

2024 X 21

0900

Seat No.

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DIV :

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SCIENCE

Time : 3 Hours

Subject Code

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SET :

B

Total No. of Questions : 49 (Printed Pages : 16)

Maximum Marks : 70

General Instructions :

- There are 49 questions in the question paper. All questions are compulsory.
- Question Nos. 1 to 35 are multiple choice questions carrying 1 mark each.
- Question Nos. 36 to 44 are short answer type (i) question, carrying 2 marks each.
- Question Nos. 45 to 47 are short answer type (ii) questions, carrying 3 marks each.
- Question Nos. 48 and 49 are long answer type questions, carrying 4 marks each.
- There is no overall choice in the question paper. However, an internal choice has been provided for 3 questions of 2 marks each, 2 questions of 3 marks each and one question of 4 marks.

PART-I (MULTIPLE CHOICE QUESTIONS)

* Select and write the most correct alternative from those given below each statement.

- An apricot placed in concentrated sugar solution will
 - Swell as it is in a hypotonic solution
 - Shrink as it is in a hypertonic solution
 - Swell as it is in a hypertonic solution
 - Shrink as it is in hypotonic solution

N-1031—Set-B

2. The cell organelle that contains digestive enzymes to break down complex

molecules is

(A) ribosome

(B) Golgi apparatus

(C) lysosomes

(D) mitochondria

3. The undefined nuclear region of prokaryotes is also known as

(A) nucleus

(B) nucleoid

(C) nucleolus

(D) nucleic acid

4. The dead element present in the phloem is

(A) companion cells

(B) phloem fibres

(C) phloem parenchyma

(D) sieve tubes

5. The type of epithelial cells that absorb the digested food materials in the intestine is

(A) stratified squamous epithelium

(B) columnar epithelium

(C) cuboidal epithelium

(D) squamous epithelium

6. In desert plants, rate of water loss gets reduced due to the presence of

(A) pectin

(B) lignin

(C) stomata

(D) suberin

7. Heart muscle cells are

(A) involuntary and multinucleated

(B) unbranched and uninucleated

(C) cylindrical and uninucleated

(D) unbranched and involuntary

8. A racing car has a uniform acceleration of 4 ms^{-2} . The distance it will cover in 10 s after the start is

(A) 50 m

(B) 100 m

(C) 150 m

(D) 200 m

9. A particle is moving in a circular path of radius r . The displacement after half a circle is

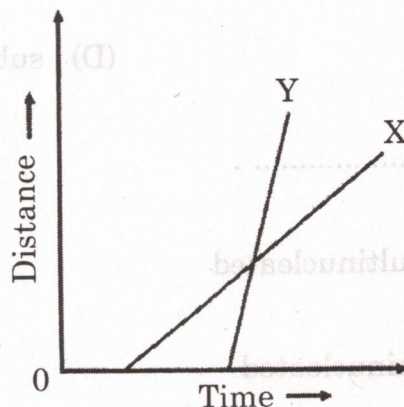
(A) πr

(B) $2r$

(C) Zero

(D) $2\pi r$

10. The distance-time graph of two objects X and Y is shown below. Which statement is true for the speed of the object X and Y ?



- (A) Speed of object X is greater than object Y
 (B) Speed of object Y is greater than object X
 (C) Both the objects X and Y have the same speed
 (D) Both the objects X and Y are at rest.
11. If a boy runs 8 m towards south and then turns towards east and runs 6 m, the displacement of the boy from the initial position is
- (A) 12 m (B) 10 m
 (C) 8 m (D) 6 m
12. An object of mass 5 kg is moving with a uniform velocity of 3 m/s on a smooth horizontal surface. The force required to keep the object moving with the same velocity is
- (A) 15 N (B) 8 N
 (C) 2 N (D) 0 N

13. The momentum of an object is the product of its
(A) mass and acceleration (B) time and acceleration
(C) mass and velocity (D) time and velocity
14. Two forces are said to be balanced when they are
(A) equal in magnitude
(B) equal in direction
(C) equal in magnitude but opposite in direction
(D) equal in magnitude but in same direction
15. The inertia of an object tends to cause the object
(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
16. According to the universal law of gravitation, the force between two objects is directly proportional to
(A) distance between them
(B) square of the distance between them
(C) the product of their masses
(D) sum of their masses

17. A metal box weighing 20 N is thrown in a pool of water now weighs only 17 N.
The weight of the water displaced by the box will be
- (A) 3 N (B) 9 N
(C) 11 N (D) 37 N
18. The mass of an object on moon is 60 kg. Its weight on the earth is
- (A) 10 N (B) 60 N
(C) 360 N (D) 588 N
19. As the surface area of a liquid increases, its pressure
- (A) increases (B) decreases
(C) becomes zero (D) remains unchanged
20. To enhance fish seed quality, people breed these fish in ponds using
- (A) hormonal modification (B) gene transfer
(C) hormonal stimulation (D) gene abbreviation
21. Growing two or more crops simultaneously on the same field in a definite pattern is known as
- (A) intercropping (B) mixed farming
(C) interplanting (D) crop rotation

22. Cyperinus and Parthenium are types of
- (A) Diseases (B) Pesticides
(C) Weeds (D) Pathogens
23. Among thirteen nutrients, six nutrients are needed by the plants in large quantities. They are nitrogen, calcium, phosphorus,
- (A) iron, boron and chlorine
(B) potassium, magnesium and sulphur
(C) molybdenum, manganese and zinc
(D) chlorine, carbon and aluminium
24. Exotic or foreign breeds like Jersey or Brown Swiss are selected for long
- (A) gestation periods (B) lactation periods
(C) incubation period (D) weaning period
25. Which of the following are the reasons for undertaking poultry farming ?
- (i) egg production,
(ii) feather production,
(iii) chicken meat,
(iv) milk production
- (A) (i) and (ii) (B) (i) and (iii)
(C) (ii) and (iii) (D) (iii) and (iv)

26. The phenomenon responsible for spread of perfumes from one corner of the other room is
- (A) fusion (B) evaporation
(C) diffusion (D) melting
27. We can liquefy gases by
- (A) increasing pressure and increasing temperature
(B) reducing pressure and increasing temperature
(C) increasing pressure and reducing temperature
(D) reducing pressure and reducing temperature
28. A liquid freezes at 6°C . The temperature on Kelvin scale is
- (A) 173 K (B) 273 K
(C) 279 K (D) 300 K
29. The phenomenon of change of a liquid into gaseous state at any temperature below its boiling point is called
- (A) freezing (B) boiling
(C) evaporation (D) sublimation
30. Sol and Gel are examples of
- (A) solid-solid colloid
(B) sol is solid-liquid and gel is liquid-solid colloid
(C) sol is solid-solid colloid and gel is solid-liquid colloid
(D) sol is liquid-solid and gel is solid-liquid colloid

31. The process used to purify the salt obtained from sea water is
- (A) condensation (B) crystallization
- (C) distillation (D) filtration
32. The method used to separate two miscible liquid having different boiling points is
- (A) distillation (B) centrifugation
- (C) chromatography (D) decantation
33. To make a saturated solution, 40 g of sodium chloride is dissolved in 160 g of water at 293 K. The concentration of the solution at this temperature is
- (A) 10% (B) 20%
- (C) 30% (D) 40%
34. Tyndall effect can be seen when a beam of light is passing through a solution of
- (A) copper sulphate (B) water and milk
- (C) iodine in alcohol (D) sugar in water

35. Proteins used for membrane biogenesis are synthesized by
- (A) smooth Endoplasmic reticulum
 - (B) rough endoplasmic reticulum
 - (C) mitochondria
 - (D) ribosomes

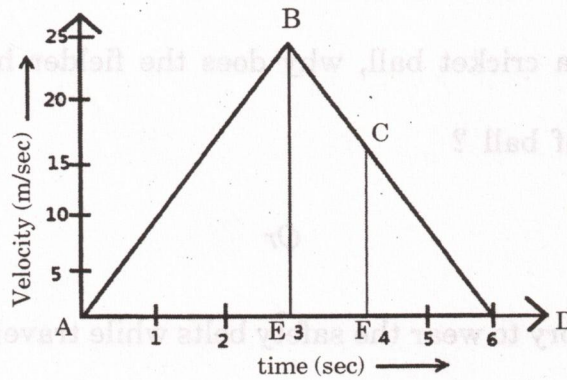
PART-II (SUBJECTIVE)

36. Draw a diagram to show the separation of ammonium chloride and salt by sublimation and label the ammonium chloride solidified and ammonium chloride vapours.
37. A stone is released from the top of a tower of height 19.6 m. Calculate its final velocity just before touching the ground. ($g = 9.8 \text{ ms}^{-2}$)
38. Draw a scientifically correct diagram of a neuron and label nucleus and nerve ending.
39. A car with a mass of 800 kg is moving with an initial velocity of 5ms^{-1} .
If a constant force of 1600 N is applied to the car, calculate its final velocity after 4 s.

Or

39. A body of mass 4 kg is dropped from a height of 20 m. Calculate the initial momentum and the momentum just before it strikes the ground.

40. Study the graph and answer the questions given below.



(a) Find the acceleration acting on the body between B and C.

(b) Find the distance travelled in a region ABE.

41. Using Newton's laws of motion, explain the below mentioned situations :

(a) Water sprinkler used for grass lawns begins to rotate as soon as water is supplied.

(b) Water drops are removed from wet clothes by giving light jerk to the cloth.

42. Why do swimmers experience less fatigue when swimming in sea water compared to fresh lake water ? Why does relative density have no unit ?

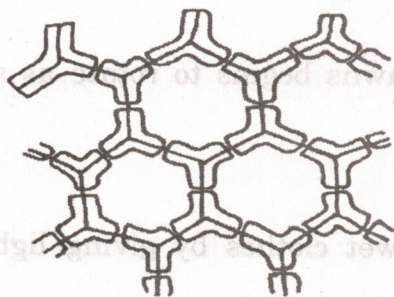
Or

42. What keeps a satellite in orbit around the earth and how would a decrease in its velocity affect its orbit ?

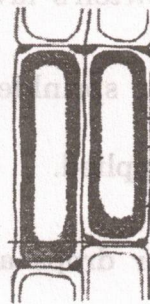
43. If a table tennis ball and cricket ball travelling at the same speed hit a person, which of the two balls will cause more injury ? Justify your answer. When a fielder catches a cricket ball, why does the fielder have to move his hand in the direction of ball ?

Or

43. Why is it compulsory to wear the safety belts while travelling in a car ? Jumping from a moving bus poses serious safety risks. Give reason.
44. Given below are the diagrams of two types of simple tissues (A, B). Identify them and write one function of each tissue.



(A)



(B)

45. (i) A car starts from rest and is uniformly accelerated in a straight line at the rate of 10 ms^{-2} . Calculate :
- (a) the velocity of the car in 10 s.
 - (b) the distance travelled by the car in 10 s.
- (ii) Write a point of difference between uniform and non-uniform motion.

Or

45. (i) Suppose a person takes a round of circular park whose diameter is 140 m in 2 minutes.

Calculate :

(a) the distance covered by the person

(b) the speed of the person

(ii) Write a point of difference between acceleration and velocity.

46. (i) Draw a neat labelled diagram of location of meristematic tissue in plant body.

(ii) Cells of meristematic tissue differentiate to form different types permanent tissues. Explain the process of differentiation.

47. Mr. Farmer desires to start a fishing business. Explain to him the differences between capture fishery and culture fishery. Suggest to him how more intensive fish farming can be done in composite fish culture. Also mention the disadvantages of composite fish culture.

Or

47. The assignment topic given for the first term is "increase in the production of food grains". Answer the following questions to complete the assignment :

(i) List the three major groups of activities for improving crop yield.

(ii) State some of the factors for which variety improvement is done.

(iii) Write a short note on green manure.

48. Draw a neat labelled diagram to show of separation of dyes in black ink using chromatography. Why is this technique of separation used for some solutes?

List *two* applications of chromatography.

Or

48. (i) Draw a neat labelled diagram to show the process of obtaining coloured component (dye) from blue/black ink.
- (ii) Why is method of evaporation used in this case ?
- (iii) List *two* applications of separation of mixtures by centrifugation.
49. (i) If you are provided with some vegetables to cook, you generally add salt into vegetables during cooking process. After adding salt vegetables release water. What mechanism is responsible for this ?
- (ii) Why do plant cells possess large sized vacuole ?
- (iii) How is bacterial cell different from onion cell ? (*two* points)

Rough Work