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**Maximum Marks : 90**
**Maximum Time : 3 hours**


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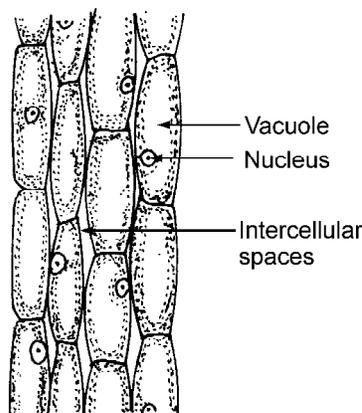
**General Instructions : Same as in CBSE Sample Question Paper**


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**SECTION-A**

1. Name the plant part which provides resistance to microbes to withstand hypotonic external media without bursting. 1
2. Define 1 kg weight and express it in Newton. 1
3. What is the gaseous form of a substance which exists as a liquid at room temperature known as? 1
4. (a) Classify each of the following as homogeneous or heterogeneous mixtures :  
soda water, wood, air, soil, vinegar, filtered tea. 1  
(b) How will you confirm that a colourless liquid given to you is pure water? 2
5. How does the force of gravitation between two objects change when the distance between them is reduced to half? 2
6. How do substances like CO<sub>2</sub> and water move in and out of the cell? Discuss. 2
7. What is the difference between parenchyma and collenchyma? 2
8. Why is organic matter important for crop production? 3
9. Draw labelled diagrams to show the difference between the structures of any two types of muscles fibres. 3
10. A stone is thrown vertically upward with initial velocity of 40 ms<sup>-1</sup>. Taking g = 10 ms<sup>-2</sup>, find the maximum height reached by the stone. What is the net displacement and total distance covered by the stone? 3

11.



- (a) Identify this tissue.
- (b) Infer the characteristic features of these cells.
- (c) Suggest any two parts of the plant where such cells are present. 3

12. What is the magnitude of gravitational force between the earth and 1 kg object on its surface? [Mass of the earth is  $6 \times 10^{24}$  kg and radius of the earth is  $6.4 \times 10^6$  m.] 3
13. A man pushes a box of mass 50 kg with force of 80 N. What will be the acceleration of the box due to this force? What would be the acceleration if the mass were doubled? 3
14. How is a prokaryotic cell different from a eukaryotic cell? 3
15. A bullet of mass 0.03 kg and moving with velocity 'x' hits a target with a force of 187.5 N. If the bullet penetrates 0.80 m in the target, find the value of 'x'. 3
16. Give two reasons to justify.  
 (a) Water at room temperature is a liquid.  
 (b) An iron almirah is solid at room temperature. 3
17. For any substance, why does the temperature remain constant during change of state. 3
18. If there is low rainfall in a village throughout the year, what measures will you suggest to the farmers for better cropping? 3
19. Gravitational force on the surface of moon is only 1/6 as strong as gravitational force on the earth. What is weight in newtons of 10 kg object on the moon and on the earth? 3
20. A stone of 1 kg is thrown with a velocity of  $20 \text{ ms}^{-1}$  across the frozen surface of a lake and comes to rest after travelling a distance of 50 m. What is the force of friction between the stone and the ice? 5

**OR**

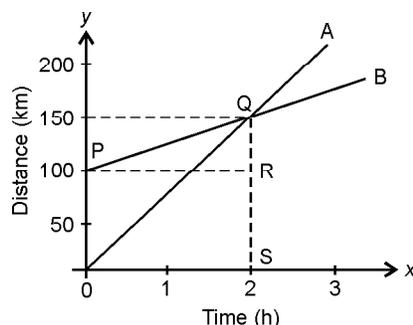
An object of mass 1 kg travelling in a straight line with a velocity of  $10 \text{ ms}^{-1}$  collides with and sticks to a stationary wooden block of mass 5 kg. Then they both move together in the straight line. Calculate the total momentum just before the impact and just after the impact. Also, calculate the velocity of the combined object.

21. Give reasons for the following :
- (i) The molecules of a solid have the strongest intermolecular forces.
  - (ii) A gas can be easily compressed.
  - (iii) Plasma is found in the stars.
  - (iv) During summer, water is sprinkled on the roof tops as well as on the ground.
  - (v) Hot water kept in a plate cools down faster than when kept in a glass. 5

**OR**

What is the special name given to the following conversions?

- (i) Solid  $\rightarrow$  Liquid
  - (ii) Liquid  $\rightarrow$  Solid
  - (iii) Liquid  $\rightarrow$  Gas
  - (iv) Gas  $\rightarrow$  Liquid
  - (v) Gas  $\rightarrow$  Solid
22. The distance - time graph of two trains are given below. The trains start simultaneously in the same direction.



- How much ahead of A is B when the motion starts?
- What is the speed of B?
- When and where will A catch B?
- What is the difference between the speeds of A and B?
- Is the speed of both the trains uniform or non uniform? Justify your answer. **5**

**OR**

- Prove that  $v = u + at$  using graphical method.
- A train starting from rest attains a velocity of 72 km/h in 5 minutes. Assuming the acceleration is uniform. Find.
  - The acceleration
  - The distance travelled by the train for attaining this velocity.

**23.** Cultivation practices and crop yield are related to environmental conditions. Explain. **5**

**OR**

In agricultural practices, higher input gives higher yield. Discuss how?

- 24.** (a) What is a colloidal solution? How is it different from a true solution? Identify the colloidal solutions from the following :  
Copper sulphate solution, vinegar, blue ink, milk of magnesia.
- (b) A solution contains 110 g of sugar in 500 g of water. Calculate the concentration in terms of mass by mass percentage of the solution. **5**

**OR**

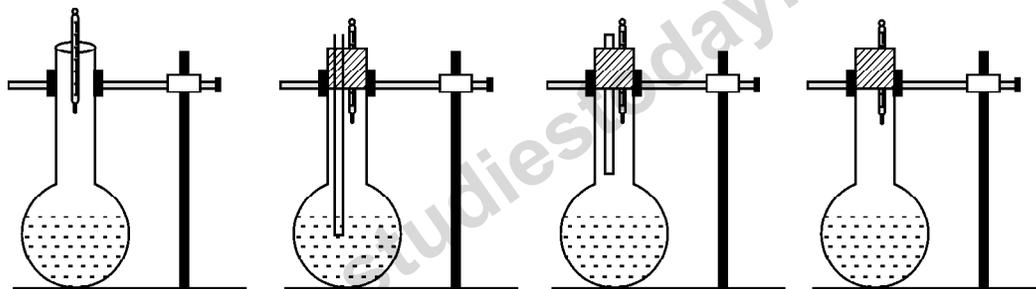
Pragya tested the solubility of three different substances at different temperatures collected the data as shown below (results are given in the following table, as gram substance dissolved in 100 grams of water to form a saturated solution).

Substance dissolved	Temperature in K				
	283	293	313	333	353
Potassium nitrate	21	32	62	106	167
Sodium chloride	36	36	36	37	37
Potassium chloride	35	35	40	46	54
Ammonium chloride	24	37	41	55	66

- (a) What mass of potassium nitrate would be needed to produce a saturated solution potassium nitrate in 50 grams of water at 313 K?
- (b) Pragya makes a saturated solution of potassium chloride in water at 353 K and the solution to cool at room temperature. What would she observe as the solution cool? Explain.
- (c) Find the solubility of each salt at 293 K. Which salt has the highest solubility at this temperature?
- (d) What is the effect of change of temperature on the solubility of a salt?

**SECTION-B**

25. Amongst the following scientists, who propounded the laws of motion? 1
- (a) Joule                      (b) Einstein                      (c) Newton                      (d) Ampere
26. Which one of the following experimental arrangements is most appropriate for the determination of boiling point of water?



- (i)                      (ii)                      (iii)                      (iv)
- (a) (i)                      (b) (ii)                      (c) (iii)                      (d) (iv) 1
27. Sodium sulphate and barium chloride solutions are mixed in a test tube. The observation made is :
- (a) greenish yellow gas is evolved                      (b) a colourless gas is evolved
- (c) a yellow precipitate is formed                      (d) a white precipitate is formed 1
28. Lignin deposits are found in the walls of :
- (a) collenchyma                      (b) parenchyma                      (c) sclerenchyma                      (d) striated muscle. 1
29. A bright iron nail is placed in a beaker containing copper sulphate solution. In the beaker a sensitive thermometer is suspended and the temperature of copper sulphate solution is recorded. The nail is taken out after 10 minutes and the temperature is again recorded.
- The thermometer at the end of the experiment records :
- (a) higher temperature                      (b) lower temperature
- (c) no change in temperature                      (d) none of these. 1
30. When you add carbon disulphide in a test tube containing a mixture of iron filings and sulphur powder, then what would you observe after shaking the test tube well?
- (a) Some brown gas is evolved
- (b) Yellow solution is formed and iron filings settle down.

- (c) Sulphur dissolves to form colourless solution and iron filings settle down.  
 (d) After sometime, carbon disulphide, sulphur and iron filings form three separate layers in the test tube. **1**
- 31.** A student soaked 10 g raisins in 50 ml of distilled water in two beakers A and B each. She maintained beaker A at 25°C and beaker B at 50°C. After an hour, the percentage of water absorbed will be  
 (a) the same in both A and B (b) more in A than in B  
 (c) more in B than in A (d) exactly twice as much in B as in A **1**
- 32.** Boiling point of water is :  
 (i) 40° F (ii) 212° F (iii) 0°C (iv) 100°C  
 (a) (i) and (iii) are correct (b) Both (ii) and (iv) are correct  
 (c) Only (ii) is correct (d) Only (iv) is correct **1**
- 33.** Which of the following components are seen in a slide of human cheek cell when observed under a microscope?  
 (a) Cell membrane, protoplasm, nucleus  
 (b) Cell wall, cytoplasm, nucleus (c) Cell wall, protoplasm, nucleus  
 (d) Cell membrane, cytoplasm, nucleus **1**
- 34.** A small amount of the mixture of iron filings and sulphur powder is spread on a white paper and a magnet is rolled in it. The particles which cling to the magnet are of :  
 (a) sulphur (b) iron  
 (c) both iron and sulphur (d) neither iron nor sulphur **1**
- 35.** The colour that indicates that dal is adulterated with metanil yellow is :  
 (a) red (b) brown (c) pink (d) crimson **1**
- 36.** The particles of a colloidal solution are :  
 (a) not visible with a powerful microscope  
 (b) visible only with a powerful microscope  
 (c) visible with the naked eyes (d) none of the above **1**
- 37.** Starch is present in :  
 (a) wheat (b) potato (c) corn (d) all of these **1**
- 38.** In which of the following sedimentation will not take place?  
 (a) Soil and water (b) Starch and water  
 (c) Glass powder and water (d) Charcoal powder and water **1**
- 39.** Which of the following can be subjected to sublimation?  
 (a) NH<sub>4</sub>Cl (b) Camphor (c) Naphthalene (d) All of these **1**
- 40.** Which of the following are voluntary muscles?  
 (a) striated muscles (b) smooth muscles (c) cardiac muscles (d) all of these **1**
- 41.** A mixture consists of an insoluble substance P and a soluble substance Q. The mixture is dissolved in water and filtered. The filtrate so collected contains :  
 (a) substance P only (b) substance Q only  
 (c) substance Q and water only (d) substance P and water only **1**
- 42.** A force acting on a body can change the :  
 (a) direction of motion (b) shape of the body  
 (c) size of the body (d) all the above **1**