



विद्या सर्वार्थ साधिका

ANANDALAYA
PERIODIC TEST - 3
Class: IX

Subject: Science
Date : 03-01-2024

MM : 40
Time: 1 Hr 30 min

General Instructions:

1. All questions are compulsory. There are 17 questions in all.
2. This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.
3. Section A consists of 8 multiple choice questions of 1 mark each, Section B consists of 2 very short questions of 2 marks each, Section C consists of 2 short answer type questions of 3 marks each, section D consists of 2 long answer questions of 5 marks each and Section E consists 3 source-based/case study-based questions of 4 marks each with sub-parts.

SECTION A

1. Two objects of different masses falling freely from the same height near the surface of the earth (1)
would _____.
(A) have same velocities at any instant (B) have different accelerations
(C) experience forces of same magnitude (D) undergo a change in their inertia
2. The gravitational force between two objects is F. If masses of both objects are doubled without (1)
changing distance between them, then the gravitational force would become _____.
(A) F/2 (B) 2F (C) F/4 (D) 4F
3. The formula of Ammonium Sulphate is _____ (1)
(A) NH_4SO_4 (B) NH_4SO_2 (C) $(\text{NH}_4)_2\text{SO}_4$ (D) NH_2SO_4
4. A sample of NH_3 molecule irrespective of source contains 82.35% Nitrogen and 17.65% of (1)
Hydrogen by mass. This data supports:
(A) Law of Conservation of Mass (B) Law of Multiple Proportions
(C) Law of Definite Proportions (D) Avogadro's Law
5. Which muscles act involuntarily? (1)
(i) Skeletal muscles
(ii) Smooth muscles
(iii) Cardiac muscles
(A) (i) and (ii) (B) (ii) and (iii) (C) (iii) and (i) (D) (iii), (ii) and (i)
6. Areolar tissue is the most abundant type of connective tissue in higher animals. Select the (1)
incorrect location of this tissue from the given:
(A) between the skin and muscles (B) in the bone marrow
(C) around the blood vessels and nerves (D) between tendons and ligaments

For question number 7 and 8, two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.

- (A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
- (B) Both Assertion and Reason are true but Reason is NOT the correct explanation of Assertion.

- (C) Assertion is true but Reason is false
 (D) Assertion is false and Reason is also false.

7. Assertion: The value of quantity G in the law of gravitation is independent of mass and radius of the earth. (1)
 Reason: G is a universal constant
8. Assertion: The standard unit for expressing the mass of an atom is 'u' (1)
 Reason: 'u' is also called the unified mass

SECTION B

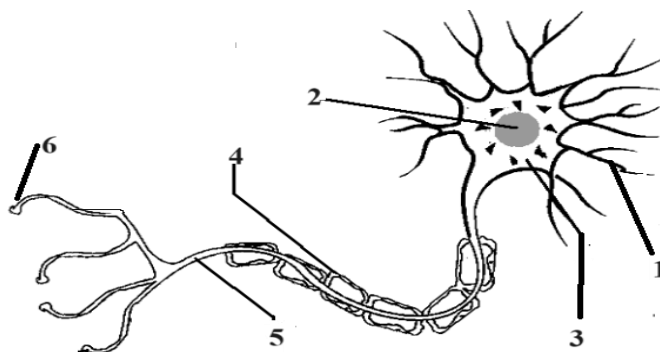
9. (a) State Archimedes principle. (2)
 (b) An object weighs 10 N in air. When immersed fully in water, it weighs only 8 N. What will be the weight of the liquid displaced by the object?
10. Classify each of the following based on their atomicity. (2)
 (a) F₂ (b) NO₂ (c) N₂O (d) C₂H₆

SECTION C

11. Write the molecular formulae of all the compounds that can be formed by the combination of the following ions. (3)
 Cu²⁺, Na⁺, Fe³⁺, Cl⁻, SO₄²⁻, PO₄³⁻.
12. Which type of epithelial cell lining is found in the following structures in animals: (3)
 (a) lung alveoli (b) kidney tubules (c) sweat glands
 (d) human skin (e) small intestine (f) blood vessels

SECTION D

13. (a) State Newton's law of gravitation. (5)
 (b) Write the mathematical expression of gravitational force acting between two masses.
 (c) Distinguish between mass and weight.
 (d) The weight of any person on the moon is about 1/6 times that on the earth. He can lift a mass of 15 kg on the earth. What will be the maximum mass, which can be lifted by the same force applied by the person on the moon?
14. In higher animals, the nervous system consists of the central nervous system and the peripheral nervous system. It plays a significant role in the survival of the organism. The neuron is the structural and functional unit of the nervous system. (5)



Study the following diagram carefully and then answer the following questions:

- (a) In which major parts is this tissue found in the animals?
 (b) Write one structural difference between the parts labelled as 1 and 5.
 (c) Describe the structure labelled as 3.
 (d) State the function of the parts labelled as 1 and 6 each.

SECTION E

Questions 15 to 17 are Source-based/ Case study based questions of 4 marks with sub-parts.

15. Whenever objects fall towards the earth under this force alone, we say that the objects are in free fall. While falling, there is no change in the direction of motion of the objects. But due to the earth's attraction, there will be a change in the magnitude of the velocity. Any change in velocity involves acceleration. Whenever an object falls towards the earth, an acceleration is involved. This acceleration is due to the earth's gravitational force. Therefore, this acceleration is called the acceleration due to the gravitational force of the earth (or acceleration due to gravity). It is denoted by g . The earth is not a perfect sphere. As the radius of the earth increases from the poles to the equator, the value of g becomes different at the poles than at the equator
- (i) The value of acceleration due to gravity _____ (1)
(A) is same on equator and poles
(B) is least on poles
(C) is least on equator
(D) increases from pole to equator
- (ii) What is the acceleration of free fall on earth? (1)
- (iii) A ball is thrown vertically upwards with a velocity of 49 m/s. Calculate the maximum height to which it rises, (2)

OR

(iii) What is the importance of the universal law of gravitation? (Two points)

16. A student was asked by his teacher to verify the law of conservation of mass in the laboratory. He prepared 5% aqueous solutions of NaCl and Na₂SO₄. He mixed 10 mL of both these solutions in a conical flask. He weighed the flask on a balance. He then stirred the flask with a rod and weighed it after some time. There was no change in mass. Read this narration and answer the questions given below:
- (i) Was the student able to verify the law of conservation of mass? (1)
- (ii) If not, what was the mistake committed by him? (1)
- (iii) In your opinion, what should he have done? (2)

OR

(iii) What is the molecular mass of Na₂SO₄? (Atomic mass of Na = 23, S = 32, O = 16)

17. Connective tissues are the basic animal tissues along with other tissues such as muscle tissue, epithelial tissue, and nervous tissue. These tissues are found between other connective tissues. All the connective tissues are made of three basic components: the cells, fibres, and the ground substance. The connective tissues can be of many kinds and their functions are different. There are mainly four kinds of connective tissues that are found in animal bodies.
- (i) Which connective tissue has no fibrous component in it? (1)
- (ii) Name the tissue regarded as the rich reservoir of lipid and fat. (1)
- (iii) Write two differences between bone and cartilage. (2)

OR

(iii) Write two differences between epithelial tissue and connective tissue.