punlic

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Class 9 - Science

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Section A - Multiple Choice Questions

Q1. Which phenomenon is responsible for the cooling sensation experienced when acetone is poured on the palm? (1 marks)

a. Sublimation
b. Condensation
c. Evaporation
d. Diffusion

Q2. Which cell organelle is known as the 'suicidal bag' of the cell? (1 marks)

a. Mitochondria
b. Lysosome
c. Ribosome
d. Endoplasmic Reticulum

Q3. If an object moves with constant velocity, which of the following statements is true regarding the net force acting on it? (1 marks)

a. The net force must be non-zero and constant.
b. The net force must be zero.
c. The net force is in the direction of motion.
d. The object must be extremely heavy.

Q4. The value of acceleration due to gravity (g) at a given point does not depend on: (1 marks)

a. The mass of the Earth.
b. The distance from the center of the Earth.
c. The mass of the object falling.
d. The Universal Gravitational Constant (G).

Q5. A sound wave travels from a source to a reflector and returns in 0.4 seconds. If the speed of sound is 340 m/s, what is the distance of the reflector from the source? (1 marks)

a. 68 m

b. 136 m
c. 170 m
d. 34 m

Q6. What is the primary objective of integrated fish farming? (1 marks)

a. To increase the yield of only one type of fish.
b. To use common animal waste (e.g., poultry droppings) as feed for fish.
c. To restrict the growth of beneficial microorganisms.
d. To practice monoculture in large ponds.

Section B - Fill in the Blanks

Q7. The number of moles present in 88 grams of Carbon Dioxide (CO_2) is _____. (Atomic masses: C=12 u, O=16 u) (1 marks)

Q8. The discovery of the electron was made by J.J. Thomson using the _____ ray experiment. (1 marks)

Q9. _____ tissues are composed of elongated cells that provide flexibility and structural support to plant parts like leaf stalks without extensive rigidity. (1 marks)

Q10. When an object covers equal distances in equal intervals of time, it is said to be in _____ motion. (1 marks)

Q11. Diseases that are caused by microbial agents and can spread from an infected person to a healthy person are called _____ diseases. (1 marks)

Section C - Short Answer Questions

Q12. Explain the principle and one major application of the technique of centrifugation in separating mixtures. (3 marks)

Q13. State the three criteria used by R.H. Whittaker for the classification of organisms into the Five Kingdom System. (3 marks)

Q14. A gun of mass 4 kg fires a bullet of mass 50 g with a muzzle velocity of 35 m/s. Calculate the recoil velocity of the gun. (Assume the gun and bullet were initially at rest.) (3 marks)

Q15. A force of 10 N acts on an object. The object is displaced by 5 m in the direction of the force. If the force continues to act on the object while the displacement occurs, calculate the work done. If the object takes 2 seconds to cover this distance, what is the power used? (3 marks)

Q16. List three general methods or principles that can be used to prevent the spread of infectious diseases in a community. (3 marks)

Q17. The atmosphere cannot replenish nitrogen directly. Briefly explain the major steps involved in the Nitrogen Cycle that make nitrogen available to plants. (3 marks)

Section D - Long Answer Questions

Q18. Describe the structure and mention two key functions each for the Mitochondria and the Endoplasmic Reticulum (ER). (5 marks)

Q19. State the Universal Law of Gravitation. Derive the mathematical expression for this law and define the Universal Gravitational Constant (G), specifying its SI unit. (5 marks)

Q20. a) Define the following characteristics of a sound wave: Wavelength, Frequency, and Speed. b) A submarine transmits a SONAR signal which returns from an underwater cliff in 3 seconds. If the speed of sound in water is 1531 m/s, how far away is the cliff? (5 marks)

Q21. Explain the major divisions within Kingdom Plantae based on whether the plant body is differentiated, and the presence or absence of specialized vascular tissues and seeds. Give an example for each major division. (5 marks)

Section E - Matching Questions

Q22. Match the tissue type in Column A with its primary function/ characteristic in Column B. (1 marks)

Q23. Match the term related to resources and food improvement in Column A with its description in Column B. (1 marks)

Section F - Case Study

Q24. A car starts from rest and accelerates uniformly at 2 m/s^2 for 5 seconds. It then travels at a constant velocity for the next 10 seconds. Finally, it decelerates uniformly for 4 seconds to come to rest. Q24.1: Calculate the maximum velocity attained by the car. Q24.2: Calculate the distance covered during the period of constant velocity. Q24.3: Calculate the retardation during the final 4 seconds. (5 marks)

Q25. Consider the elements Hydrogen (H), Deuterium (D), and Tritium (T). All three are isotopes of Hydrogen, meaning they have the same number of protons but different number of neutrons. Q25.1: State the number of protons, neutrons, and electrons in Deuterium (^2_1D). Q25.2: If Hydrogen gas is represented by H_2, calculate the molar mass of D_2 gas. Q25.3: Why do isotopes of the same element show identical chemical properties but slightly different physical properties? (5 marks)