SECTION-A

Q.1. Define atomic mass of an element. Mention the unit of measuring the atomic mass of an element.

Q.2. Define atomic number.

Q.3. Where are seeds of gymnosperms formed ?

Q.4. A source produces 20 crests and 20 troughs in 0.4 sec. Find the frequency of the wave.

Q.5. Relative density of gold is 19.5. The density of water is 1000 kgm^{-3}. What will be the density of gold in SI units and in g cc^{-1}.

Q.6. (a) During respiration, a six carbon molecule-glucose($C_6H_{12}O_6$) undergoes combustion. Calculate its molecular mass. [Atomic mass C = 12.0 u, H = 1.0 u, O =16.0 u]

(b)Find the ratio by mass of the combining elements in the following compounds: (i) $Al_2(SO_4)_3$ (ii) $CaCl_2$

Q.7. Give reasons :

(a)Mass number of an atom excludes the mass of an electron.

(b)Nucleus of an atom is charged.

(c)Alpha particle scattering experiment was possible by using gold foil only and not by foil of any other metal.

Q.8. State three drawbacks of Rutherford's model of atom.

Q.9. State any three differences between cryptogamae and phanerogamae.

Q.10. A rabid dog was seen in a colony and everyone was afraid of going near to it. Name the disease and state how this disease is transmitted ? The dog is presently considered the reservoir of the disease. What is the meaning of 'reservoir' here ?

What steps should the Government take to prevent the spread of the disease ?

Q.11. Given below are few situations :

(i) Geeta of Class IX was having common cold. She sits with Sarika who also develops the diseases.

(ii) Animesh of Class IX shifted to a new residence, with his family, where water purification system has not been installed yet. He develops cholera and dysentery.

Associate these situations with their mode of transmission and assign appropriate category to them.

Q.12. Calculate the power of an electric motor that can lift 800 kg of water to store in a tank at a height of 1500 cm in 20 s. (g = 10 ms^{-2})

Q.13. Define relative density. Relative density of mercury is 13.6. The density of water is 10^3kgm^{-3}. What is the

density of mercury in SI unit ?

Q.14. What is reverberation ? How can it be reduced ? Give two applications of reflection of sound wave.

Q.15. The potential energy of a freely falling object decreases progressively. Does this violate the law of conservation of energy ? Why ? State the law of conservation of energy.

Q.16. Pappu used to supply milk in a locality. Though he claimed that he supplied pure milk, many people complained that his supply contained adulterated milk. To help people in his neighbourhood, Varun put the milk to test in a lactometer and proved Pappu wrong.

(i) On which principle does a lactometer work ?   (ii) State the principle involved. (iii) What qualities are exhibited by Varun ?

Q.17. (a) Calculate the molar mass of the following substances : (i) Ethyne, C_2H_2 (ii) Sulphur molecule, S_8

(b)(i) Convert 12 g of oxygen gas into mole. (ii) Find the mass of 0.5 mole of Na_2CO_3.

[At mass of Na = 23 u, C = 12 u, O = 16 u]   (iii) How many molecules of Na_2CO_3 are present in its 1 mole ?

Q.18. Create a flow-chart to show the classification of four eukaryotic kingdoms.

Q.19. Health is not merely absence of diseases. How can we define health ? Classify diseases on the basis of:

(i) Duration of the diseases   (ii) Cause of the diseases. Give one example of each type.

Q.20. List two differences between thrust and pressure. What is meant by 1 Pascal and 1 Newton ? How will the pressure change if area of contact is doubled ?

Q.21. (a) Briefly explain why some objects sink but others float when immersed in a liquid.

(b) When a boat is partially immersed in water, it displaces 600 kg of water. How much is the buoyant force acting on a boat in N ewton (g = 10 ms^{-2})

SECTION-B   Q.22. – Q.24. OTBA Questions of 10 marks.

SECTION-C

Q.25. While performing an experiment to verify the laws of reflection of sound, the observed experimental difference between the values of angle of incidence and angle of reflection is likely to be minimum when a student chooses a :
(a) wide tube and a faint source of sound.   (b) narrow tube and a faint source of sound.
(c)narrow tube and a strong source of sound.   (d) wide tube and a strong source of sound. '

Q.26. A gold biscuit of dimensions xm x ym x zm (where x > y > z) is placed on a table. The density of gold is d kgm^{-3}. The maximum pressure exerted by gold biscuit on the table is : (g = 10 ms^{-2})
(a) 10 xd   (b) xd   (c)10 yz   (d) 10 zd

Q.27. Which of the following is an example of pulse :
(a) shock waves caused by the supersonic plane.   (b) sound waves produced by the clapping of hands.

(c)formation of water waves when a stone is dropped into it.   (d) giving a jerk to a string tied at one end.

Q.28. After studying the characteristics of Agaricus, Madan noted them as following :

(i) it is fleshy.   (ii) it has an umbrella like cap called pileus.

(iii) it has a ring like membrane structure attached at the base of stalk.   (iv) its body is made of filaments.

Which of the above observations is not correct ?   (a) (i)   (b) (ii)   (c) (iii)   (d) (iv)

Q.29. When 10 g of calcium carbonate is heated, 4.4 g of carbon dioxide escapes out. The amount of residue left is :

(a)   5.6 g   (b)   9.8 g

(c)   10 g   (d) 14.4 g

Q.30. When we add lead nitrate solution to sodium chloride solution, a precipitate of lead chloride and sodium nitrate solution are obtained. To prove the law of conservation of mass, which of the following statements is correct

(a) Mass of lead nitrate = Mass of sodium chloride

(b)Mass of lead nitrate + Mass of sodium chloride = Mass of lead chloride + Mass of sodium nitrate

(d) Mass of lead chloride + Mass of sodium chloride = Mass of lead nitrate + Mass of sodium nitrate

(d) Mass of sodium chloride + Mass of sodium nitrate = Mass of lead chloride + Mass of lead nitrate

Q.31. Plant A has leaves with reticulate venation and its flowers consist of 5 petals. Plant B has leaves with parallel

venation and its flowers have three petals on the basis of above observations which of the following given statements

needs correction.

(a) Plant A is dicot plant   (b) Plant B is monocot plant

(c) Plant A consists tap – root   (d) Plant B has two cotyledons

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

Q.32. Fibrous root system is found in which of the following plants :

(a) Petunia   (b) Rose   (c) Lily   (d)Hibiscus

Q.33. Larva of a mosquito develops :

(a) on decaying material   (b)under the surface of water

(c) on the surface of water   (d)at the base of the water body

Q.34. When a body hanging with the hook of a spring balance is immersed in a liquid, state the factor due to which the

reading of spring balance decreases. Define the factor.

Q.35. When dipped in a fluid, name the factor on which the loss in weight of a solid depends. Name the two forces

which act upon the solid dipped in the fluid.

Q.36. Mention two features adopted by birds which help them to fly.