IX A

NEW ERA PUBLIC SCHOOL
Mid-Term Examination (2025-26)
Class: IX
Subject: Science

Time: 3 Hours   M.M:80

General Instructions:
i) This question paper consists of 39 questions in 5 sections.
ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
iii) Section A consists of 20 objective type questions carrying 1 mark each.
iv) Section B consists of 6 very short questions carrying 02 marks each.
v) Section C consists of 7 short answer type questions carrying 03 marks each.
vi) Section D consists of 3 long answer type questions carrying 05 marks each.
vii) Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION A

1. When heat is constantly supplied by a burner to boiling water, then the temperature of water during vaporisation: (1)
   (a) rises very slowly
   (b) rises rapidly until steam is produced
   (c) first rises and then becomes constant
   (d) does not rise at all

2. A cell will swell up if (1)
   (a) the concentration of water molecules in the cell is higher than the concentration of water molecules in the surrounding medium.
   (b) the concentration of water molecules in the surrounding medium is higher than the concentration of water molecules in the cell.
   (c) the concentration of water molecules is same in the cell and in the surrounding medium
   (d) the concentration of water molecules does not matter.

3. In tincture of iodine, find the solute and solvent? (1)
   (a) Alcohol is the solute and iodine is the solvent
   (b) Iodine is the solute and alcohol is the solvent
   (c) Any component can be considered as solute or solvent
   (d) Tincture of iodine is not a solution

4. Which of the following phenomena always results in the cooling effect? (1)
   (a) Condensation   (b) Evaporation
   (c) Sublimation   (d) None of these

5. Which Biologist proposed the cell theory along with Schwann? (1)
   (a) Schleiden   (b) Robert Brown
   (c) Purkinje   (d) Virchow

6. While doing work and running, you move your organs like hands, legs etc. Which among the following is correct? (1)
   (a) Smooth muscles contract and pull the ligament to move the bones.
   (b) Smooth muscles contract and pull the tendons to move the bones.
   (c) Skeletal muscles contract and pull the ligament to move the bones.
   (d) Skeletal muscles contract and pull the tendon to move the bones

7. On converting 308 K, 329 K and 391 K to Celsius scale, the correct sequence of temperatures will be: (1)
   (a) 33°C, 56°C and 118°C   (b) 35°C, 56°C and 119°C
   (c) 35°C, 56°C and 118°C   (d) 56°, 119°C and 35° C

8. Which of the following elements is not a metalloid? (1)
   (a) Boron   (b) Silicon
   (c) Germanium   (d) Tungsten

9. In which of the following cases of motions, the distance moved and the magnitude of displacement are equal? (1)
   (a) If the car is moving on straight road.
   (b) If the car is moving in circular path.
   (c) The pendulum is moving to and fro.
   (d) The earth is revolving around the sun.

10. Which one of the following is not the unit of energy? (1)
    (a) Joule
    (b) Newton Metre
    (c) Kilowatt
    (d) Kilowatt Hour

11. Bone matrix is rich in (1)
    (a) fluoride and calcium
    (b) calcium and phosphorus
    (c) calcium and potassium
    (d) phosphorus and potassium.

12. A particle is moving in a circular path of radius r. The displacement after half a circle would be (1)
    (a) Zero   (b) πr
    (c) 2r   (d) $2\pi r$

13. Which of the following figures represents uniform motion of a moving object correctly? (1)
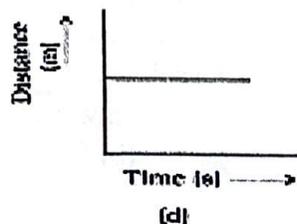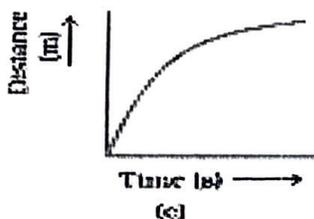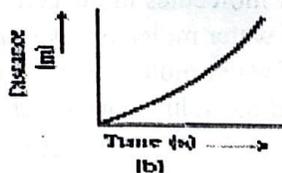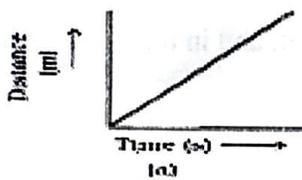
14. An object of mass 2 kg is sliding with a constant velocity of 4 m/s on a frictionless horizontal table. The force required to keep the object moving with the same velocity is (1)
    (a) 32N   (b) 0N ·
    (c) 2N   (d) 8N

15. Which is not a function of epidermis? (1)
    (a) Protection from adverse condition.   (b) Gaseous exchange
    (c) Conduction of water   (d) Transpiration

16. The inertia of an object tends to cause the object (1)
    (a) to increase its speed
    (b) to decrease its speed
    (c) to resist any change in its state of motion
    (d) to decelerate due to friction

Read the assertion (A) and reason (R) statements carefully and mark the correct option out of the following options:
    (a) Both (A) and (R) are true and (R) is correct explanation of the assertion.
    (b) Both (A) and (R) are true and (R) is not the correct explanation of the assertion.
    (c) (A) is true but (R) is false
    (d) (A) is false but (R) is true.

17. Assertion (A): A solution of table salt in a glass of water is homogeneous.
    Reason (R): A solution having different composition throughout is homogeneous. (1)

18. Assertion (A): Friction always opposes the relative motion between surfaces in contact.
    Reason (R): In some situations, friction helps motion, and in others, it opposes it (1)

19. Assertion (A): Cell wall is a living part of the cell. (1)
    Reason (R): It offers protection, definite shape and support.

20. Assertion (A): Work is done when there is a displacement perpendicular to the direction of the force.
    Reason (R): If there is no displacement, the work done is zero. (1)

SECTION – B

21. When a carpet is beaten with a stick, dust comes out of it. Explain. (2)

22. Identify the type of tissue in the following: Skin, bark of tree, lining of kidney tubule, transports food in plants. (2)

OR

(a) Presence of which tissue provides crunch in pear?
(b) Lotus floats on water surface. Name the tissue due to which this is possible.
(c) Name a tissue that fills gap in all the parts of animals.
(d) Which tissue stores fat between internal organs?

23. Study the given diagram. Where will the object move and why? (2)
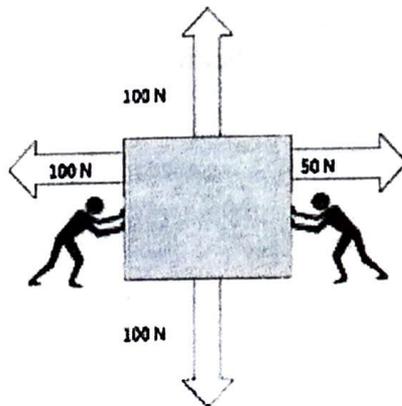
24. Write an activity to show that particles of matter have space between them. (2)
25. Give reasons for the following: (2)
    (a) Striated muscles are also called voluntary muscles.
    (b) Nerve cells are long and branched.

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26. The graph given below shows the positions of a body at different times. Calculate the speed of the body as it moves from (2)
   (a) A to B   (b) B to C
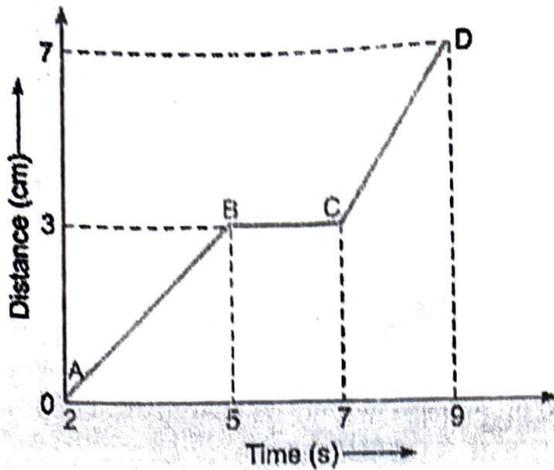
OR

The minute hand of a wall clock is 14 cm long. Find its displacement from 11:00 a.m. to 11:30 a.m.

SECTION-C

27. Beakers A and B contain a solution of sugar and a mixture of saw dust and water respectively. On the basis of observations, categorise the two as homogeneous and heterogeneous mixture. Mention two points of difference that you would observe in the two mixtures. (3)

OR

(a) Write any two properties of colloids.

(b) What do you mean by Tyndall effect. Give one example of it from your daily life.

28. (a) Name the factors which affect the rate of evaporation.

(b) Latent heat of evaporation of two liquids A and B is 100 J/kg and 150 J/kg respectively. Which one can produce more cooling effect and why? (3)

29. How do substances like CO_2 and water move in and out of the cell? Discuss. (3)

OR

(a) Identify the part labelled 'A' in the diagram below. Also define it.

Bacterial Cell Structure
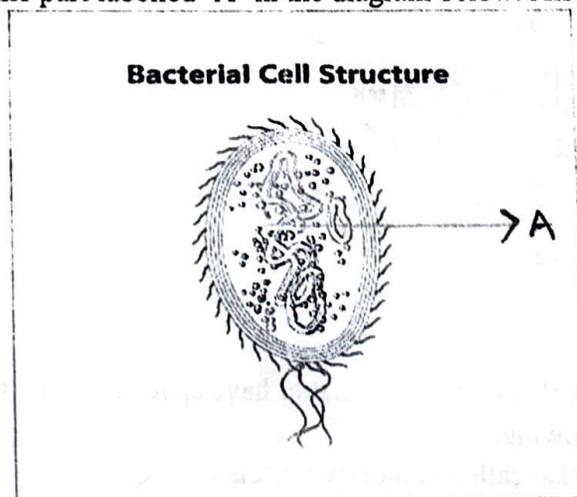
(b) Why is the cell called structural and functional unit of life?

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30. (a) How can you change an unsaturated solution to saturated solution without adding any more solvent to it?
    (b) Why do we feel comfortable under a fan when we are perspiring?
    (c) Give example of any two sublime substances.   (3)

31. (a) Differentiate between speed and velocity. (Any 2 points).
    (b) Explain the function of an odometer?   (3)

32. A train starting from a railway station and moving with uniform acceleration attains a speed 36 km h^{-1} in 10 minutes. Find its acceleration.   (3)

OR

A bus starting from rest moves with a uniform acceleration of 0.1 m s^{-2} for 2 minutes. Find (a) the speed acquired, (b) the distance travelled.

33. Mention a function of each of the following: (3)
    (a) Chloroplast   (b) Vacuole
    (c) Chromosome   (d) Mitochondria
    (e) Ribosomes   (f) SER

SECTION-D

                                                                                        (5)
34. (a) Define power and its SI unit.
    (b) Look at the activities listed below. Reason out whether or not work is done in the light of your understanding of the term 'work'.
        (i) Suma is swimming in a pond.
        (ii) A donkey is carrying a load on its back.
        (iii) An engine is pulling a train.

OR

    (a) A mass of 10 kg is at a point A on a table. It is moved to a point B. If the line joining A and B is horizontal, what is the work done on the object by the gravitational force? Explain your answer.
    (b) Certain force acting on a 20 kg mass changes its velocity from 5 m s^{-1} to 2 m s^{-1}. Calculate the work done by the force.

35. (a) Differentiate between striated, unstriated and cardiac muscles on the basis of their (5) structure and location in the body.
    (b) Draw a labelled diagram of neuron.

36. (a) State Newton's first law of motion.   (5)
    (b) A stone of 1 kg is thrown with a velocity of 20 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?

OR

    (a) State Newton's third law of motion.
    (b) An object of mass 100 kg is accelerated uniformly from a velocity of 5 ms^{-1} to 8 ms^{-1} in 6 s. Calculate the initial and final momentum of the object. Also, find the magnitude of the force exerted on the object.

SECTION-E

37. **Read the following paragraph and answer the given questions:**

The Golgi apparatus, first described by an Italian pathologist, consists of a system of membrane-bound vesicles (flattened sacs) arranged approximately parallel to each other in stacks called cisterns. These membranes often have connections with the membranes of ER and therefore constitute another portion of a complex cellular membrane system.

(i) Who discovered Golgi apparatus? (1)

(ii) Define membrane biogenesis? (1)

(iii) Mention two functions of Golgi apparatus. (2)

OR

(iii) Lysosomes are called suicidal bags. Why?

38. **Read the following paragraph and answer the given questions:**

Sudha tested the solubility of four salts, X, Y, Z and T at different temperatures and collected the following data

Salt dissolved	Temperature				
	290 K	313 K	323 K	343 K	353 K
	Solubility (g/ 100 g water)				
X	22	34	40	93	109
Y	43	43	46	50	50
Z	27	30	34	37	40
T	25	38	42	54	64

(i) Which salt has the highest and lowest solubility at 323 K? (1)

(ii) The solubility of which salt is least affected by increase in temperature? (1)

(iii) A student prepared a saturated solution of X at 323 K and then added 25 g water to it. What mass of X must be added to again make the solution saturated? (2)

OR

(iii) Find the concentration of Z at 353K.

39. **Read the following paragraph and answer the given questions:**

Work done by a force acting on an object is equal to the magnitude of the force multiplied by the distance moved in the direction of the force. Work has only magnitude and no direction. Work done is negative when the force acts opposite to the direction of displacement. Work done is positive when the force is in the direction of displacement.

(i) When is work said to be done? (1)

(ii) Define 1Joule of work. (1)

(iii) Two masses in the ratio 1:4 have their speeds in the ratio 4:5. Find the ratio of their Kinetic energy (2)

OR

(iii) A bullet and a recoiled gun have equal momentum in mutually opposite directions. Which has greater kinetic energy and why?