MODEL QUESTION

Time: 3 hours   **Maximum Marks: 80**

SECTION–A

1. Identify the name of the material which has no fixed shape but a fixed volume:

   Wood, a piece of iron, oxygen and water

2. Define animal husbandry.

3. State two differences between electron and neutron.

4. Give reasons for the following:

   (*a*) It is easy to walk on sand with flat shoes, than with high heel shoes.

   (*b*) Railway tracks are laid on large sized wooden sleepers.

5. Differentiate between kinetic energy and potential energy. Give one example of each.

6. List three characteristics of particles of matter.

7. You are given a mixture of alcohol and water. Explain the process to separate it into its constituents.

8. What would happen if there were no lysosomes in the cell? (*Give any three effects*)

9. What precautions can you take in your school to reduce the incidence of infectious diseases?

   OR

   (*a*) Write the differences between acute and chronic diseases.

   (*b*) Pick out chronic diseases from the list given below:

   Japanese encephalitis, viral fever, common cold, tuberculosis

10. On a velocity-time graph, draw three lines/curves to represent the motion of an object:

    (*a*) moving with zero acceleration.

    (*b*) moving with positive acceleration.

    (*c*) moving with negative acceleration.

11. The weight of a person on the moon is about $\frac{1}{6}$ times that on the earth. He can lift a mass of 15 kg on the earth. What will be the maximum mass which can be lifted by the same force applied by the person on the moon?

12. Distinguish between echo and reverberation (*give two points*). Write one application of each.

    OR

    A sound wave of wavelength 0.332 m has a time period of 10^{-3} s. If the time period is decreased to 10^{-4} s, calculate the wavelength and frequency of new wave.

13. A laundry engaged in washing clothes has been pouring waste water directly into the river. Over a period of time, it was found that large numbers of fish were dying in the river.

    Answer the following questions based on the above information:

    (*a*) Mention the reasons for the dying of fish.

    (*b*) Is there any way it can be avoided?

    (*c*) Mention values associated with above situation.

14. Name the three constituents of abiotic component of the biosphere. Explain their major role in biosphere.

15. Mention the major factors that lead to the green revolution. Illustrate any one of the factors.

16. (*a*) Define formula unit mass.

    (*b*) Give an example for each of the following:

    (*i*) A cation

    (*ii*) Molecule of a compound

    (*iii*) Tri-atomic molecule

    (*c*) How many molecules are present in 1.28 g of SO_2 gas, if the atomic mass of sulphur and oxygen is 32 u and 16 u respectively?

17. What is the gold foil experiment? Name the scientist who performed this experiment. Write the conclusions and shortcomings of Rutherford's model of atom.

<div align="center">OR</div>

    (*a*) (*i*) $^{24}_{12}Mg$ and $^{26}_{12}Mg$ are symbols of two isotopes of magnesium.

    Compare atoms of these isotopes with respect to:

    ● composition of their nuclei,

    ● electronic configuration and valency

    (*ii*) Give the reason why two isotopes of magnesium have different mass numbers?

    (*b*) How are canal rays different from electrons in terms of charge and mass?

18. (*a*) Differentiate between simple tissues and complex tissues in plants.

    (*b*) (*i*) Why are complex tissues called so?

    (*ii*) Write names of different types of complex tissues.

    (*iii*) State the function of these tissues.

19. (*a*) Explain the three basic features for grouping all organisms into five major kingdoms.

    (*b*) *Euglena* is a dual organism.Why?

20. (*a*) Calculate the ratio of momentum when:

    (*i*) velocity of an object is doubled.

    (*ii*) mass of an object is halved.

    (*iii*) both mass and velocity are increased by three times.

    (*b*) State reason for the following:

    (*i*) A person is hit harder, when he falls on a hard floor than when he falls on sand or cotton.

    (*ii*) A gunman gets jerk in backward direction while firing a gun.

21. (*a*) On what factors the work done on a body depends?

    (*b*) A boy of mass 50 kg runs up a staircase of 45 steps in 9 s. If the height of each step of the staircase is 15 cm, find the power of the boy. ($g = 10$ m/s^2)

SECTION–B

22. A small amount of iron sulphide in powdered form is taken in a test tube and 5 mL of carbon disulphide is added to it. The test tube is vigorously shaken. What is observed?

23. To find the boiling point of water, three students A, B and C used distilled water at 0°C, at room temperature and luke warm respectively. Compare the boiling point of water observed by the three students and give reason for your answer.

24. What are the characteristic features to identify a nerve cell?

25. Distinguish between cockroach and earthworm by listing their specific features. (*Two each*)

26. While studying the reflection of sound, four students A, B, C and D used different reflecting surfaces. Who would obtain the best result and why?

A: A thermocol sheet

B: A polished, plane metal sheet

C: A rough cardboard sheet

D: A cushioned chair

27. Four students P, Q, R, S while performing the experiment to establish the relation between loss of weight of a small solid object when fully immersed in same fluid and weight of fluid displaced by it. Four different shapes of overflow cans containing water are shown below. Which arrangement will give correct result and why?

P   Q   R   S