विद्या सर्वार्थि साधिका

ANANDALAYA

PERIODIC TEST - 2

Class : IX

Subject: Science MM : 80

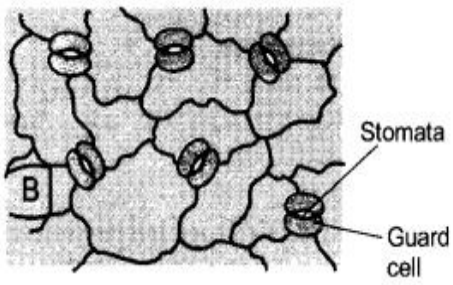
Date : 23-09-2022 Time: 3 hours

General Instructions:

1) All questions are compulsory. There are 40 questions in all.
2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E.
3) Section A contains 16 very short answer questions and 4 assertion reasoning and 4 MCQs of 1 mark each, Section B has 6 case based questions of 4 marks each, Section C contains 4 short answer questions of 2 marks each, Section D contains 3 short answer questions of 3 marks each and Section E contains 3 long answer questions of 5 marks each.
4) There is no overall choice. However internal choice is provided. You have to attempt only one of the choices in such questions.

SECTION A

1. Momentum is the product of mass and _____. (1)
2. The SI unit used to express gravitational force is _____. (1)
3. A girl kicked a football with a force of 2 N. What will be force experienced by her while kicking the ball? (1)
4. A stone is dropped from a height. What type of motion does it follow? (1)
5. A body of mass 12 kg is pulled by a force of 20 N. What will be the acceleration of the body? (1)
6. An object on Earth weighs 20 kg. How much is the gravitational force acting on it? (1)
7. Write the symbols of (i) Silver and (ii) Helium (1)
8. Write the formula of Magnesium Nitrate. (1)
9. A Student wrote the formula of Sodium Sulphide as NaS. Is the formula correct? If not, write the correct formula. (1)
10. State reason: Sponge though compressible is a solid. (1)
11. What happens when you open a bottle of perfume? Name the phenomenon behind your observation? (1)
12. Write one basic difference between Boiling and Evaporation. (1)
13. Cyanobacteria and Hydrilla have cell wall enveloping the plasma membrane. Which one of these has cellulosic cell wall? (1)
14. Which type of connective tissue do tendons and ligaments belong to? (1)
15. Identify the type of plant tissue from the figure given below and also write its location. (1)



16. Latika was suffering from chickenpox and the doctor advised her to stay at home to avoid contact with anyone**.** Why did the doctor advise her so? (1)

For question numbers 16, 17, 18 and 19 two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions.
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.

17. Assertion: Two masses M_1 and M_2, separated by a distance L meters are in vacuum. The gravitational force exerted by M_1 on M_2 is 10 N. If the same two masses when placed inside water M_1 exerts the same gravitational force of 10 N on M_2. (1)
Reason: Gravitational constant is a universal constant.

18. Assertion: The solution of iodine in water is known as Tincture of Iodine. (1)
Reason: Here, water is present as solvent and iodine is present as solute.

19. Assertion: Sulphur is Polyatomic molecule of element. (1)
Reason: There are 4 atoms present in Sulphur molecule.

20. Assertion: Sieve tube elements have abundant cytoplasm but there is no nucleus. (1)
Reason: Nucleus is present in companion cell.

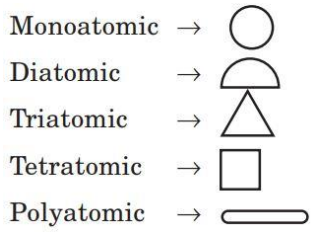
(1)

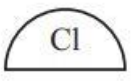
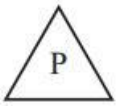
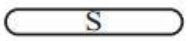
The following questions 21 to 24 are multiple choice questions. Choose the correct option.

21. A mass is acted upon by balanced forces. What happens to its momentum? (1)
(A) Momentum remains constant (B) Momentum increases
(C) Momentum decreases (D) Momentum will become zero

22. The SI unit of gravitational constant is _____. (1)
(A) ms^{-1} (B) N (C) ms^{-2} (D) Nm^2kg^{-2}

23. In a science project. Aditya has made a chart, illustrating various elements and their atomicity. Aditya decided to show elements of different atomicity by different shape as given in the figure. Pick the element which is shown incorrectly. (1)



(A)	(B)	(C)	(D)
			

24. The molecular mass of X is 106 u. X among the following is _____. (1)
(A) $CaCO_3$ (B) SO_3 (C) Na_2CO_3 (D) NaCl
(Atomic masses in unified units are; Ca = 40, C = 12, O = 16, S = 36, Na = 23, Cl = 35.5)

SECTION B

Questions 25 to 30 are Case Study Based questions and are compulsory. Each sub question carries 1 mark.

25. When the speed of a car increases or decreases we say the car experiences acceleration. When the direction of the motion changes then also we say that there is an acceleration. Since velocity is a vector quantity and acceleration depends on change in velocity. Therefore acceleration is a vector quantity. A falling object experiences acceleration. A body rotating in a circular path also experiences acceleration. A ball rolling on rough floor experiences acceleration. (4)

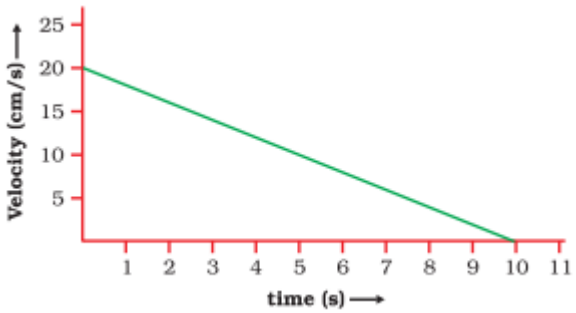
(i) Acceleration can be defined as rate of change of
(A) mass (B) velocity (C) force (D) position

(ii) Acceleration is a vector quantity. This implies that _____.
(A) it can be positive or negative or zero (B) it is always positive
(C) it is always negative (D) it always zero

(iii) Acceleration of a falling apple is generally taken as _____.
(A) negative and uniform (B) positive and uniform
(C) negative and non uniform (D) positive and non uniform

(iv) The speed of a car increases from 18 km/h to 36 km/h in 5 minutes. The acceleration is _____.
(A) 1 m/s^2 (B) 1 km/h^2 (C) 216 m/s^2 (D) 216 km/h^2

26. The velocity time graph of a mass 20 kg moving along a straight line is given here. (4)



Study the graph and answer the questions given below.

(i) What is the type of motion?
(A) Constant velocity (B) The ball is at rest
(C) Constant speed (D) Constant acceleration

(ii) What is the velocity at t = 10 s?
(A) 20 m/s (B) 15 m/s (C) 10 m/s (D) 0 m/s

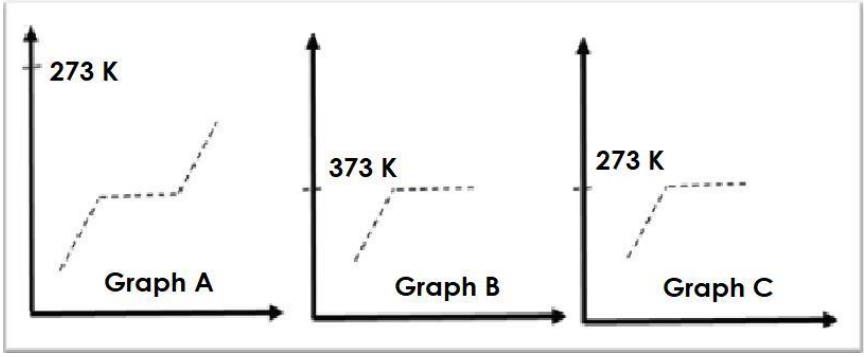
(iii) What is the initial momentum?
(A) 20 Ns (B) 20 kg (C) 400 N (D) 400 Ns

(iv) The force acting on the mass is _____.
(A) 40 N (B) - 40N (C) 0.004 N (D) – 0.004 N

27. 100 ml of water at room temperature of 25°C is taken in a beaker and a little of sulphate salt of Aluminium metal is dissolved in it by stirring to obtain a solution X. More of salt is added to the solution with constant stirring while keeping the temperature of the solution constant at 30°C. After some time, it is observed that no more salt dissolves in water, and at the same time, some solid is also left undissolved at the bottom of the beaker. The contents of the beaker are filtered through a filter paper to obtain solution Y in the form of a filtrate. (4)

(i) What is a solution like Y called?
(ii) What will you observe if the solution Y at 30°C is cooled down to 10°C by keeping the beaker in crushed ice? Why?
(iii) Write the chemical formula of the salt?
(iv) What will happen if a beam of light is passed through Y?

28. Water can exist in three different states. Solid, Liquid and gas. Solid ice starts melting at 0°C. At the time of melting the temperature remains constant as the heat is being supplied is used to overcome the force of attraction between particles. The same thing is also found when water starts boiling at 100 °C. The following are the graphical representations for the phase transformations of water. It is Temperature Vs Phase transformation. Please observe the graph and answer the following questions. (4)



(i) Which of the above represents the graphical representation of only melting of ice?
(ii) Which of the above is the graphical representation of only boiling of water?
(iii) Which of the above correctly represents the change of ice in to water and also change of water in to water vapour?
A. Graph A **B**. Graph B **C**. Graph C **D**. None of these
(iv) Why the rise in temperature is not seen in thermometer during the change in state of matter?

29. The central nervous system (CNS) is made up of the brain and spinal cord. It is made up of two types of tissue, the grey matter and the white matter. Both these tissues are made up of nerve cells. Brain has outer grey matter and inner white matter. The grey matter of the brain is mainly composed of neuron cell bodies and non-myelinated axons whereas the white matter is found in the deeper tissues of the brain and contains myelinated axons, which are the extensions of nerve cells. (4)

(i) How do neurons communicate with one another?
(A) Electrically (B) Chemically
(C) Through radio-wave-like impulses (D) Both (A) and (B)

(ii) The human nervous system is capable of a wide range of functions. The basic unit of the nervous system is _____.
(A) Brain (B) Neuron
(C) Spinal cord (D)Cerebrospinal fluid

(iii) Nissil's granules present in _____of neuron.
(A) Cell body (B) Dendrite
(C) Axon (D) Synaptic knob

(iv) Which one is the incorrect statement about myelinated neuron?
(A) It transmits the electrical impulses quickly
(B) It protects the neuron from other electrical Impulses
(C) It transmits electrical wave along the entire length of the axon
(D) It is present in the inner region of the human brain

30. Infectious diseases are also called communicable diseases as they can spread through air, water, food, physical contact and insects. Infectious diseases are caused by pathogens such as bacteria, virus, fungi, protozoans and worms. Some of the infectious diseases are Tuberculosis, Influenza, Polio, Pertussis and Hepatitis. The means of spread of these diseases are through direct and indirect transmission leading to epidemics. (4)

(i) Which one is not caused by virus?
(A) Polio (B) Chicken pox (C) Hepatitis (D) Tuberculosis

(ii) Air borne diseases are _____ .
(A) Tuberculosis, Influenza, Polio (B) Hepatitis, Malaria, Polio
(C) Malaria, Tuberculosis, Hepatitis (D)Tuberculosis, Hepatitis, Polio

(iii) Measles has infected human population the most than other disease because _____.
(A)It is highly contagious and spreads through air

(B) It can easily spread through vectors such as mosquito and housefly
(C) It spreads through contaminated water
(D) It spreads through contaminated water

(iv) Which disease is totally eradicated from our country?
(A) Pertussis (B) Hepatitis (C) Polio (D) Influenza

SECTION C

31. (a) State Newton's first law of motion. (2)
(b) Which of the following has more inertia: a rubber ball and a stone of the same size?

OR

Which would require a greater force — accelerating a 2 kg mass at 5 ms^{-2} or a 4 kg mass at 2.5 ms^{-2}? Justify with proper calculation.

32. (a) Hydrogen and Oxygen combine in the ratio of 1:8 by mass to form water. What mass of oxygen would be required to react completely with 5 gm of Hydrogen gas? (2)
(b) Give an example with explanation to show that the law of Conservation of mass applies to physical changes also.

33. (a) What type of Colloid Milk is? (2)
(b) Write down the states of Dispersed phase and Dispersing medium?

34. Give one word for the following: (2)
(a) Transporting channels of the cell
(b) Plastid present in root cells
(c) Condensed form of chromatin network
(d) Enucleated cell in human body

SECTION D

35. Draw a (v-t) graph of a uniformly accelerated motion starting from rest. Obtain an expression for the displacement from the graph. (3)

36. (a) 'Rising of hot air over a radiator.' – Is it a physical change or chemical change? (3)
(b) On heating calcium carbonate gets converted into calcium oxide and carbon dioxide. This is a known as Chemical change. Prepare one acidic and one basic solution using the products formed in the above process.

37. Our social environment is an important factor in our individual health. Justify the given statement by stating scientific reasons with an example. (3)

OR

(a) List any two causes of non-infectious diseases.
(b) Which is the causative agent of peptic ulcers in humans?
(c) Name the biologists who discovered the causative agent of peptic ulcers.

SECTION E

38. (a) State the law of conservation of momentum. (5)
(b) A girl of mass 40 kg jumps with a horizontal velocity of 5 ms^{-1} onto a stationary cart with frictionless wheels. The mass of the cart is 3 kg. What is her velocity as the cart starts moving? Assume that there is no external unbalanced force working in the horizontal direction.
(c) Why is it advised to tie any luggage kept on the roof of a bus with a rope?

OR

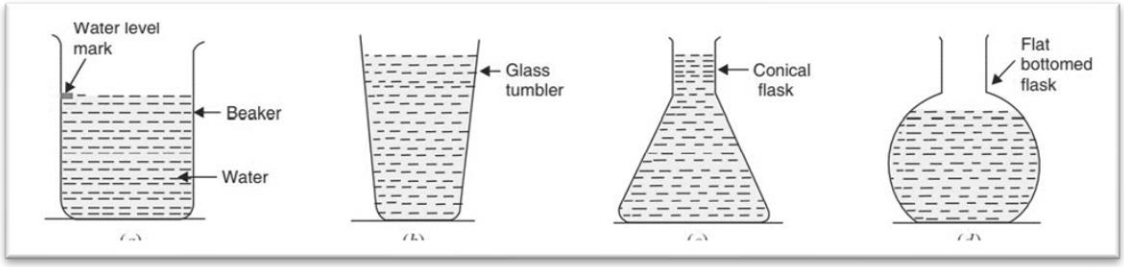
(a) Distinguish between speed and velocity. Give two points.
(b) Define average speed.
(c) Usha swims in a 90 m long pool. She covers 180 m in one minute by swimming from one end to the other and back along the same straight path. Find the average speed and average velocity of Usha.

39. (i) What happens when acetone is poured on the palm? Write your observation as well as state the reason behind it. (5)

(ii) Account for the following: Naphthalene balls disappear with time without leaving any solid residue.

(iii) Solid, liquid and gas are the three phases of a substance. If a substance has an odor at normal environment condition, it is more likely to be _____.
(A) Solid (B) Liquid (C) volatile (D) pure substance

(iv) Manali took some quantity of water in container A. Then she very carefully transferred the whole quantity of water in to container B in such a way that there is not even wastage of one drop of water. Now the same thing she did for container C and D and filled them.



What property of the liquid is reflected in the figure above?

Note: Make sure that this property is not shown by the gaseous state of matter.

OR

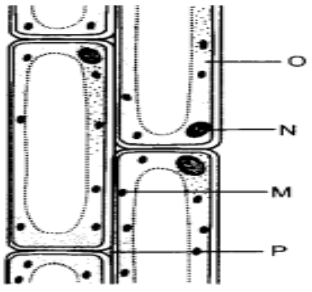
(i) Observe the following pictures and answer the questions.

(a) In which of the above picture, water is colder?
(b) Give reason.

(ii) Melting points of three substances A, B, C are 52°C, 175°C and 80°C. Arrange them in the decreasing order of the inter-particle force of attraction in each of them.

(iii) Describe an activity to show "Air contains water vapours."
(Write steps the involved in and the observation)

40. Given is the diagram showing longitudinal section of plant tissue: (5)



(a) Identify the tissue and label the parts 'N' and 'O' in the given diagram.
(b) Simple permanent tissues are different from complex permanent tissues. Write any one structural difference between them.
(c) In desert plants the epidermis has a thick waxy coating. Why?
(d) Name any two plants that lack the tissue responsible for secondary growth in it?

OR

(a) Define tissue.
(b) What is the utility of tissues in multicellular organisms?
(c) Write one important difference between the types of muscle tissues.
(d) Draw a labelled diagram of the muscle tissue which never shows fatigue.