

- AI** 1. In a sample of ethyl ethanoate ( $\text{CH}_3\text{COOC}_2\text{H}_5$ ), the two oxygen atoms have the same number of electrons but different number of neutrons, which of the following is the correct reason for it?
- (a) One of the oxygen atoms have gained electrons.  
 (b) One of the oxygen atoms has gained two neutrons.  
 (c) The two oxygen atoms are isotopes.  
 (d) The two oxygen atoms are isobars.

2. A cell will swell up if
- (a) the concentration of water molecules in the cell is higher than the concentration of water molecules in surrounding medium.  
 (b) the concentration of water molecules in surrounding medium is higher than water molecules concentration in the cell.  
 (c) the concentration of water molecules is same in the cell and in the surrounding medium  
 (d) concentration of water molecules does not matter.

OR

- AI** The only cell organelle seen in prokaryotic cell is
- (a) Mitochondria (b) Ribosome  
 (c) Plastids (d) Lysosomes

3. Which one of the following is not important for individual health?
- (a) Living in clean space. (b) Good economic condition.  
 (c) Social equality and harmony. (d) Living in a large and well furnished house.

OR

- We should not allow mosquitoes to breed in our surroundings because they
- (a) multiply very fast and cause pollution. (b) are vectors for many diseases.  
 (c) bite and cause skin diseases. (d) are not important insects.
4. Area under  $v-t$  graph represents a physical quantity which has the unit
- (a)  $\text{m}^2$  (b) m  
 (c)  $\text{m}^5$  (d)  $\text{ms}^{-1}$

OR

- AI** If the displacement of an object is proportional to square of time, then the object moves with
- (a) Uniform velocity (b) Uniform acceleration  
 (c) Increasing acceleration (d) Decreasing acceleration
5. In SONAR, we use
- (a) Ultrasonic waves (b) Infrasonic waves  
 (c) Radio waves (d) Audible sound waves
6. Find out the wrong statement from the following:
- (a) White revolution is meant for increase in milk production.  
 (b) Blue revolution is meant for increase in fish production.  
 (c) Increasing food production without compromising with environmental quality is called as sustainable agriculture  
 (d) None of the above

7. The boiling points of diethyl ether, acetone and n-butyl alcohol are  $35^\circ\text{C}$ ,  $56^\circ\text{C}$  and  $118^\circ\text{C}$ , respectively. Which one of the following correctly represents their boiling points in Kelvin scale?

- (a) 306 K, 329 K, 391 K (b) 308 K, 329 K, 392 K  
 (c) 308 K, 329 K, 391 K (d) 329 K, 392 K, 308 K
8. Tincture of iodine has antiseptic properties. This solution is made by dissolving
- (a) iodine in potassium iodide (b) iodine in vaseline  
 (c) iodine in water (d) iodine in alcohol

9. Which of the following would weigh the highest?
- (a) 0.2 mole of sucrose ( $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ ) (b) 2 moles of  $\text{CO}_2$   
 (c) 2 moles of  $\text{CaCO}_3$  (d) 10 moles of  $\text{H}_2\text{O}$

10. In the relation  $F = GMm/d^2$ , the quantity G
- (a) Depends on the value of g at the place of observation  
 (b) Is used only when the earth is one of the two masses  
 (c) Is greatest at the surface of the earth  
 (d) Is universal constant of nature.

11. Mass of a body is doubled. How does its acceleration change under a given force ?

OR

When a carpet is beaten with a stick it releases dust. Explain why ?

12. How can we separate a mixture of two immiscible liquids ?  
13. Name the tissue which is responsible for increase in length of stem and root.

OR

Name the following tissues :

- (i) that forms the inner lining of our mouth.  
(ii) present in the brain.

14. In what direction does the buoyant force on an object immersed in a liquid act ?  
15. State the law of constant proportion.

OR

Define the term molecular mass.

**DIRECTIONS (Qs.16 to 20):** In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).  
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).  
(c) Assertion (A) is true but reason (R) is false.  
(d) Assertion (A) is false but reason (R) is true.

16. **Assertion :** A 40 kg girl is running along a circular path of radius 1 m with a uniform speed. The work done by the girl is zero.  
**Reason :** In this case, displacement is zero after one complete rotation.

17. **Assertion:** We prefer to wear cotton clothes during summer.  
**Reason:** Cotton clothes are good absorber of water.

18. **Assertion:** Angiosperms and gymnosperms both are flowering plants.  
**Reason:** Both form seeds.

19. **Assertion:** Motion of satellites around their planets is considered an accelerated motion.  
**Reason:** During their motion, the speed remains constant, while the direction of motion changes continuously.

20. **Assertion:** An object thrown vertically upwards with certain velocity  $v$ , reaches maximum height and falls back with same velocity.  
**Reason:** Whenever an object falls towards the earth, gravitational force of the earth causes acceleration.

## Section 'B'

21. State reason for the following statements:

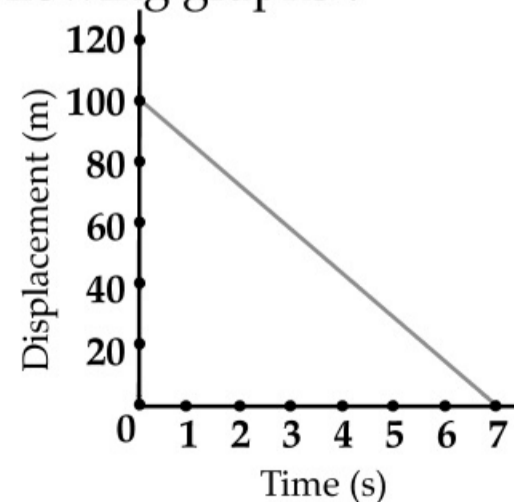
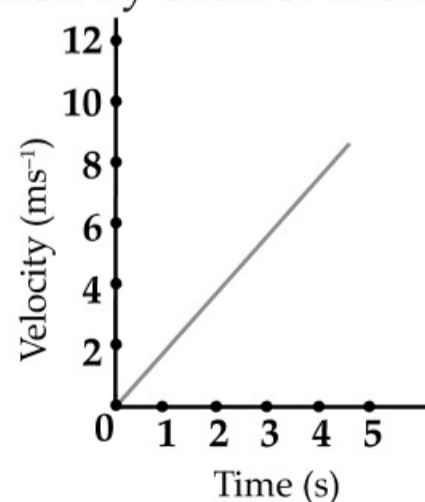
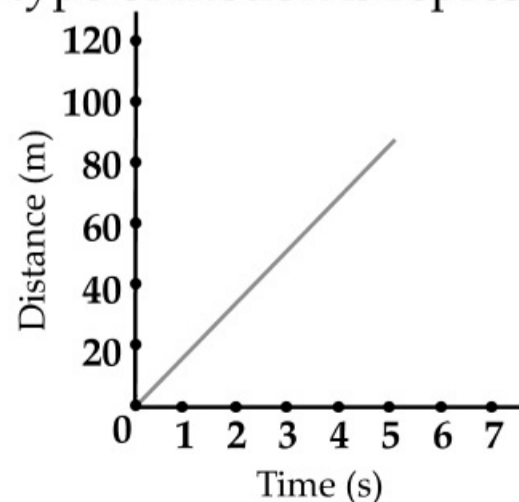
- (i) Fertile soil has lot of humus.  
(ii) Dust is a pollutant.  
(iii) People love to fly kites near the sea shore.

22. A radio station is transmitting its signals at a frequency of 400 MHz. If the velocity of radio waves is  $3 \times 10^8$  m/s, calculate the wavelength of radio waves.

OR

- (i) Name the characteristic of sound that helps us to distinguish a note played on a sitar and a violin.  
(ii) In a submarine fitted with a SONAR, the time interval between the generation of an ultrasonic wave and the receipt of its echo from an enemy submarine is 200 sec. What is the distance of the enemy submarine ? Given : Speed of sound in water is 1450 m/s.

23. What type of motion is represented by each of the following graphs ?



OR

Which law of motion can best describe the following :

- (i) Force applied while pulling a lawn mower.  
(ii) Shoulder bone fracture from recoil of a gun.  
(iii) Coin remains on the table, when table cloth is suddenly removed.

24. (i) Define weight of a body. Mention the direction in which it acts.  
 (ii) A stone is thrown vertically upwards with an initial velocity of  $40 \text{ ms}^{-1}$ . Find the maximum height reached by the stone. What is the net displacement and the total distance covered by the stone ?

OR

A biker rides 700 m north, 300 m east, 400 m north, 600 m west, 1200 m south, 300 m east and finally 100 m north. Draw the path of motion of the biker. What distance did he cover ? What was his displacement ?

25. (i) You are given a mixture of mustard oil and water. Name the process that can be used to obtain mustard oil from the above mixture.  
 (ii) Draw a well labelled diagram of the above process.

AI 26. (a) From the symbol  ${}_{16}^{32}\text{S}$  state :

- (i) Atomic number of sulphur  
 (ii) Mass number of sulphur  
 (iii) Electronic configuration of sulphur

(b) Which of the two elements given below would be chemically more reactive, 'X' of atomic number 18 or element 'Z' of atomic number 16 and why ?

27. (i) Draw a labelled diagram of longitudinal section of sclerenchyma.

(ii) Name any two regions in the plant, where this tissue is present.

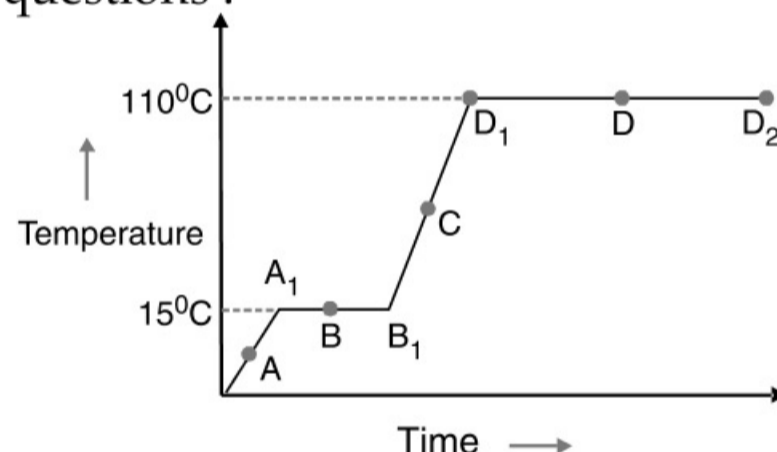
28. Mention the problem which is associated with using local names of organisms. How was this resolved? Name the scientist who had introduced the above solution.

AI 29. Ozone is poisonous and is found in upper atmosphere of earth yet the world is worried about its depletion. Explain why? Write any two methods to control ozone layer depletion.

AI 30. State one point of difference between biofertilizers and fertilizers. Give one example of each. What is the advantage of using biofertilizers over fertilizers ?

## Section 'C'

31. The temperature—time graph given below shows the heating curve for pure wax. After studying the graph answer the following questions :



- (i) What is the physical state of the substance at the point A, B, C and D ?  
 (ii) What is the melting point of the substance ?  
 (iii) What is its boiling point ?  
 (iv) Which portions of the graph indicate that change of state is taking place ?  
 (v) Name the terms used for heat absorbed during change of states involved in the above process.

OR

(a) Arrange the following in the increasing order of (i) force of attraction, (ii) intermolecular space : iron nail, kerosene and oxygen gas.

(b) Define the following terms : (i) Rigidity, (ii) Compressibility, (iii) Diffusion.

32. (i) Define kinetic energy. Derive an expression for the kinetic energy of an object.  
 (ii) The power of a motor pump is 5 kW. How much water per minute the pump can raise to height of 20m ? Take  $g = 10 \text{ ms}^{-2}$ .

OR

(i) Define the work done by a constant force. Write its SI unit and define this unit.

(ii) A 3000 kg truck moving at a speed of 90 m/s stops after covering some distance. The force applied by brakes is 27000 N. Compute the distance covered and work done by this force.

33. (a) Briefly explain Bohr-Bury scheme for the distribution of electrons in different shells.  
(b) An atom has 2 electrons in its outermost shell M. What is the atomic number of the element? Also mention its name.
- AI** 34. Make a comparison and write down ways in which plant cells are different from animal cells.
35. (a) What do signs and symptoms indicate if a person is suffering from any disease?  
(b) Based on the duration of disease what are the different categories of diseases? Differentiate between them with one example each.
36. (i) Define density.  
(ii) Density of a substance is one of its characteristic properties. Explain.  
(iii) State unit of density in SI.  
(iv) How can we identify whether the substance is pure or not by knowing its density?

□□□