# SUMMATIVE ASSESSMENT – II SCIENCE Class – IX [2017: HUJYK89] JST

1 . What is the number of electrons in Mg atom and $Mg^{2+}$ ion ?

2. Name the group called the Amphibian of the plant kingdom.

3. The quality of the topsoil is important. Give reason.

4. The antibiotic penicillin is effective against many bacteria. State reason.

5. Define transverse waves and give its one characteristic.

6. Identify and state the type of transformation of energy in the following cases :
(a) when coal is burnt. (b) in a thermal power plant.

7. (a) Define atomicity. (b) State the atomicity of the following molecules : (i) Oxygen (ii) Phosphorous (iii) Sulphur (iv) Argon

8. In the following table are given the mass number and atomic number of certain elements.

| Element | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| Mass No. | 2 | 3 | 3 | 6 | 9 | 11 | 19 | 23 |
| Atomic No. | 1 | 1 | 2 | 3 | 4 | 5 | 9 | 11 |

(i) How many neutrons are present in F ?

(ii) Which atoms are isotopes of the same element ?

(iii) Which atom will form single positively changed ion ?

(iv) Which is the atom of an inert gas ?

(v) Which will form single negatively charged ion ?

(vi) Which of these has 11 electrons ?

9. (a) When 10g of sulphur is burnt in 10g of oxygen 20g of sulphur dioxide is produced ? Find the mass of sulphur dioxide formed on burning 20g of sulphur in 30g of oxygen. Justify your answer by stating the law which governs your answer ?

(b) State the postulate of Dalton‟s atomic theory which can explain the above law.

10. The students of our school when visited a slum area, found many people suffering from malaria.

(a) Mention any two unhygienic conditions that must have prevailed in that locality

(b) Which preventive measures students should take to avoid infection of this disease during their trip ?

11. A plant specimen was found without differentiated roots.

(a) Which plant structure helps in attaching this plant to the substratum ? (b) To which group you will keep this plant ? (c) Which plant could it be ?

12 .Define thrust and pressure. Give their Sl unit. Calculate the pressure exerted by a block of 100N if the surface area in contact is 2.5 m2 ?

13.(a) Name the type of energy possessed by a moving object.

(b) Derive and expression for this energy for an object moving with velocity v and having mass m.

14. Calculate the work required to be done to stop a car of 1300 kg moving at a speed of 50 km/h.

15. How does the sound produced by a vibrating object in a medium reach our ears?

16. (a) Radius of an iron sphere is 0.21 cm. If density of iron is 7.80 g/cc. Calculate its mass.

(b) Edge of a aluminium cube is 0.18 cm. If density of aluminium is 2.70 g/cc., calculate its mass.

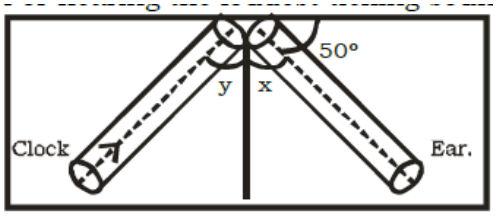
17.(a) Explain the formation of acid rain. (b) What does the presence of smog in an area indicate ?

18. Write the composition of soil ? On what basis is the type of soil decided ?

19.Elaborate the basic difference between the formula unit mass and the molecular mass. Write the formulae for calcium chloride, potassium nitrate and magnesium hydroxide and compute their molecular masses. (atomic masses Ca = 40 U, Cl = 35.5 U, K = 39 U, N = 14 U, O = 16 U, H = 1U)

21. (a) What is a vaccine ? Name any four diseases which can be prevented by vaccination. (b) What is Pulse Polio programme ? (c) Give reason – Majority of children in many parts of India are already immune to Hepatitis A by the time they are 5 years old.

22. For hearing the loudest ticking sound by the ear.
(a) Find the angles *x* and *y* in the figure below.
(b) Name the phenomenon observed here.
(c) State the laws of the phenomenon.




23. The sound of an explosion on the surface of a lake is heard by a man 150 m away and by a diver 150 m below the point of explosion. Answer the following : (a) Explain who will hear the sound of explosion first. (b) If sound takes *t* sec. to reach the man, how much time will it take to reach the diver? (speed of sound in air is 344 m/s and in water 1533 m/s) (c) Give the audible range of the man.

24. (a) Explain how does burning of fossil fuels cause air pollution ? (b) Justify “Dust is a pollutant”.

SECTION - B

25 While doing an experiment to verify the laws of reflection of sound, in which of the following cases will the sound heard be maximum ?

(a) Pipes can either be hollow or solid (b) When one of the pipes is hollow and the other is solid

(c) When both the pipes are solid (d) When both the pipes are hollow √

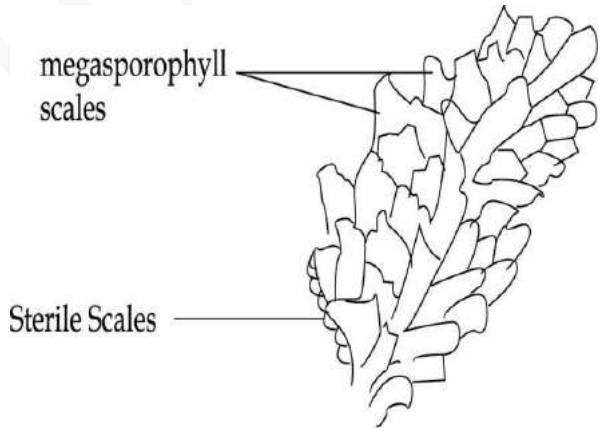
26 . A doctor applies a force of 50N to the syringe‟s piston of area 1.5m2. The increase in pressure of the fluid in the syringe is (a) 33.3 Pa √ (b) 50 Pa (c) 35.5 Pa (d) 30 Pa

27. The kind of waves which can be generated by a slinky are :

(a) Only longitudinal waves (b) Only transverse waves

(c) Both longitudinal waves and transverse waves√ (d) neither longitudinal waves nor transverse waves

28.Observe the figure given here. Which of the following does it represent ?




(a) Female cone of pinus √ (b) Male cone of pinus

(c) Rachis of Fern (d) Annulus of Agaricus

29. Nitrogen and Hydrogen combine together to form ammonia.

$N_2 + 3H_2 \dashrightarrow 2NH_3$

(Relative atomic masses N = 14, H = 1).

The mass of Nitrogen and Hydrogen which combine together to form 6.8g ammonia are :

(a) $N_2 = 2.8g$, $H_2 = 4.0g$ (b) $N_2 = 5.6g$, $H_2 = 1.2g$ √

(c) $N_2 = 4.0g$, $H_2 = 2.8g$ (d) $N_2 = 1.2g$, $H_2 = 5.6g$

30. Burning of paper causes weight loss because :

(a) it does not follow the law of conservation of mass (b) some gases are produced and escaped out √

(c) it is not a chemical reaction (d) precipitate is not formed

31. Which one of the following is the correct statement :

(a) Plants with parallel venation have tap root system and trimerous flowers.

(b) Plants with parallel venation have fibrous root system and penta-merous flowers.

(c) Plants with reticulate venation have fibrous root system and tetra-merous flowers.

(d) Plants with reticulate venation have tap root system and pentamerous flowers √

32. Dicotyledons and monocotyledons are present in which of the following :

(a) gymnosperms (b) pteridophyta (c) bryophyta (d) angiosperms

33. Which one of the following is not the potential breeding ground for mosquitoes ?

(a) Ponds (b) lakes (c) ditches (d) river √

34.The mass of a solid iron cube of side 3 cm is to be determined by using a spring balance. If the density of iron is about 8.5 g C/C , What should be the least count of the best suited spring balance to determine the weight of solid ?

Ans: Volume of cube = 3 x 3 x 3 = 27 cm3 Density of iron □ 8.5 gcc□1

Mass of cube □ density □ volume = 8.5 x 27 = 229.5 gram

Least count of spring balance should be 0.5 g.wt.

35. A ball filled with air has a volume of 500 cm3. Calculate the minimum force applied by a child to put it completely inside the water. (Take g = 10 m/s2)

Ans: Force applied by the child □ Buoyant force □ 5N

36. Name two features of the fish due to which they are categorized under phylum pisces.

Ans: Fins, streamlined body and gills. (Any two)

# Answer/Hint:

1. Number of electrons in Mg atom = 12 Number of electrons in Mg2+ ion = 10
2. Bryophyta Value point : Recalling
3. Top soil decides the biodiversity of an area

4. Penicillin blocks the bacterial processes that build the cell wall. Growing bacteria is unable to make cell walls, and so die easily.

5. Definition of transverse wave – Alternate crests and troughs are formed.

6. (a) chemical energy to heat energy. (b) chemical energy of fuel to electrical energy.

7. The number of atom present in one molecule of a : (i) Oxygen : diatomic (Atomicity 2) (ii) Phosphorous :Tetra atomic (Atomicity 4) (iii) Sulphur : Poly atomic (Atomicity 8) (iv) Argon : Mono atomic (Atomicity 1)

8. (i) 6 (ii) A and B (iii) H (iv) C (v) G (vi) H

9. (a) According to the question sulphur and oxygen combine in the ratio of 1:1 by mass. 20 g sulphur will combine only with 20 g of oxygen and 40 g of sulphur dioxide will be produced. This is in accordance with law of constant

proportion.

Which says in a chemical substance elements are always present in definite proportion by mass.

(b) The relative number and kinds of atoms are constant in a given compound.

10. (a) Stagnant water in ditches , Breeding ground for mosquitoes

(b) Wear full sleeve shirt and full pant . Apply mosquito repellent

11. (a) Rhizoids (b) Bryophyta (c) Funaria / Marchantia / Anthoceros / Riccia

12. The perpendicular force acting on a surface is called thrust. Unit Newton.

The thrust per unit area is defined as pressure. Unit : Pascal

Pressure = thrust/area = 100/2.5 = 40 Pascal

13. (a) Kinetic energy (b) $v^2 - u^2 = 2as \Rightarrow S = (v^2 - u^2)/2as$

$F = ma \Rightarrow W = F \times S \Rightarrow W = ma\ (v^2 - u^2)/2a \Rightarrow$ If u = 0 object at rest then $\Rightarrow W = ½\ mv^2 \Rightarrow W = KE = ½\ mv^2$

14. Velocity = 50 km/h = 13.9 m/s

Work done = K.E. = ½ × mass × v2 = ½ × 1300 × 13.9 × 13.9 = 125586.5 Joules

15.When sound waves impinge on an ear, certain nerves which are very sensitive to pressure variations in sound waves lead to sensation of hearing.

16. (a) Radius = 0.21 cm

Volume = $4/3\ \pi r^3 = 4/3 \times 22/7 \times 0.21 \times 0.21 \times 0.21 = 0.038$ cm3

Density = mass / volume

Mass = density × volume = 0.038 × 7.8 = 0.296 g

(b) Radius = 0.18 cm

Volume = $4/3\ \pi r^3 = 4/3 \times 22/7 \times 0.18 \times 0.18 \times 0.18 = 0.024$ cm3

Density = mass / volume

Mass = density × volume = 0.024 × 2.7 = 0.064 g

17. (a) Fossil fuels contain small amounts of sulphur and nitrogen.

Burning them [fossil fuels] form oxides of sulphur and nitrogen. These oxides dissolve in rain to form acid rain.

(b) The area is polluted.

18. Soil is a mixture of small particles of rock. It contains bits of decayed living organisms humus. Microscopic life also exists.
Type of soil is decided by average size of particles found in it and quality of the soil decided by the amount of humus and the microscopic organisms found in it.

19.The molecular mass of a substance is the sum of the atomic masses of all the atoms in a molecule of the substance. It is therefore the relative mass of a molecule expressed in atomic mass units (u).

The formula unit mass of a substance is a sum of the atomic masses of all atoms in a formula unit of a compound. Formula unit mass is calculated in the same manner as we calculate the molecular mass. The only difference is that we use the word formula unit for those substances whose constituent particles are ions.

Formulae: do yourself

20. (a) Common name - Round worm Technical name - Ascaris lumbricoides

(b) Phylum - Nematoda Kingdom - Animalia (c) Small intestive

21. (a) A vaccine is a preparation of weakened infectious agents or their products that can be injected or given orally to prevent specific diseases.

Tetanus, Diphtheria, Pertusis, Polio, Chicken pox, Measles, Mumps, Typhoid, Tuberculosis, Hepatitis or any other (Any four)

(b) 'Do boond zindagi ke' Till the child becomes 5 yrs 2 drops of polio vaccine is given – to eradicate polio from the country

(c) As they are exposed to the virus through water

22 (a) $\angle x = \angle y = \angle I \quad \Rightarrow \angle x = 90^o - 50^o = 40^o = \angle r \Rightarrow \angle y = \angle i = 40^o$

(b) Reflection of sound. (c) (i) The incident ray, normal, reflected ray all lie in the same plane (ii) $\angle i = \angle r$

23 (a) The diver will hear the sound of the explosion first because sound travels faster in water than in air.

(b) Time taken by sound to reach the diver = $\frac{\text{speed of sound in air}}{\text{speed of sound in water}} = \frac{344}{1533}$ = 0.22 t sec.

(c) 20 Hz – 20,000 Hz

24 Burning of fossil fuel produces gases like CO, $CO_2$, $SO_2$, $NO_2$ and unburnt particles $CO_2$ causes global warming

(a) Due to smog formation.

(b) Allergic asthma, bronchitis, Cough, Cold, irritants - reduce photosynthetic activity – block stomata