

MAX. Marks: 80

TIMES: 3 Hrs

**General Instructions:**

1. Questions 1 to 5 are one mark questions. They are to be answered in one word or one sentence.
2. Questions 6 to 14 are two marks questions. They are to be answered in about 30 words.
3. Questions 15 to 23 are three marks questions. They are to be answered in about 50 words.
4. Questions 24 to 26 are five marks questions. They are to be answered in about 70 words.
5. Questions 27 to 41 are multiple choice questions based on practical skills. Each question is a one mark question. You are to choose one most appropriate response out of the four a, b, c and d provided to you.

**SECTION – A**

1. In what type of wave alternate compressions and rarefactions are formed?
2. Although gravitational force which acts on all bodies is proportional to their masses, then why heavy bodies do not fall faster than lighter bodies?
3. Name the universally accepted standard reference for measuring atomic masses.
4. State the wave property that determines 'pitch' of sound.
5. How does the speed of sound change on increasing the temperature?
6. What do you mean by photoperiod? Name two processes that are dependent on photoperiod.
7. Name a cell organelle found only in a plant cell and also its type.
8. Write the differences between simple and complex tissues. Give one example of each.
9. List two characteristics of meristematic tissue.
10. A housewife churned full cream milk with a milk churner.
  - a) What did she observe after churning milk?
  - b) What could be the possible reason for this observation?
11. How would you separate dyes in blue-black ink using chromatography?
12. Why does a wooden block float and an iron block sink when both are placed on the surface of water?
13. Why are sound waves called mechanical waves
  14. Give one example each of:
    - (a) Positive work done by a force
    - (b) Negative work done by a force.
  15. Mention three characteristics of sound waves. State the factors on which they depend.

16. Draw a neat diagram of the leaf epidermis showing pores through which exchange of gases takes place. Label any two parts giving one function of each.
17. i) Which of the following diseases are protozoan in origin?  
a) Dengue  
b) Malaria  
c) Kalaazar  
d) AIDS
- ii) Suggest any two ways you would like to adopt, to prevent being infected by them.
18. Write two properties each of a solution, suspension and a colloid with respect to stability and filterability.
19. What is meant by fractional distillation? How is it different from simple distillation? Give one application of fractional distillation.
20. What is Avogadro number? How many atoms of each element are present in 6.3 gm of nitric acid ( $\text{HNO}_3$ )? [H=1.0, N=14.0, O=16.0 u,  $N_A=6.022 \times 10^{23} \text{ mol}^{-1}$  ]
21. Calculate the number of molecules present in 90 gm of water. [H=1.0, O=16.0 u,  $N_A=6.022 \times 10^{23} \text{ mol}^{-1}$  ]
22. A boy weighing 50 kg climbs up a vertical height of 100 m in 200 seconds. Calculate the –  
a) amount of work done by him  
b) potential energy gained by him  
c) Power of the boy (given that  $g = 10 \text{ m/s}^2$  )
23. i) In a tug of war, one team (team A) wins and the other team (team B) loses. Which of these two teams does a) positive work b) negative work
- ii) What is the work done in case of a satellite moving around the earth?
24. i) Write any three differences between Prokaryotic and Eucaryotic cell.  
ii) Draw a neat diagram of a typical prokaryotic cell and label any two parts.
25. Compare the models of an atom proposed by Thomson, Rutherford and Bohr in a tabular form giving two characteristics of each.
26. (A) Derive the formula of kinetic energy of an object of mass 'm' moving with a uniform velocity 'u'.  
(B) A force acting on a 20 kg mass changes its velocity from  $5 \text{ ms}^{-1}$  to  $2 \text{ ms}^{-1}$  . Calculate the work done by the force.

### Multiple Choice Questions (MCQs)

27. To prepare a mount of human cheek cell, the sample is collected from:

- (a) Outside of cheek with a blade
- (b) Inner side of cheek with a blade
- (c) Outside of cheek with a tooth pick
- (d) Inner side of cheek with a tooth pick

28. You are asked to select a slide, showing parenchyma cells from a slide box containing a few unlabelled slides. Which of the following would help you to correctly identify the slide?

- (a) Structure of the cells as seen under low power of the compound microscope.
- (b) Observing the slide with the help of a simple microscope.
- (c) A colour of the material on the slide.
- (d) None of the above.

29. Four students recorded their data in the experiment done to detect the presence of metanil yellow in the adulterated arhar dal.

| Student | Procedure  | Observation                      | Inference                               |
|---------|--|----------------------------------|---|
| I       | 5 g dal + 5 g metanil yellow                     | Dal turns yellow                 | Metanil yellow is present               |
| II      | 5 g dal + 5 ml water + 2 drops of HCl            | Solutions turns pink             | Metanil yellow is present in the sample |
| III     | 5 g dal + 5 ml water + a pinch of metanil yellow | Water turns yellow               | Metanil yellow is present               |
| IV      | 5 g dal + 5 ml water + 2 drops of HCl            | Water turns yellow and then pink | Metanil yellow is absent                |

which recording has been correctly reported by student:

- (a) (i)
- (b) (ii)
- (c) (iii)
- (d) (iv)

30. A student wants to prepare a temporary mount of spirogyra. Where should he search for a fresh specimen?

- (a) is a pond of salty water.
- (b) is a pond of stagnant dirty water
- (c) is a stream of running fresh water
- (d) is a stream of running salty water

31. The structure associated with earthworm, cockroach, bony fish and birds are given below in a series. Choose the correct series:

- (a) Pneumatic bones, gills, Chitinous plates, metamerer
- (b) Gills, metamerer, Chitinous plates, pneumatic bones

- (c) Metameres, gills, Chitinous plates, pneumatic bones
- (d) Metameres, Chitinous plates, gills, pneumatic bones

32. Which one of the following will form a translucent solution in water?

- (a) Sugar
- (b) Starch
- (c) Soil
- (d) Sand

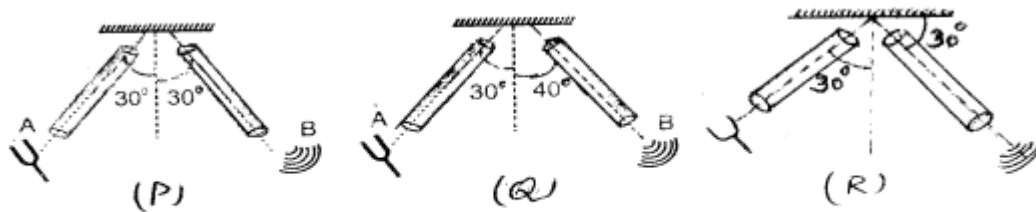
33. What is not observed when a magnet is moved repeatedly through a mixture of iron fillings and sulphur placed on a paper?

- (a) Iron fillings stick to the magnet
- (b) A black mass of iron sulphide is formed
- (c) Sulphur powder is left on the paper
- (d) Each of the above.

34. In the experiment for determining the velocity of propagation of a pulse in a slinky/string we prefer a long slinky/string

- a) because pulse cannot be formed in a short slinky/string
  - b) because slinky/string is cheap
  - c) so that pulse may move through it easily
  - d) so that time taken by pulse to move from one end of slinky/string to other is more
- Temperature Time (minutes) → ( o c ) → D B c E

35. Three students performed the experiment on verifying the laws of reflection of sound using a tuning fork as a source of sound. Their experimental set up is shown in figures P, Q, and R. In which of the following set ups, will the sound of the vibrating tuning fork be heard the most?



- a) fig. P
- b) fig. Q
- c) both P and Q
- d) fig. R

- a) fig. P
- b) fig. Q
- c) both P and Q
- d) fig. R

36. During the experiment on measurement of loss in weight of solid in tap water and salty solution, the maximum loss in weight of the body is observed when –

- a) it just touches the surface of the liquid
- b) it is completely immersed in the liquid
- c) it is partially immersed in the liquid
- d) no difference in loss in weight in above three cases.

37. Temporary mount of a tissue is made in :

- a) Glycerin
- b) Alcohol
- c) Wax
- d) Formalin

38. The following is a typical identifying character of sclerenchyma

- a) sufficient inter cellular spaces
- b) Thick lignified cell wall
- c) Presence of chlorophyll
- d) Presence of stored food

39. A student was observing a sample of adulterated Dal with Metanil yellow. What colour appears when HCl is added to the sample?

- a) Yellow
- b) Red
- c) Pink
- d) Brown

40. Rohit observed the posterior part of a male cockroach in the laboratory. He made the following diagram. The missing part/parts in this diagram is



- a) Antennae
- b) Brood Pouch
- c) Anal Cerci
- d) Anal styles

41. A boy brought a free floating, bright green, silky mass from the surface of a fresh water pond. He observed it under a microscope. Identify the specimen

- a) Nostoc
- b) Spirogyra
- c) Sargarsum
- d) Sphagnum