

HYM

HALF YEARLY EXAMINATION - 2024**10** - Std**SCIENCE**

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Marks : 75

Time : 3.00hrs.

PART - I**Note : i) Answer all the Questions**

12 X 1 = 12

I CHOOSE THE CORRECT ANSWER.

- Inertia of body depends on
 - Weight of the object
 - acceleration due to gravity of the planet
 - mass of the object
 - Both a & b
- One horse power (hp) = _____ Watt.
 - 764
 - 746
 - 647
 - 674
- _____ isotope is used for the treatment of cancer.
 - Radio Iodine
 - Radio Cobalt
 - Radio Carbon
 - Radio Nickel
- _____ group contains the member of halogen family.
 - 17th
 - 15th
 - 18th
 - 16th
- The number of components in a binary solution is _____.
 - 2
 - 3
 - 4
 - 5
- Which is the functional group of aldehyde?
 - OH
 - CO -
 - CHO
 - COOH
- Kreb's cycle takes place in
 - Chloroplast
 - Mitochondrial Matrix
 - Stomata
 - inner mitochondrial membrane
- The part of the root that absorbs water from the soil is _____.
 - root hair
 - cortex
 - pericycle
 - endoderm
- _____ is a major conducting centre for the brain.
 - Thalamus
 - Pons
 - Cerebellum
 - Hypothalamus
- Which is known as plant's stress hormone?
 - Auxins
 - Absciscic acid
 - Ethylene
 - Gibberellins
- Himgiri is disease resistance variety of _____.
 - Sugarcane
 - Paddy
 - Cow pea
 - Wheat
- World "No Tobacco Day" is observed on
 - May 31
 - June 6
 - April 22
 - July 6

PART - II**II ANSWER ANY SEVEN QUESTIONS : Q.No. 22 IS COMPULSORY.**

7 X 2 = 14

- Why does the sky appear in blue colour?
- State Boyle's Law.
- State True or False. If false give the correct statement.
 - The volume occupied by 1 mole of a diatomic gas at S.T.P. is 2.24 litre.
 - Molar mass of CO₂ is 42g.
- Why does the reaction rate of a reaction increase on raising the temperature?
- Write the dental formula of rabbit.

18. Why are thyroid hormones referred as personality hormone?
 19. Why is Archaeopteryx considered to be a connecting link?

20. **Match the following**

E- Waste

Health Effects

- | | | |
|-------------|---|----------------------|
| a) Lead | - | Asthmatic Bronchitis |
| b) Chromium | - | Respiratory System |
| c) Cadmium | - | Nervous System |
| d) Mercury | - | Kidney and Liver |

21. What is Sprite?
 22. Find the amount of urea which is to be dissolved in water to get 500g of 10% w/w aqueous solution.

PART - III

III ANSWER ANY SEVEN QUESTIONS : Q.No. 22 IS COMPULSORY.

7 X 4 = 28

23. What are the types of inertia? Give an example for each type.
 24. Differentiate natural and artificial radio activity.
 25. a) Define atomicity. b) Define Hydrated Salt.
 26. What is called homologous series? Give any three of its characteristics?
 27. a) What is collateral vascular bundle?
 b) Draw the structure of chloroplast and label its parts.
 28. a) Define reflex arc.
 b) Draw and label the human sperm cell.
 29. Enumerate the function of blood.
 30. Define Ethnobotany and write its importance.
 31. Enumerate the importance of forest.
 32. a) Calculate the velocity of a moving body of mass 5Kg whose linear momentum is 2.5 Kg ms^{-1} .
 b) Calculate the amount of energy released when a radio active substance undergoes fusion and results in a mass defect of 2 Kg.

PART - IV

IV ANSWER ALL THE QUESTIONS.

3 X 7 = 21

33. a) Differentiate the eye defect Myopia and Hypermetropia.
 b) Define electrical resistivity. **(OR)**
 a) What are the factors that affect the speed sound in gases.
 b) Complete the equation
 i) α decay ${}_{92}\text{U}^{238}$ -----> _____ + _____
 ii) β decay ${}_{15}\text{P}^{32}$ -----> _____ + _____
 34. a) Give salient features of modern atomic theory (Any Five)
 b) What is Amalgam. **(OR)**
 Explain the factors influencing the rate of a reaction.
 35. Explain with an example the inheritance of dihybrid cross. **(OR)**
 a) What are the effects of hybrid vigour in animals (Any Three)
 b) What precautions can be taken for preventing heart diseases?

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STD-X - SCIENCE ANSWER KEY

1. c) Mass of the object.

2. b) 746

3. b) Radio cobalt

4. a) 17th

5. a) 2

6. c) -CHO

7. b) Mitochondrial Matrix

8. a) root hair

9. a) Thalamus

10. b) Abscisic acid

11. d) wheat

12. a) May 31

13* When sunlight passes through atmosphere blue colour is scattered to great extent than red colour.

* This scattering causes the sky to appear in blue colour.

14. Boyle's law.

when temperature is kept constant, volume of fixed mass of gas is inversely proportional to pressure.

$$p \propto \frac{1}{V} \quad (\text{or}) \quad pV = \text{Constant.}$$

15. (i) True (ii) False \rightarrow (429) \rightarrow 449.

16. On raising the temperature, the heat added to the reactants provides energy to break more bonds and thus increases the reaction rate.

17. $I = \frac{2}{1}$, $c = \frac{0}{0}$, $PM = \frac{3}{2}$, $M = \frac{3}{3}$

$$\frac{2033}{1023}$$

18. * Thyroid hormone is essential for normal physical mental and personality development.
* Hence it is referred to as personality hormone.

19. * Archaeopteryx had wings with feathers like a bird.
* It had a long tail, clawed digits and conical teeth like a reptile.
* That is why Archaeopteryx considered to be a connecting link between reptiles and birds.

20. E-waste Health Effects.

a) Lead - Nervous system
b) Chromium - Asthmatic Bronchitis
c) Cadmium - Kidney and Liver
d) Mercury - Respiratory System.

21. The characters on the background of a Scratch window are known as sprite.

22. Mass Percentage = $\frac{\text{Mass of the Solute}}{\text{Mass of the Solution}} \times 100$
 (w/w)

$$10 = \frac{\text{Mass of the Urea}}{500} \times 100$$

$$\text{Mass of urea} = \frac{10 \times 500}{100} = 50\text{g.}$$

23. Inertia of rest:

* The resistance of a body to change its state of rest is called inertia of rest.

eg. when you vigorously shake the branches of a tree some leaves and fruits are detached and fall down.

Inertia of motion:

* The resistance of a body to change its state of motion is called inertia of motion.

eg - An athlete runs some distance before jumping. Jump to longer and higher.

Inertia of direction:

* The resistance of a body to change its direction of motion is called inertia of direction.

eg. when you make sharp turn while driving a car you tend to lean side ways.

24.	Natural Radioactivity	Artificial Radioactivity
i)	Exhibited by elements with atomic number more than 82	Exhibited by elements with atomic number less than 82.
ii)	It takes place on its own in nature.	It is induced by man.
iii)	Spontaneous process	Induced Process
iv)	Cannot be controlled	Can be controlled
v)	α , β , γ radiations are emitted.	neutron, positron, β are emitted.

25. a) * The number of atoms present in one molecule is called its atomicity.
 * A molecule can be classified into monoatomic, diatomic, triatomic, polyatomic depending on the number of atoms present.
- b) Ionic substances crystallize out from their saturated aqueous solution with a definite number of molecules of water. Such salts are called hydrated salts.

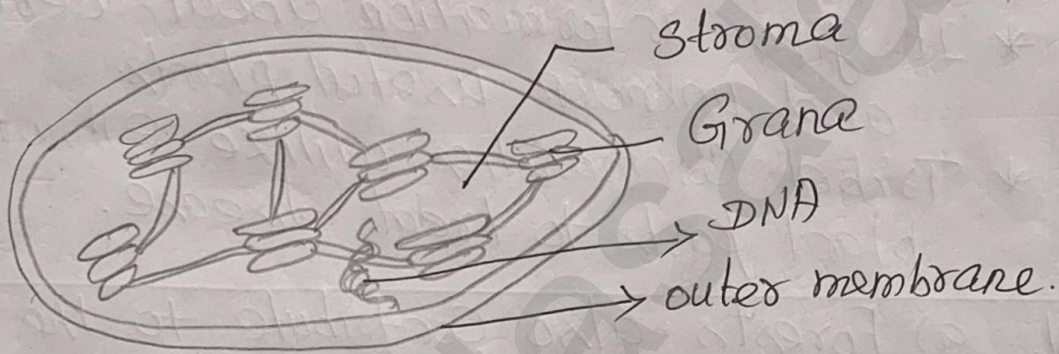
26. Homologous series is a group or a class of organic compounds having same general formula and similar chemical properties in which the successive members differ by a $-CH_2$ group. eg. CH_4 (Methane)

characters:
 1. All members of a homologous series contain

- the same elements and functional group.
2. All the members can be prepared by a common method.
 3. Chemical properties of the members of a homologous series are similar.

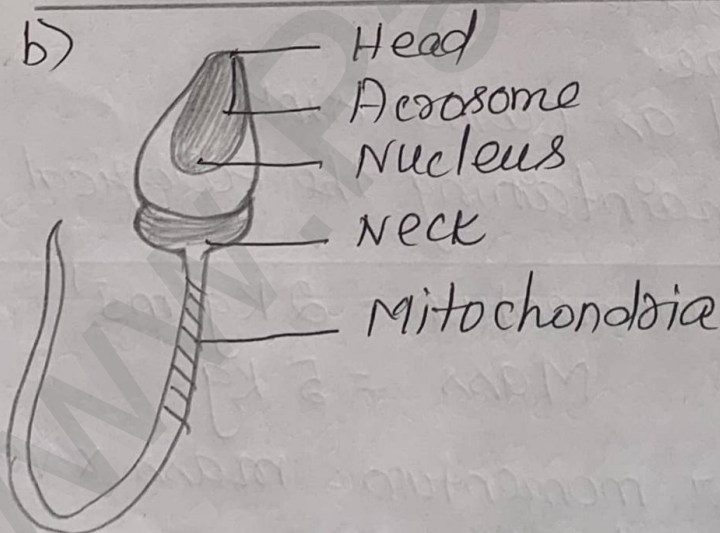
27. a) In this collateral bundle system lies towards the centre and phloem lies towards the periphery. It is called Collateral vascular bundle.

b)



28. a) The pathway taken by nerve impulse to accomplish reflex action is called reflex arc.

b)



29. a) Transport of respiratory gases
- b) Transport of digested food materials.
- c) Transport of hormones.
- d) Transport of nitrogenous excretory

products like ammonia, urea, uric acid.
 e) It maintains proper water balance in the body.

30. Ethnobotany is the study of a region's plants and their practical uses through the traditional knowledge of the local culture of people.

Importance:

- * It provides traditional uses of plant.
- * It gives information about certain known and unknown useful plants.
- * Tribal Communities utilize ethnomedicinal plant parts to treat disease.

31. a) Forests also contribute to the economic development of our country.
 b) Forests are vital for human life.
 c) They provide wood, food, fodder, fibres and medicine.
 d) They act as carbon sink.
 e) They maintaining the ecological balance.

32) a) Linear momentum = 2 kg m s^{-1}
 Mass = 5 kg

Linear momentum = mass \times velocity

velocity = $\frac{\text{Linear momentum}}{\text{mass}}$

$$V = \frac{2}{5} = 0.4 \text{ m s}^{-1}$$

b) Mass defect in the reaction (m) = 2 kg
 velocity of light (c) = $3 \times 10^8 \text{ m s}^{-1}$
 Energy released $E = mc^2$
 $E = 2 \times (3 \times 10^8)^2$
 $= 1.8 \times 10^{17} \text{ J}$

32.1)

a)

Myopia

1. Short sightedness
2. Lengthening of eyeball.
3. Near by objects can be seen clearly.
4. Image are formed before retina
5. To correct Concave lens is used.

Hypermetropia

- long sightedness
 shortening of eyeball.
 Distant objects can be seen clearly.
 Image are formed behind retina.
 To correct Convex lens is used.

b)

Electrical resistivity defined as the resistance of a conductor of unit length and unit area of cross section. unit is ohm meter.

(ii)

a) Effect of density:

velocity decreases as density increases.

$$v \propto \sqrt{1/d}$$

b) Effect of temperature.

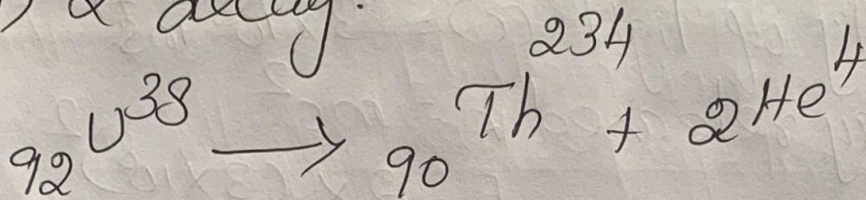
velocity increases as temperature increases by 0.1 m s^{-1} .

$$v \propto \sqrt{T}$$

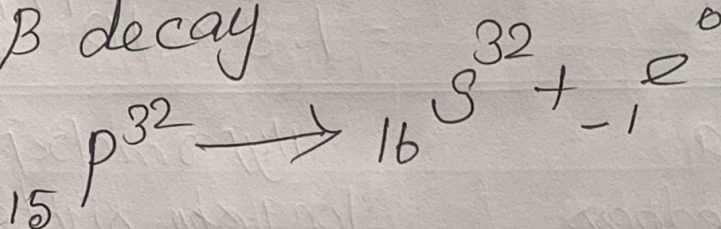
c) Effect of relative humidity:

velocity of sound increases as humidity increases.

b) i) α decay.



ii) β decay



34.
i)

- An atom is no longer indivisible.
- Atom is a smallest particle that takes part in a chemical reaction.
- The mass of an atom can be converted into energy. ($E=mc^2$)
- Atoms may not always combine in a simple form.
- Atoms of the same element may have different atomic mass.

(b) An amalgam is an alloy of mercury with another metal.
eg. Ag-Sn amalgam is used for dental filling.

- ii)
- Nature of the reactant - A reactive acid reacts faster. A less reactive acid reacts more slowly.
 - Temperature - Most of the reactions go faster at high temperature.
 - Pressure - On increasing the pressure the reacting particles come closer and collide frequently.

4. Catalyst - A catalyst is a substance which increases the reaction rate without being consumed in a reaction.
5. Surface area of the reactants - when solid reactants are involved in a reaction, their powdered form reacts more readily.

35. a)
- * Dihybrid cross took 2 pairs of contrasting characters.
 - * F_1 generation produce all the plants of round-yellow seeds in the mendal dihybrid cross.
 - * F_1 generation crossed breed by self pollinating.
 - * Then four types of seed having 4 different combinations of shape and colour were obtained in F_2 generation.
 - * Round yellow - 9, wrinkled yellow - 3
Round Green - 3, wrinkled green - 1.
 - * From this it was concluded that Round shape and yellow colour of the seeds were dominant traits.
 - * wrinkled shape and green colour of the seeds were recessive traits.

35. b)
- a) Increased production of milk of cattle.
 - b) Increased production of eggs by poultry.
 - c) High quality of meat is produced.
 - d) Increased growth rate in domesticated animals.
 - e) Increased feed assimilation rate.

- b) * Reduction in the intake of calories, low saturated fat and cholesterol rich food, low carbohydrates and common salt.
- * Increase in the intake of fibre diet, fruits and vegetables, protein, minerals and vitamin.
- * Regular exercise, walking and yoga.
- * Alcohol consumption and smoking are to be avoided.

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