Quarterly Examination - 2022 SCIENCE(ERODE)

Max Marks: 75 Time: 2.30 hr

PART-1 12x1=12

1. Choose the correct answer

1. Which among the following is not a device to measure mass?
a) spring balance b) beam balance c) physical balance d)digital balance

2 Radius of a thin wire is measured by.....
a) spring balance b) meter scale c) vemier caliper **d) screw gauge**

3.---------- force is experienced when a Marry-Go-Round rotates.
a) gravitation **b) centripetal force** c) centrifugal force d) none of the above

4. Clouds float in atmosphere because of their low.
a) density b) pressure c) velocity d) mass

5.--------has the same properties throughout the sample.
a) pure substance b) mixture c) colloid d) suspension

6. An example of a substance that sublimes is
a) lodine b) camphor c) ammonium chloride **d) all the above**

7. The term nucleons refers to
a) protons and electrons b) only neutrons c) electrons and neutrons **d) protons and neutrons**

8 Noble gases belong to.....group of the periodic table. a) 10th b) 15th **c) 18th** d) 11^{th}

9. Identify the animal having four chambered heart. a) Lizard b) snake **c) crocodile** d) calotes

10. provide mechanical support to plant organs.
a) parenchyma **b) collenchyma** c) xylem d) sclerenchyma

11. The bending of root of a plant is response to water is called
a) thigmonasty b) phototropism **c) hydrotropism** d) photonasty

12. The slides are grouped together in a sequence to form
a) slideshow b) sharts c) page d) messages

PART-2

Answer any 7 of the following questions. Question No.22 is compulsory. 7x2=14

13. Match the following

Device	Measuring object
1. Screw gauge	Coins
2. Vernier Caliper	Cricket ball
3. Beam balance	Gold ornaments
4. Digital balance	Vegetables

14. What is meant by uniform circular motion? Give two examples of uniform circular motion.

When an object moves with constant speed along a circular path, the motion is called uniform circular motion.
Example :

- The earth moves around the sun in the uniform circular motion.
- The moon moves in uniform circular motion around the earth.

15.Say true or false? If false correct the statement.

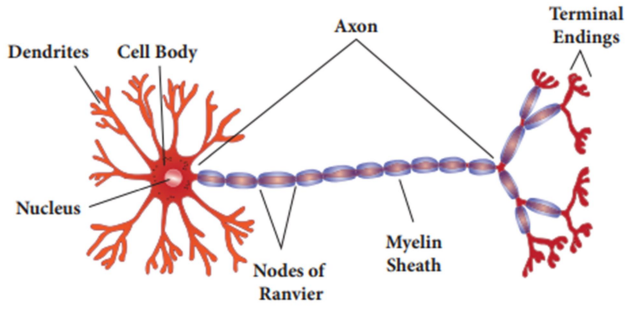
a) A compound cannot be broken into simpler substances chemically.
False. A compound can be broken into simpler substances chemically.
b) liquid-liquid colloids are called gel.
False: liquid-solid colloids are called gel.

16. Fill in the blanks:
A) calcium and Argon ara examples of a pair of.....(isobars)
B) Total number of electrons that can be accommodated in an Orbit is given by..($2n^2$)

17 Match the following.

1. triads	Dobereiner
2. law of octaves	Newlands
3. modern periodic law	Henry Moseley
4. periodic table	Mendeleev's

18. How does locomotion take place in Starfish?
With thehelp of tube feet star fish moves from place to place.
19. Draw and label the structure of neuron?



20 What is Nastic Movement?
Nastic movements are non-directional response of a plant or part of a plant to stimulus.

21. What is presentation?
A presentation is a structured delivery of information. It is a systematic display of information along with graphics, movies, sound, etc. All these are displayed together on the screen.

22. Mass of an object is 960 gram and length is 12 cm, breath is 10cm, height is 4 cm. Find its density.
volume=length x breadth x height
$=12 \times 10 \times 4 = 480 \text{ cm}^3$
Density= mass/volume=960/480
$= 2 \text{ g/ cm}^3$

PART-3

Ill. Answer any 7 of the following questions. (Question No.32 is compulsory) 7 x 4= 2

23. Differentiate mass and weight

Mass	Weight
1. It is a fundamental quantity.	It is a derived quantity.
2. It has magnitude alone – scalar quantity.	It has magnitude and direction – vector quantity.
3. It is the amount of matter contained in a body.	It is the normal force exerted by the surface on the object against gravitational pull.
4. Remains the same everywhere.	Varies from place to place.
5. It is measured using physical balance.	It is measured using spring balance.
6. Its unit is kilogram.	Its unit is newton.

24. Explain any four types of motion.

Types of Motion☹+ suitable examples)

Linear motion: Motion along a straight line.

Circular motion: Motion along a circular path.

Oscillatory motion: Repetitive to and fro motion of an object at regular interval of time.

Random motion: Motion of the object which does not fall in any of the above categories

25. A) What is meant by atmospheric pressure

Earth is surrounded by a layer of air up to certain height (nearly 300 km) and this layer of air around the earth is called atmosphere of the earth. Since air occupies space and has weight, it also exerts pressure. This pressure is called atmospheric pressure.

B) On what factors the pressure exerted by liquid depends on?

The pressure exerted by a liquid at a point is determined by, 1.depth (h) 2.the density of the liquid (p) 3.acceleration due to gravity (g)

26 Write the differences between elements and compounds and give an example for each.

Element	Compound
Made up of only one kind of atom.	Made up of more than one kind of atom.
The smallest particle that retains all its properties is an atom.	The smallest particle that retains all its properties is the molecule.
Cannot be broken down into simpler substances.	Can be broken down into elements by chemical methods.

27. What are the limitations of Mendeleev's periodic table?

Limitations:

- Elements with large difference in properties were included in the same group. Eg: Hard metals like copper (Cu) and silver (Ag) were included along with soft metals like sodium (Na)
- No proper position could be given to the element hydrogen.
- Non-metallic hydrogen was placed along with metals like lithium (Li), sodium (Na) and potassium (K).
- The increasing order of atomic mass was not strictly followed throughout. Eg. Co & Ni, Te & I. No place for isotopes in the periodic table.tassium (K).

28. Comment on the aquatic and Terrestrial habits of amphibians.

1. The transition from aquatic to terrestrial living is clearly indicated in Amphibian.
2. They are the first vertebrates to live on land.
3. Amphibians have dual adaptation to living in aquatic and land environments.
4. The double life is called amphibious.
5. In frogs, the hind limbs have webbed feet.
6. The skin is moist and glandular usually without scale.
7. Respiration is by gills, lungs, skin and pharyngeal region.
8. The heart has three chambers, with two auricles and a single ventricle.
9. Fertilization is external.
10. The larva is a tadpole, which is metamorphosed into an adult.

29. Give an account on phylum Annelida.

1. The animals in phylum annelida are segmented worms.
2. Example: Earth worms, Leeches and a group of marine worms.
3. Segmented body shows metamerism which means the property of having repeated homologous organs in each segment.
4. The animals possess body cavity called coelom.
5. Some organisms show movable bristles called setae.
6. They have no legs and no hard skeleton.
7. The body is covered by moist outer cuticle.
8. A thick multi-layered structure, outside the epidermis provides protection.
9. They have a central nervous system with a brain.
10. Metabolic wastes are removed by Nephridia.

30. List out the differences between mitosis and meiosis.

Mitosis	Meiosis
Occurs in somatic cells	Occurs in reproductive cells
Involved in growth and occurs continuously throughout life	Involved in gamete formation only during the reproductively active age
Consists of a single division	Consists of two divisions
Two diploid daughter cells are formed	Four haploid daughter cells are formed

The chromosome number in the daughter cell is similar to the parent cell (2n)	The chromosome number in the daughter cell is just half (n) of the parent cell
Identical daughter cells are formed	Daughter cells are not similar to the parent cell and are randomly assorted

31. A) Differentiate phototropism from photonasty
Phototropism: Movement of a plant part towards light. e.g. shoot of a plant.
Photonasty: Movement of a part of a plant in response to light. e.g.Taraxacum officinale, blooms in morning and closes in the evening. Similarly, Ipomea alba (Moon flower), opens in the night and closes during the day.
B) photosynthesis converts energy X into energy Y. What are X and Y?
a) X → light energy
Y → Chemical energy

32. Fill in the blanks From A to H.

Atomic Number	Mass number	Number of neutrons	Number of protons	Number of electrons	Name of the element
9	19	10	9	9	F
1	0	0	1	1	H

IV. Answer in detail. (Draw the suitable diagrams) 3 x 7 =21

33. a) How will you find the thickness of a one rupee coin?
To measure the thickness of a one rupee coin we have to take following steps;

Find the pitch, least count and zero error of the given screw gauge.

Now place the coin in between the two studs by rotating the head until the coin is held firmly by using ratchet but not tightly.

The pitch scale reading (PSR) and head scale coincidence (HSC) are to be noted.

$t = PSR + (HSC \times 0.01) \pm 0$

Using this formula find out thickness.

By repeating the same process we find the thickness of one rupee coin for different positions and finally by finding the average of thickness we will get the accurate thickness of the one rupee coin. (OR)

b)
(i)What is a hydrometer? (ii) What is the principle of a hydrometer?
(i)A direct-reading instrument used for measuring the density or relative density of the liquid is called hydrometer.

(ii)Principle :

The weight of the liquid displaced by the immersed portion of the hydrometer is equal to the weight of the hydrometer. [Flotation principle].

Construction

Lower end of hydrometer :

A cylindrical stem having a spherical bulb which partially W Lead shots

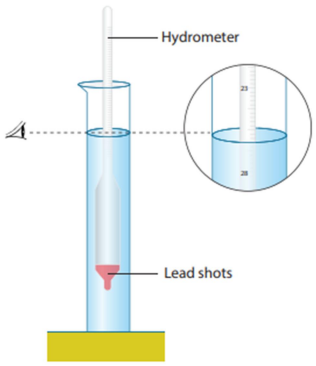
filled with lead shots or mercury which helps to float or stand vertical in liquids.

Upper end of hydrometer:

A narrow tube has markings so that the relative density of liquids can be read off directly.

Working:

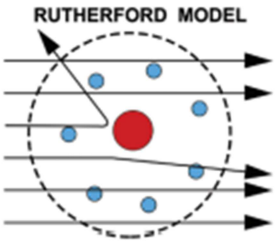
1. Liquid to be tested is poured into the glass jar.
2. The hydrometer is gently lowered into the liquid until it floats freely.
3. The reading against the level touching the tube gives the relative density of the liquid.



34. a) How was it shown that an atom has empty space?

Rutherford performed gold foil experiment.

He observed that: 1. Most of the alpha particles passed straight through the foil. 2. Some alpha particles were slightly deflected from their straight path. 3. Very few alpha particles completely bounced back

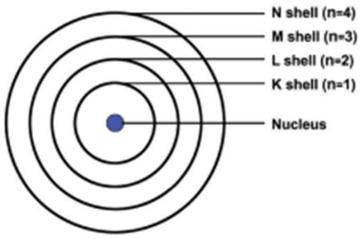


Finally he concluded that most of the space in an atom empty.

(ii) Explain the postulates of Bohr's atomic model.

The main postulates are:

- In atoms, electrons revolve around the nucleus in stationary circular paths called orbits or shells or energy levels.
- While revolving in orbits the electrons do not radiate energy.
- The circular orbits are numbered as 1,2,3,4,… or designated as K, L, M, N, shells. These numbers are referred to as principal quantum numbers (n).
- K shell (n=l) is closest to the nucleus and is associated with lowest energy.
- The energy of each orbit or shell is a fixed quantity and the energy is quantized.



(OR) b) i) State modern periodic law. The modem periodic law states that:
"The Chemical and Physical properties of elements are periodic functions of their atomic numbers".

ii) State any five features of modem periodic table.

- All the elements are arranged in the increasing order of their atomic number
- The horizontal rows are called periods. There are seven periods in the periodic table.
- The elements are placed in periods based on the number of shells in their atoms
- Vertical columns in the periodic table starting from top to bottom are called groups. There are 18 groups in the periodic table
- Based on the physical and chemical properties of elements, they are grouped into various families.

35. a)

(i)Define taxonomy.

Taxonomy is the science of classification which makes the study of a wide variety of organisms easier and helps us to understand the relationship among different groups of animals.

ii) Give an account on Phylum Arthropoda.

- Arthropoda is the largest phylum of the animal kingdom.
- They are bilaterally symmetrical, triploblastic and coelomate animals.
- The body is divisible into head, thorax and abdomen.
- Each segment bears paired jointed legs.
- Exoskeleton is made of chitin and is shed periodically as the animal grows.

- The casting off and regrowing of exoskeleton is called moulting.
- Body cavity is filled with haemolymph(blood).
- The blood does not flow in blood vessels and circulates throughout the body (open circulatory system).
- Respiration is through body surface,gills or trachea (air tubes).
- Excretion occurs by malphigian tubules or green glands Sexes are separate, e.g., Prawn, Crab, Cockroach, Millipedes, Centipedes, spider, scorpions.

(OR)

b)

i) Define transpiration

The loss of water in the form of water vapour from the aerial parts of the plant body is called Transpiration.

ii) What are the types of transpiration?

There are three types of transpiration :

1.Stomatal transpiration 2.Cuticular transpiration 3.Lenticular transpiration

iii) Explain the types of transpiration.

1. Stomatal transpiration: Loss of water from plants through stomata. It accounts for 90-95% of the water transpired from leaves.
2. Cuticular transpiration: Loss of water in plants through the cuticle.
3. Lenticular transpiration: Loss of water from plants as vapour through the lenticels. The lenticels are tiny openings that protrude from the barks in woody stems and twigs as well as in other plant organs.

Hard work Never fails

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