerted by the ball  
(c) increase the rate of change of momentum (d) keep the ball in hands firmly
- 15 The weight of an object at the centre of the Earth of radius R is: [1]  
(a) zero (b) R times the weight at the surface of the earth  
(c) infinite (d)  $1/R^2$  times the weight at the surface of the earth
- 16 What changes continuously in a uniform circular motion? [1]  
(a) Speed (b) Velocity (c) Both (d) None of these

- 17 What can you say about the motion of a body whose velocity-time graph is a straight line parallel to the time axis? [1]
- (a) Displacement is constant (b) Displacement per unit time is constant  
(c) Acceleration is constant (d) None of these
- 18 Assertion : When a solid melts, its temperature remains the same. [1]  
Reason : The heat gets used up in changing the state by overcoming the forces of attraction between the particles.
- (a) Both assertion and reason are correct, and reason is the correct explanation for assertion  
(b) Both assertion and reason are correct, and reason is not the correct explanation for reason.  
(c) Assertion is true and reason is false.  
(d) Assertion is false and reason is true.
- 19 Assertion : Cell walls permit the cells of plants, fungi and bacteria to withstand hypotonic external media without bursting. [1]  
Reason : The cell swells up which builds up pressure against the cell wall.
- (a) Both assertion and reason are correct, and reason is the correct explanation for assertion  
(b) Both assertion and reason are correct, and reason is not the correct explanation for reason.  
(c) Assertion is true and reason is false.  
(d) Assertion is false and reason is true.
- 20 Assertion : The velocity of an object can be uniform as well as varied as per situations. [1]  
Reason : Velocity of object is determined by the average speed.
- (a) Both assertion and reason are correct, and reason is the correct explanation for assertion  
(b) Both assertion and reason are correct, and reason is not the correct explanation for reason.  
(c) Assertion is true and reason is false.  
(d) Assertion is false and reason is true.

### Section-B

Question No. 21 to 26 are very short answer questions

- 21 Classify the following process as a chemical or physical change. [2]
- (a) Melting of wax (b) burning of coal  
(c) digestion of food (d) dissolving copper sulphate crystals in water
- 22 Plasma membrane is known as selectively permeable membrane. Explain why? [2]

23 Draw a neat labelled diagram of a prokaryotic cell. [2]

**OR**

Differentiate between prokaryotic cell and eukaryotic cell. [2]

24 What is the change in momentum of a car weighing 3000 kg when its speed increases from 36 km/h to 72 km/h uniformly? [2]

25 A train traveling at 50 m/s accelerates at  $0.2 \text{ m/s}^2$  for 1 min. How far will it travel in this time? [2]

**OR**

(a) Write the formula for acceleration. Give the meaning of each symbol which occurs in it. [1]

(b) Distinguish between speed and velocity. [1]

26 As plants grow older, outer protective epidermal tissue undergoes certain changes and a new layer of cork tissues are developed in it. How does the cork act as a protective tissue? [2]

### **Section-C**

Question No. 27 to 33 are short answer questions

27 (a) Why do the doctors advise to put strips of wet cloth on the forehead of a person having a high fever? [2]

(b) Define sublimation. [1]

28 Calculate the mass of Copper sulphate required to prepare its 20% (mass percent) solution in 100 gm of water. [3]

**OR**

What are the properties of a solution? [3]

29 (a) What is malleability? [1]

(b) What is metalloid? Write any two examples [2]

30 (a) Name the organelle of the cell which is a membrane bound sac, filled with powerful digestive enzymes. Write its any one function in the cells. [2]

(b) Name two cell organelles that can synthesise some of their proteins in a plant cell. [1]

31 Differentiate between parenchyma and collenchyma. [3]

32 A train travels the first 15 km at a uniform speed of 60 km/h; the next 75 km at a uniform speed of 100 km/h; and the last 30 km at a uniform speed of 90 km/h. Calculate the average speed for the entire train journey. [3]

33 If a man jumps out from a boat, the boat moves backwards. Why? [3]

**Section-D**

Question No. 34 to 36 are long answer questions.

34 (a) Give three characteristics of the particles of matter [3]

(b) What are the conditions required for liquefaction of gas? [2]

**OR**

Compare the properties of solids, liquids and gasses with respect to (i) shape (ii) volume (iii) compressibility (iv) diffusion (v) rigidity [5]

35 (a) Given below is the diagrammatic sketch of a tissue . Identify and write the name of the tissue. [5]

Write any three characteristic structural features of that tissue. Write the location of this tissue in the human body.



(b) Name the following

i) tissue that forms the lining of kidney tubules

ii) tissue that forms the lining of mouth

**OR**

(a) Explain the characteristic features of cells of meristematic tissue. [5]

(b) Describe different types of meristematic tissue on the basis of their position

36 (a) Is the acceleration due to gravity of earth 'g' a constant? Discuss. [2]

(b) Calculate the acceleration due to gravity on the surface of a satellite having a mass of  $7.4 \times 10^{22}$   $\text{Nm}^2/\text{kg}^2$  and a radius of  $1.74 \times 10^6$  m ( $G = 6.7 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$ ). [3]

**OR**

(a) Write two differences between mass and weight. [2]

(b) Define relative density. What is the SI unit of relative density? [2]

(c) State the principle of flotation. [1]

## SECTION - E

Question No. 37 to 39 are case-based/data -based questions with 2 to 4 short sub-parts.

- 37 All the matter in surroundings can be classified into pure substances and mixtures. Pure substances [4]  
can be further grouped into elements and compounds. Elements and compounds have a constant  
chemical composition, and thus they have uniform chemical properties. Mixtures are the  
substances formed by physically mixing other substances. Mixtures do not have fixed composition.  
Mixtures are further grouped into homogeneous and heterogeneous mixture. In homogeneous  
mixtures, the components cannot be distinguished and require special procedures to separate them.  
The substances combined in heterogeneous mixture can be easily seen and separated by physical  
method.
- i) Which of the following are heterogeneous in nature: (1) ice (2) wood (3) air (4) soil  
(a) (1) & (2) (b) (2) & (3) (c) (2) & (4) (d) (3) & (4)
- ii) Solid dispersed in gas is called  
(a) Foam (b) gel (c) sol (d) aerosol
- iii) If the components of the substance can be separated only by a chemical reaction, then it is  
(a) Element (b) compound (c) mixture (d) both (a) & (b)
- iv) Which of the following materials fall in the category of a pure substance?  
(a) Brick & Milk (b) Iron & Hydrochloric acid  
(c) Brick & Iron (d) Air and Ice
- 38 A group of cells that are similar in structure and/or work together to achieve a particular function [4]  
forms a tissue. On the basis of the functions they perform there are different types of animal  
tissues, such as epithelial tissue, connective tissue, muscular tissue and nervous tissue. Connective  
tissue contributes to numerous body functions, including supporting organs and cells, transporting  
nutrients and wastes, defending against pathogens, storing fat, and repairing damaged tissues. The  
cells of connective tissue are loosely spaced and embedded in an intercellular matrix. The matrix  
may be jelly like, fluid, dense or rigid.
- i) The excess of nutrients which are not used immediately are converted into fats and are stored  
in  
(a) Bones (b) adipose tissue (c) glandular epithelium (d) areolar tissue
- ii) Which of the following structures/ substances is incorrectly paired with the tissue  
(a) Haversian canal - bone (b) platelets - blood  
(c) Hyaline matrix - Cartilage (d) fibroblast- Striated muscle

iii) The connective tissues which acts as basic packing tissue and also helps in repair of tissues.

- (a) Areolar            (b) Adipose            (c) tendon            (d) ligament

iv) Connective tissue that connects muscles to bone is called

- (a) tendon            (b) ligament            (c) cartilage            (d) macrophage

39 Two strings X and Y are tied to the two opposite faces of the block as shown in figure. If we apply a force by pulling the string X, the block begins to move to the right. Similarly, if we pull the string Y, the block moves to the left. But, if the block is pulled from both the sides with equal forces, the block will not move. Such forces are called balanced forces and do not change the state of rest or of motion of an object. Now, let us consider a situation in which two opposite forces of different magnitudes pull the block. In this case, the block would begin to move in the direction of the greater force. Thus, the two forces are not balanced and the unbalanced force acts in the direction the block moves. This suggests that an unbalanced force acting on an object brings it in motion. Force is push or pull. [4]

i) Force is nothing but

- (a) push            (b) pull            (c) both push or pull            (d) none of the above

ii) When balanced forces acting on moving object then

- (a) Object continue to move with same speed            (b) Object will change its direction of motion  
(c) Object will come to rest            (d) None of the above

iii) When unbalanced force acts on moving object opposite to direction of motion then

- (a) Object continue to move with same speed            (b) Object will come to rest  
(c) Both can be possible            (d) None of the above

iv) Differentiate between balanced and unbalanced force. Give 1 point each.