Term -1
Class - IX Session (2021-22)
Science
Test ID 086

Time: 90 Minutes **Max. Marks 40**

General Instructions:

- ***The Question Paper contains three sections A, B and C.***
- ***Section A has 24 questions. Attempt any 20 questions.***
- ***Section B has 24 questions. Attempt any 20 questions.***
- ***Section C has 12 questions. Attempt any 10 questions.***
- ***All questions carry equal marks.***
- ***There is no negative marking.***

Section – A

This section consists of 24 questions. Attempt any 20 questions from this section. The first attempted 20 questions would be evaluated.

1. Two chemical species X and Y combine together to form a product P which contains both X and Y. X+Y → P. X and Y cannot be broken down into simple substances by simple chemical reactions. Which of the following concerning the species X, Y and P are correct?
   i) P is a compound
   ii) X and Y are compounds
   iii) X and Y are elements
   iv) P has a fixed composition

   a) (i), (ii) and (iii) b) (i), (ii) and (iv)
   c) (ii), (iii) and (iv) d) (i), (iii) and (iv)

2. Which of the following represents the solution of solid in a solid?
   a) Bread b) Brass
   c) Beryllium d) Boron

3. Mark the odd one out.
   a) Mercury. b) Steel.
   c) Magnesium d) Copper

4. Tincture of iodine has antiseptic properties. This solution is made by dissolving
   a) Iodine in potassium iodide
   b) Iodine in vaseline
   c) Iodine in water
   d) Iodine in alcohol

5. The teacher instructed three students A, B and C respectively to prepare a 50% (mass by volume) solution of sodium hydroxide. 'A' dissolved 50 g of NaOH in 100 mL of water, 'B' dissolved 50 g of NaOH in 100 g of water while 'C' dissolved 50 g of NaOH in water to make 100 mL of solution. Which one of the following has made the desired solution?
   a) Student A
   b) Student B
   c) Student C
   d) None of these

6. Which of the following are substances of homogeneous mixture?
   a) Air
   b) Filtered tea
   c) Both A and B
   d) Neither A nor B

7. Rusting of an article made up of iron is called
   a) Corrosion and it is a physical change
   b) Dissolution and it is a physical change
   c) Corrosion and it is a chemical change
   d) Dissolution and it is a chemical change

8. Matter may be classified as elements, compounds, or mixtures. Which of the following lists includes only mixtures?
   a) Dry ice, alcohol, brass
   b) Sea water, milk, air
   c) Copper, gasoline, bread
   d) Paint, blood, mercury

9. Sugar solution can be classified under:
   a) Element
   b) Compounds
   c) Homogeneous Mixture
   d) None of these

10. A solution can be called a dilute, concentrated or a saturated solution, depending upon the amount of _____ present in a _____.
   a) Solute, solvent
   b) Solvent, solution
   c) Solute, solution
   d) None of these.

11. The two diferent physical quantities, which are used to describe the overall motion of an object and to locate it's fnal position with reference to its initial position at a given time are
   a) Distance and displacement
   b) Magnitude of displacement and speed
   c) Displacement and velocity
   d) Speed and velocity

Tendon is a structure which connects _____.

a) a bone with another bone
b) a muscle with a bone
c) an nerve with a muscle
d) a muscle with another muscle.

13. Find out the incorrect statement.

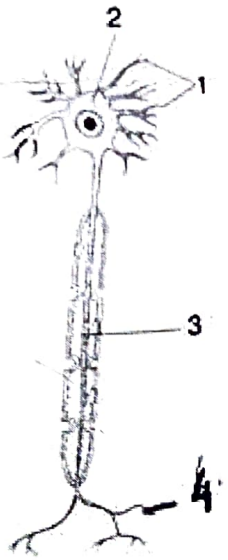
a) parenchymatous tissues have intracellular spaces
b) collenchymatous tissues are irregularly thickened at corners
c) apical and intercalary meristems are permanent tissues
d) meristematic tissues, in its early stage lack vacuoles

14. Match the following:

1. Blood and lymph	A. complex tissue
2. Bone and cartilage	B. areolar connective tissue
3. Tendon and ligament	C. skeletal connective tissue
4. Xylem and phloem	D. fluid connective tissue

a) 1 – B, 2 – C, 3 – D, 4 - A
b) 1 – D, 2 – C, 3 – B, 4 - A
c) 1 – D, 2 – B, 3 – A, 4 - C
d) 1 – B, 2 – C, 3 – A, 4 - D

15. The figure illustrates nerve tissue. Identify the labelled parts.

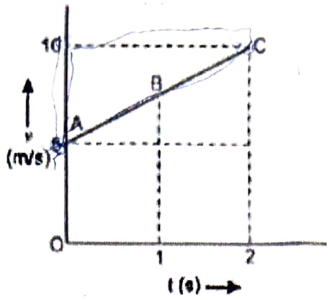


a) 1 – dendrites, 2 – cell body, 3 – axon, 4 – nerve endings
b) 1 – cell body, 2 – dendrites, 3 – axon, 4 – nerve endings
c) 1 – dendrites, 2 – axon, 3 – axon, 4 – cell body
d) 1 – dendrites, 2 – nerve endings, 3 – axon, 4 – cell body

16. On a velocity-time graph, a horizontal straight line corresponds to motion at

a) Constant velocity
b) Zero velocity
c) Increasing velocity
d) Decreasing velocity

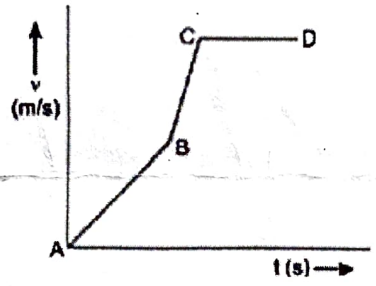
17. In the below fgure, a velocity-time graph of a moving particle is shown. The acceleration the particle is _____ m/s^2



a) 5
b) 10
c) 20
d) 2.5

18. Flexibility in plants is due to _____.
a) collenchyma
b) sclerenchyma
c) parenchyma
d) chlorenchyma

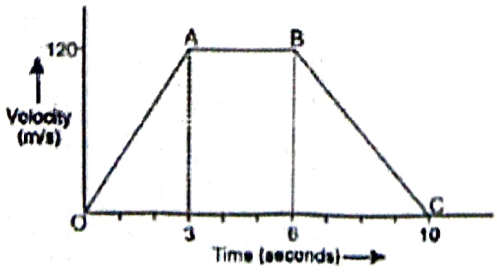
19. In the below fgure, a velocity time (v - t) graph of a moving particle is shown. The acceleration is maximum for segment



a) AB
b) BC
c) CD
d) equal for all parts

20. A particle is moving in a circular path of radius 'r'. The displacement after half a circle would b
a) zero
b) πr
c) $2r$
d) $2\pi r$

21. The velocity-time graph of an object of mass m = 50 g is shown in figure. What is the force on the object in time interval 0 to 3 s?



a) 1 N
b) 3 N
c) 2 N
d) 4 N

What is the magnitude of force required to stop a car moving with a velocity of 30 m/s in 10 seconds. The mass of the car is 1,500 kg.

a) 1500 N
b) 1000 N
c) 4500 N
d) 5000 N

23. 'Cells arise from pre-existing cells' was stated by _____.

a) Hackel
b) Virchow
c) Hooke
d) Schleiden

24 When the distance travelled by a body is directly proportional to time, it is travelling with

a) Uniform acceleration
b) Non uniform acceleration
c) Constant speed
d) Variable speed

Section – B Consists of 24 questions (Sl. No.25 to 48). Attempt any 20 questions from this section. The first attempted 20 questions would be evaluated.

25. Which of the following is pure substance?

a) Sugar
b) Milk
c) Both A and B
d) Neither A nor B

26. The properties of mixture are _____ from its component.

a) similar
b) slightly different
c) entirely different
d) None of the above

27. An example of a chemical change and physical change taking place simultaneously

a) Burning of coal
b) Burning of petrol
c) Burning of diesel
d) Burning of candle

28. Which of the following statement is always true when a substance undergoes physical change?

a) It changes color
b) A new substance is formed
c) It boils
d) Its composition remains the same

29. A bullet of mass 20 grams moving with a velocity of 300 m/s gets embedded in a truly suspended wooden block of mass 880 g. What is the velocity acquired by the block?

a) 7 m/s
b) 6.5 m/s
c) 6.48 m/s
d) 6.67 m/s

30. Swimming can be explained on the basis of:

a) Newton's 1st Law
b) Newton's 2nd Law
c) Newton's 3rd Law
d) Law of Inertia

Question No. 31 to 36 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true and R is not the correct explanation of A

C. A is true but R is false.

D. A is False but R is true.

31. Assertion: Nucleus controls metabolism as well as heredity.
Reason: There is usually a single nucleus in a cell.

32. Assertion: Whales can live in cold water as they have a coat of blubber under the skin.
Reason: Blubber consists of adipose tissue that insulates the body. b

33. Assertion: A body can have acceleration even if it's velocity is zero at a given instant.
Reason: A body is momentarily at rest when it reverses it's direction of motion.

34. Assertion: Mitochondria are known as the powerhouse of the cell.
Reason: Mitochondria generate biologically useful energy (ATP) for the cell activities by oxidation of food. A

35. Assertion: Elements and compounds are pure substances.
Reason: Properties of compounds are different from those of its constituent elements. d

36. Assertion: Alloys are homogenous mixture of metals.
Reason: Alloys cannot be separated into their components by physical methods. b

37. Cartilage is not found in_____.

a) nose
b) ear
c) kidney
d) larynx

38. Suppose a boy is enjoying a ride on a merry-go-round which is moving with a constant speed of 10m/s . It implies that the boy is

a) at rest.
b) moving with no acceleration.
c) in accelerated motion.
d) moving with uniform velocity.

39. Organelle other than nucleus, containing DNA is _____.

a) endoplasmic reticulum
b) mitochondria
c) golgi apparatus
d) lysosomes

40. Which type of tissue forms the inner lining of a blood vessel?

a) epithelial
b) connective
c) nervous
d) muscle

Two objects each of mass 1.5 kg are moving in the same straight line but in opposite directions. The velocity of each object is 2.5 m/s before the collision during which they stick together. The velocity of the combined object after collision is

a) 0 m/s
b) 1.66 m/s
c) 1.50 m/s
d) 3.75 m/s

42. Trapped dust particles are pushed out of respiratory tract by _____.

a) ciliated epithelium
b) stratified epithelium
c) sensory epithelium
d) glandular epithelium

43. Epithelial cells lie on a delicate basement membrane made up of _____ .

a) collagen
b) histamine
c) casein
d) trypsin

44. An object of mass 2 kg is sliding with a constant velocity of 4m/s on a frictional horizontal table. The force required to keep the object moving with same velocity is

a) 2 N
b) 8 N
c) 32 N
d) 0 N

45. For how long should a force of 100 N act on a body of mass 20 kg at rest so that it acquires a velocity of 100 m/s?

a) 10 s
b) 20 s
c) 5 s
d) 9 s

46. Which of the following are physical changes? (i) Melting of iron metal (ii) Rusting of iron (iii) Bending of an iron rod (iv) Drawing a wire of iron metal

a) (i), (ii) and (iii)
b) (i), (ii) and (iv)
c) (i), (iii) and (iv)
d) (ii), (iii) and (iv)

47. The brakes applied to a car produce an acceleration of 6m/s2 in the opposite direction to the motion. If the car takes 2 s to stop after the application of brakes, What is the distance it travels during this time?

a) 28.5 m
b) 37.5 m
c) 12 m
d) 67 m

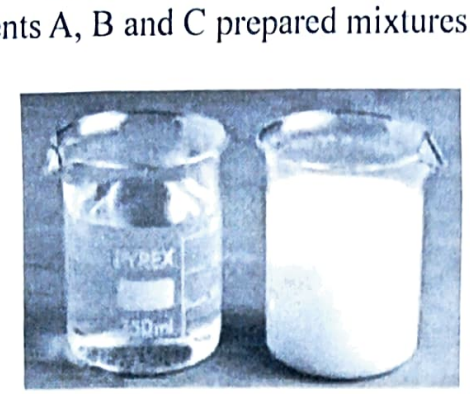
48. Tissue found in area of regular wear and tear is _____.

a) simple squamous epithelium
b) stratified squamous epithelium
c) simple cuboidal epithelium
d) stratified cuboidal epithelium

Section C

This section consists of three cases followed by a questions. There are total 12 questions i this section. The first attempted 10 questions would be evaluated.

Three students A, B and C prepared mixtures using chalk powder, sugar and milk respectively in water.



49. Whose mixture would not leave residue on filter paper after fltration?
    a) B
    b) C
    c) Both C and B
    d) None of the above

50. Whose mixture would show Tyndall efect?
    a) C
    b) A
    c) B
    d) All of the above

51. Whose mixture would give transparent/ clear solution?
    a) B
    b) A
    c) C
    d) All of the above

52. Whose mixture would settle down at the bottom when left undisturbed?
    a) A
    b) B
    c) C
    d) All of the above

Read the passage and answer the questions:

Water also follows the law of diffusion. The spontaneous movement of water molecules through a selectively permeable membrane is called osmosis. The movement of water across the plasma membrane of the cell is affected by amount of substance dissolved in water.

53. Plasma membrane is made up of _____.
    a) proteins and carbohydrates
    b) carbohydrates and lipids
    c) proteins and lipids
    d) proteins only

54. A cell placed in hypotonic solution bursts up. It is _____.
    a) animal cell
    b) bacterial cell
    c) fungal cell
    d) both (a) and (b_

Cell wall will swell up if _____.

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) concentration of water molecules does not matter

56. Select the odd one out-

a) the movement of water across a semipermeable membrane is affected by the amount of substances dissolved in it

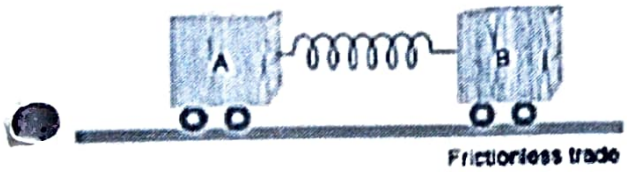
b) membranes are made of organic molecules such as proteins and lipids

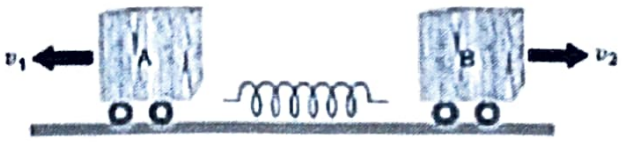
c) molecules soluble in organic solvents can easily pass through the membrane

d) plasma membranes contain chitin sugar in plants

Read the following and answer the questions:

People say that a heavy vehicle travelling fast has lots of momentum. However scientifically, momentum = mass x velocity. Like velocity, momentum is a vector, so a (+) or a (-) is used to indicate its direction. An object accelerates when a resultant force acts on it. "Therefore, its velocity will change and so will its momentum. The link between the force and the rate of change of momentum it produces is known as Newton's second law of motion. In a collision or an explosion, momentum is conserved. Let's suppose, trolleys A and B, mounted on a frictionless track, are held together so that spring between them is fully compressed. When released, they move apart as shown in figure.





57. If mass of both trolleys A and B are equal then compare the velocity v1 and v2 of trolley.

a) $v1 < v2$ b) $v1 > v2$

c) $v1 = v2$ d) None of these

58. If mass of A is twice than that of B then compare the velocity and of each trolley.

a) $v1 < v2$ b) $v1 > v2$

c) $v1 = v2$ d) None of these

59. Which of the following correctly explains the conservation of momentum?

a) $M_A u_1 - M_B u_2 = M_A v_1 - M_B v_2$ b) $M_A u_1 + M_A u_2 = M_B v_1 + M_B v_2$

c) $M_A u_1 + M_B u_2 = M_A v_1 + M_B v_2$ d) $M_A u_1 + M_B u_2 = M_A v_1 - M_B v_2$

60. Which of the following is correct relation between force and momentum?

a) Resultant Force = Change in momentum / speed

b) Resultant force = Change in speed / momentum

c) Resultant force = Change in Momentum x speed

d) Resultant force = Change in momentum/time

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