ASPER

C11 LNColony, Kolkata

SET 1

Class 09 - Science

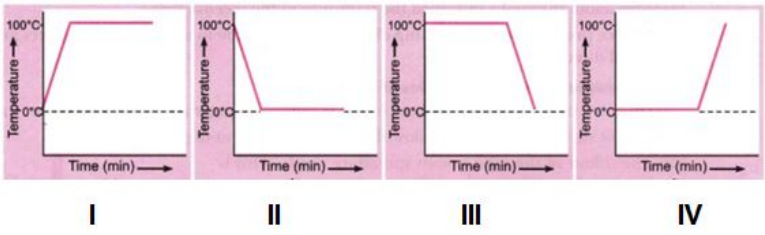
Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words.
6. 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.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

1. Ram heats a beaker containing ice and water. He measures the temperature of the content of the beaker as a function of time. Which of the following would correctly represent the result? **[1]**



a) III b) IV

c) I d) II

2. Which cell organelle plays a crucial role in detoxifying many poison and drugs in a cell? **[1]**

a) Lysosomes b) Vacules

c) Smooth endoplasmic reticulum d) Golgi apparatus

3. A man walks on a straight road from his home to a market 5.5 km away with a speed of 5.5 km h^{-1}. Finding the market closed he instantly turns and walks back with a speed of 7.5 km h^{-1}. What is the average speed and average velocity of the man between t = 0 to t = 104 min? **[1]**

a) 6.36 km h^{-1}, 6.36 km h^{-1} b) 0, 6.36 km h^{-1}

c) 0, 0

d) 6.36 km h^{-1}, 0

4. Which of the following is soil borne disease? **[1]**

a) Leaf spot of rice

b) Red rot of sugarcane

c) Smut of bajra

d) Rust of wheat

5. Choose the chemical compound with which the specimen is temporarily mounted. **[1]**

a) Water

b) Glycerine

c) Alcohol

d) Salt solution

6. Following are a few definitions of osmosis read carefully and select the correct definition. **[1]**

a) Movement of solvent molecules from its higher concentration to lower concentration

b) Movement of solvent molecules from higher concentration to lower concentration of solution through a permeable membrane

c) Movement of solute molecules from lower concentration to higher concentration of solution through a semipermeable membrane

d) Movement of water molecules from a region of higher concentration to a region of lower concentration through a semipermeable membrane

7. What mass of CO_2 will 3.011×10^{23} molecules contain? **[1]**

a) 4.4 g

b) 11.0 g

c) 44.0 g

d) 22.0 g

8. The extremely thin and flat cells forming a delicate lining in the lung alveoli constitute **[1]**

a) stratified squamous epithelium

b) simple squamous epithelium

c) ciliated epithelium

d) simple cuboidal epithelium

9. In the experiment to establish the relation between loss in weight of an immersed solid with the weight of water displaced by it, the upthrust experience by the object in tap water and in salty water are U_w and U_s respectively, then : **[1]**

a) $U_w < U_s$

b) $U_w > U_s$

c) $U_w = U_s$

d) $U_s = 2U_w$

10. The water drop falls at regular intervals from a tap 5 m above the ground. The third drop is leaving the tap at instant the first drop touches the ground. How far above the ground is the second drop at that instant? (Take g = 10 m S^{-2}) **[1]**

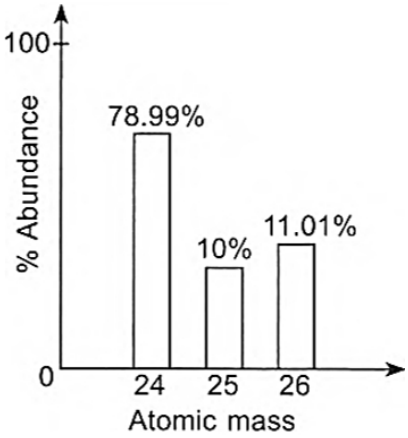
a) 2.50 m

b) 1.25 m

c) 4.00 m

d) 3.75 m

11. Study the given mass spectrum of magnesium carefully. **[1]**



The number of protons in ^{26}Mg, number of neutrons in ^{25}Mg, and the relative atomic mass of Mg are respectively

a) 12, 13 and 25
b) 12, 13 and 24.32
c) 14, 13 and 25
d) 16, 12 and 24.32

12. A nail is inserted in the trunk of a tree at a height of 1 metre from the ground level. After 3 years the nail will **[1]**

a) move downloads
b) remain at the same position
c) move sideways
d) move upwards

13. Animal cell lacking nuclei would also lack in: **[1]**

a) Chromosome
b) Endoplasmic Reticulum
c) Ribosome
d) Lysosome

14. To prepare iron sulphide, by heating a mixture of iron filings and sulphur powder, we should use a: **[1]**

a) copper dish
b) china dish
c) watch glass
d) petri dish

15. Which type of solution is formed when sand and water are mixed thoroughly and then kept undisturbed for some time? **[1]**

a) True solution
b) Mixture
c) Colloidal
d) Suspension

16. Continuous use of fertilizers can destroy soil fertility because **[1]**

a) both organic matter is not replenished and microbes in the soil are harmed
b) soil becomes hard
c) microbes in the soil are harmed
d) organic matter is not replenished

17. **Assertion (A):** A bus moving due north takes a turn and starts moving towards the east with the same speed. There will be no change in the velocity of the bus. **[1]**
Reason (R): Velocity is a vector quantity.

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

18. **Assertion (A):** Liquids diffuse easily as compared to gases. **[1]**

Reason (R): Intermolecular forces are lesser in gas.

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

19. **Assertion (A):** Surface of skin is impervious to water. **[1]**

Reason (R): Surface of skin is covered by stratified cuboidal epithelium.

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

20. **Assertion (A):** The mass of the total number of protons and neutrons is a measure of the approximate mass of an atom. **[1]**

Reason (R): The mass of an electron is negligible.

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

Section B

21. The kinetic energy of an object of mass m moving with a velocity of 5 ms^{-1} is 25 J. What will be its kinetic energy when its velocity is doubled? What will be its kinetic energy when its velocity is increased to three times? **[2]**

OR

A body moves along a circular path. How much work is done in doing so? Explain.

22. Why are we able to sip hot tea or milk faster from a saucer rather than a cup? **[2]**

23. A sound wave has a frequency of 2 kHz and wave length 35 cm. How long will it take to travel 1.5 km? **[2]**

24. Why do solids generally lack the property of diffusion? **[2]**

25. A bullet fired against a glass window pane makes a hole in it, and the glass pane is not cracked. But on the other hand, when a stone strikes the same glass pane, it gets smashed. Why is it so? **[2]**

OR

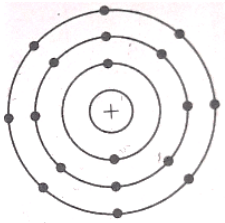
From the rifle of mass 4 kg, a bullet of mass 50 g is fired with an initial velocity of 35 ms^{-1}. Calculate the initial recoil velocity of the rifle.

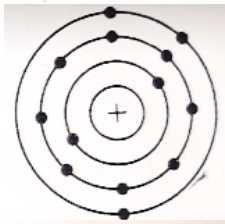
26. Stat the properties of cathode rays? **[2]**

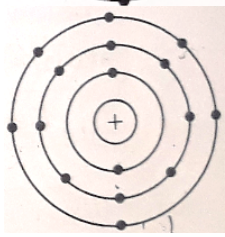
Section C

27. **[3]**
    i. Which characteristic of sound helps to identify your friend by his voice while sitting with others in a dark room?
    ii. State the relationship between frequency and time period of a wave. The wavelength of vibrations produced on the surface of the water is 4 cm. If the wave velocity is 20 m/s find the frequency and Time period.

28. Find out the valency of atoms represented by the following figures. **[3]**

i. 

ii. 

iii. 

29. Draw the graph for uniform retardation - **[3]**

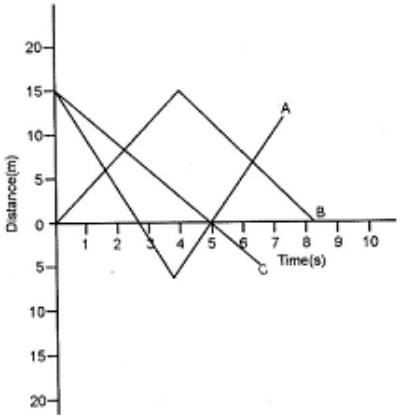
a. position - time graph

b. velocity - time graph

c. Acceleration- time graph

OR

Discuss the graphs A, B and C shown in the figure. Compare the total distance travelled and the displacements. Which graph represents a motion with negative acceleration?

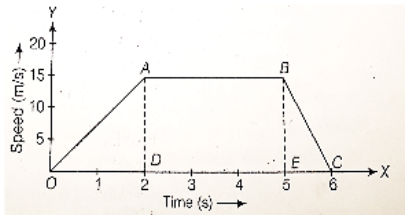


30. Calculate the force of gravitation between the earth and the sun, given that the mass of the earth = 6×10^{24} kg and of the sun = 2×10^{30} kg. The average distance between the two is 1.5×10^{11} m. **[3]**

31. The speed-time graph of a car is given. The car weighs 1000 kg. **[3]**

i. What is the distance travelled by car in the first 2s?

ii. What is the braking force applied at the end of 5 s to bring the car to stop within one second?



32. What are the differences between cell wall and cell membrane? **[3]**

OR

How can you calculate the magnification of a microscope?

33. We can control some of the actions of our body, but some are not in our control. Comment on this statement. **[3]**

Section D

34. From a cliff of 49 m high, a man drops a stone. One second later, he throws another stone. They both hit the ground at the same time. Find out the speed with which he threw the second stone. **[5]**

OR

i. A cube of side 5 cm is immersed in water and then in saturated salt solution. In which case, will it experience a greater buoyant force? If each side of the cube is reduced to 4 cm and then immersed in water, what will be the effect on the buoyant force experienced by the cube as compared to the first case for water. Give the reason for each case.

ii. A ball weight 4 kg of density 4000 kg $m^{-3}$is completely immersed in water of density 10^3kg $m^{-3.}$ Find the force of buoyancy on it. (Given g = 10 ms^{-2}.)

35. Explain main functional regions of a cell with the help of a diagram. **[5]**

OR

Draw a plant cell and label the parts which

i. determines the function and development of the cell

ii. packages materials coming from the endoplasmic reticulum

iii. provides resistance to microbes to withstand hypotonic external media without bursting

iv. is site for many biochemical reactions necessary to sustain life.

v. is a fluid contained inside the nucleus

36. i. Distinguish among the true solution, suspension and colloid in a tabular form under the following heads: **[5]**

a. Stability

b. Filterability

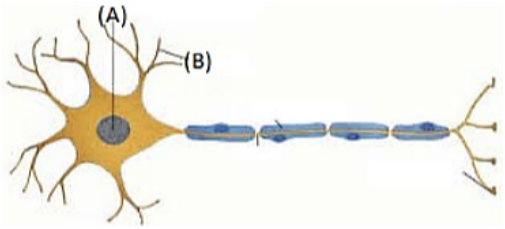
c. Type of mixture

ii. Give the expression for the concentration of a solution. How will you prepare a 10% solution of glucose by mass in the water?

Section E

37. **Read the text carefully and answer the questions:** **[4]**

Given below is the diagram of the human nerve cell.



(a) Label the part (A) and (B).

(b) What is the function of nervous tissue?

OR

Mention all part of the human body composed of nervous tissue.

38. **Read the text carefully and answer the questions:** **[4]**

Ramesh has its own cattle husbandry in which he has 20 Indian cattle of local bread. He daily supply milk and dairy products to approx 15 dairy shops. He was thinking of increasing his business but one day he noticed of one his buffalo is suffering from some disease he was quiet concern about that the disease might spread to other buffaloes also.

(a) Suggest the way by which Ramesh can increase his milk production and expand his business?

(b) If you were in place of Ramesh what would you do to protect other buffaloes from the spread of diseases?

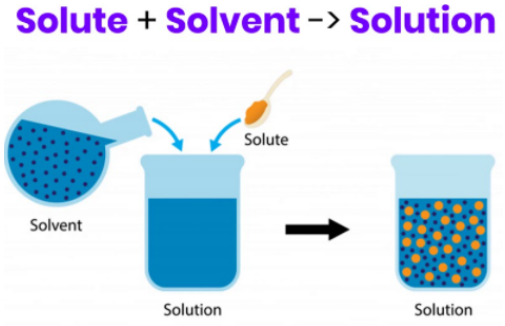
(c) Enlist the daily requirement to maintain the hygiene of the animals?

OR

Name any two Indian breed cattle?

39. **Read the text carefully and answer the questions:** **[4]**

Mixtures are constituted by more than one kind of pure form of matter. Sodium chloride is itself a pure substance matter. The solution is a homogeneous mixture of two or more substances. Lemonade, soda water etc. are all examples of solutions. Alloys are mixtures of two or more metals or a metal and a non-metal and cannot be separated into their components by physical methods. A solution has a solvent and a solute as its components. The component of the solution that dissolves the other component in it (usually the component present in a larger amount) is called the solvent. The component of the solution that is dissolved in the solvent (usually present in lesser quantity) is called the solute.



(a) In a water-sugar solution: Identify solute and solvent?

(b) What is the size of the particles of a solution?

(c) What is pure substance?

OR

What do you mean by Alloy?