

QUARTERLY EXAMS. 2024-25

10- SCIENCE KEY

B. S. PARTHASARATHI

G.H.S.S., MANAVADI

PART-I

10x1=121

- 1. C) Change of momentum
- 2. C) 0.25 m
- 3. a)  $A \leftarrow B, A \leftarrow C, B \leftarrow C$
- 4. c) Electrical energy
- 5. d) Sulphur in carbon-di-sulphide
- 6. c) 32 g
- 7. c) Galvanization
- 8. d) Androecium and Gynoecium
- 9. a) Pancreas
- 10. b) Axons
- 11. d) both b and c
- 12. b) mitochondrial matrix

II

PART-II

13. In equilibrium, the algebraic sum of the moments in the clockwise direction is equal to the algebraic sum of the moments in the anti clock wise direction (1)

$$F_1 \times d_1 = F_2 \times d_2 \quad (1)$$

- 14) When the temperature is kept constant, the volume of gas is ~~directly~~ inversely proportional to the pressure (1)

$$P \propto \frac{1}{V} \text{ (or) } PV = C \text{ (1)}$$

- 15) The number of atoms present in the molecule (1)

Classification (1)

mono atomic ex: Fe

Di atomic ex: HCl

tri atomic ex: H<sub>2</sub>O

Polyatomic ex: CH<sub>4</sub>

16. (i) Presence of moisture

(ii) Presence of H<sub>2</sub>O

(iii) Presence of oxygen

any 2 points (2m)

17. (i) Gas in liquid: Sodawater (1/2)

(ii) Solid in liquid: NaCl in water (1/2)

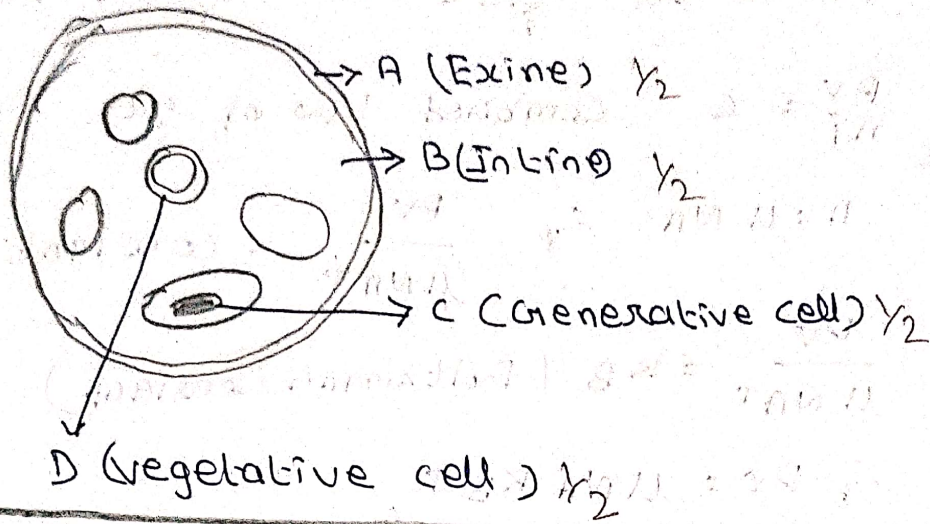
(iii) Solid in solid: Alloys (Au+Cu) (1/2)

(iv) gas in gas : Air (or) He+O<sub>2</sub> (1/2)

18. 
$$\frac{I}{1} = \frac{2}{1}, C = \frac{0}{0}, P_m = \frac{3}{2}, M = \frac{3}{3} \text{ (1)}$$

$$= \frac{2033}{1023} \text{ (1)}$$

19. \* Sudden shoot elongation followed by flowering is known as bolting (1)
- \* Treatment of Gibberellins in rosette (1)



21.

\* Landsteiner and Wiener (1)

\* Discovered from Rhesus Monkey (1)

22.

Given

$$R = 5 \Omega, I = 6 A, t = 5 \text{ minutes}$$

$$= 5 \times 60 = 300 \text{ s}$$

$$H = I^2 R t \quad (1/2)$$

$$= 6 \times 6 \times 5 \times 300 \quad (1/2)$$

$$= 54000 \text{ J} \quad (1)$$

PART - III

any 4 points,  $4 \times 1 = 4$

23.

S.No	Myopia	Hypermetropia
1.	Short sightedness	long sightedness
2.	Lengthening eye ball	shortening of eye ball
3.	Near by objects can be seen clearly	Distant objects can be seen clearly
4.	Image formed before retina	Image formed behind retina
5.	To correct concave lens used	To correct convex lens used

24.

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$$PV = c \rightarrow \textcircled{1} \quad \frac{V}{T} = c \rightarrow \textcircled{2} \quad \frac{V}{n} = c \rightarrow \textcircled{3} \quad (1)$$

$$\frac{PV}{nT} = c \quad \text{Combined law of gas}$$

$$n = \mu N_A \quad \therefore \quad \frac{PV}{\mu N_A T} = \text{constant} \quad (1)$$

$$\frac{PV}{\mu N_A T} = k_B \quad (\text{Boltzmann constant})$$

$$\therefore PV = \mu N_A k_B T \quad (1)$$

$$\mu N_A k_B = R \quad (\text{gas constant})$$

$$\therefore PV = RT \quad (1)$$

25.

- (i) Dimensions of Heavenly bodies  
ex: mass, radius of earth
- (ii) Discovering new sun and stars
- (iii) Wobble - Irregularity of motion calculated
- (iv) Explain germination of roots (geotropism)
- (v) Predict path of astronomical bodies  
(any 4 points)  $4 \times 1 = 4$

26.

Saturated Solution: No more solute can be dissolved in a definite amount of solvent at a temperature

ex: At  $25^\circ\text{C}$ , 36g of NaCl dissolved 100g  $\text{H}_2\text{O}$

Unsaturated solution: It contains less solute than that of saturated solution at a temperature

ex: At  $25^\circ\text{C}$ , 30g of NaCl in 100g  $\text{H}_2\text{O}$

27.

S.No	Hygroscopic	Deliquescent
1.	Absorb moisture and do not dissolve	Absorb moisture and dissolve
2.	Do not change its physical state	change their physical state
3.	may be amorphous solids	Crystalline solids
4.	ex: silica gel ( $\text{SiO}_2$ ) quick lime ( $\text{CaO}$ )	ex: caustic soda ( $\text{NaOH}$ ) caustic Potash ( $\text{KOH}$ )

each point carries 1m

28.

Estragen is produced by the granthian follicle of ovary (1)

Role (i) changes occur during puberty  
 (ii) initiates the process of Oogenesis  
 (iii) Development of mammary glands  
 (iv) stimulation of Ovarian follicles maturation  
 (v) Development of secondary sexual character  
 (any 3 points)  $3 \times 1 = 3$

29.

- 1) Stimulate extra ordinary elongation of internode ex: Corn
  - 2) Bolting by treatment gibberelling on rosette
  - 3) Male flower formation promoted
  - 4) Breaks dormancy ex: Potato tubers
  - 5) Seedless fruits are induced efficiently ex: tomato
- (any 4 points)  $4 \times 1 = 4$

30.

- (i) Transport  $\text{O}_2$  and  $\text{CO}_2$
- (ii) Transport digested food
- (iii) Transport Hormones

- (iv) Transport excretory nitrogenous products  
 (v) Involved respiration and defence against diseases  
 (vi) Regulate pH and Body temperature  
 (vii) maintain water balance  
 (any 4 points)  $4 \times 1 = 4$

31. (i) match

- | <u>Coloumn I</u>  | - | <u>Coloumn II</u>                           |
|-------------------|---|---|
| A) Nissl granules | - | Cyton ( $\frac{1}{2}$ )                     |
| B) Hypothalamus   | - | Fore brain ( $\frac{1}{2}$ )                |
| C) Cerebellum     | - | Hind brain ( $\frac{1}{2}$ )                |
| D) Schwann cell   | - | Peripheral nervous system ( $\frac{1}{2}$ ) |
- (ii) (a) water (1)  
 (b) Mitochondria (1)

32. molar mass of  $\text{CaCO}_3 = 40 + 12 + (3 \times 16)$   
 $= 52 + 48 = 100 \text{ g} (\frac{1}{2})$

% of an element =  $\frac{\text{Total mass of the element}}{\text{molar mass}} \times 100$

% of C =  $\frac{12}{100} \times 100 = 12\% (1)$

% of Ca =  $\frac{40}{100} \times 100 = 40\% (1)$

% of O =  $\frac{48}{100} \times 100 = 48\% (1)$

33.

a)

(i) The rate of flow of charges in a conductor (1)

$$I = \frac{Q}{t} \quad (1)$$

(ii)

(i) Name of the unit: Ampere (A) (1)

(ii) 1 ampere =  $\frac{1 \text{ Coulomb}}{1 \text{ second}}$  (1)

(iii) One coulomb charge flows across any cross-section of a conductor in one second (1)

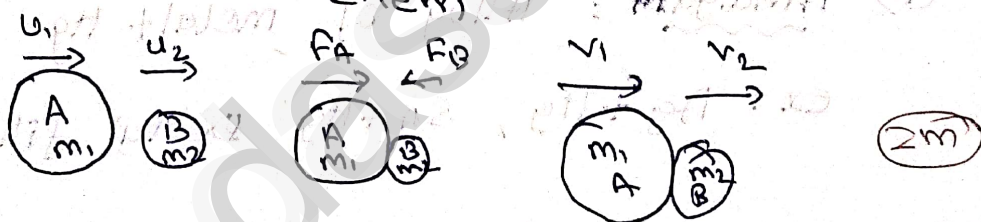
(iii)

(i) Ammeter (1)

(ii) Series connection (1)

b) (i)

Law: There is no change in the linear momentum of a system of bodies as long as no net external force acts on them. (1)



Let

$u_1 > u_2$  collision occurs

The final velocity is  $v_1$  and  $v_2$

Newton's second law

Force on body B due to A,  $F_A = m_2 \frac{v_2 - u_2}{t}$

Force on body A due to B,  $F_B = m_1 \frac{u_1 - v_1}{t}$

By Newton's third law

$$F_B = -F_A \quad (1m)$$

$$m_1 \left( \frac{u_1 - v_1}{t} \right) = - m_2 \left( \frac{v_2 - u_2}{t} \right) \quad (1m)$$

$$m_1 v_1 + m_2 v_2 = m_1 u_1 + m_2 u_2 \quad (1m)$$

blue colour scattered to great extent  
(shorter wavelength)

causes sky appears blue colour

34. a) (i) Vapour density =  $\frac{\text{mass of a given volume of gas}}{\text{mass of same volume of } H_2}$  ①

According to Avogadro's law

vapour density =  $\frac{\text{mass of a molecule of a gas}}{\text{mass of n molecule of } H_2}$  ①

Hydrogen is diatomic

$\therefore$  v.d =  $\frac{\text{mass of 1 molecule of a gas}}{2 \times \text{mass of 1 atom of hydrogen}}$  ①

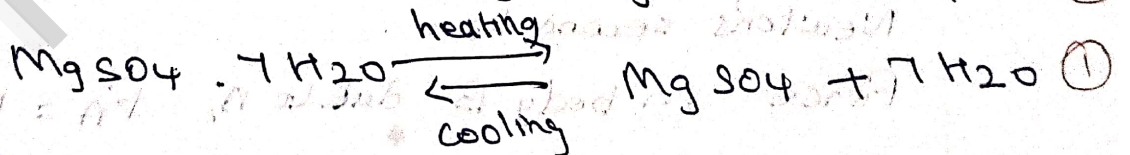
$2 \times \text{v.d} = \frac{\text{mass of 1 molecule of gas}}{\text{mass of 1 atom of hydrogen}}$  ①

Relative molecular mass =  $2 \times \text{v.d}$  ①

(ii) Amalgam: Alloy of metal + Hg ①

ex: Ag + Hg, Sn + Hg Dental filling ①  
[or]

b) (i) When magnesium sulphate hepta hydrate is heated it loses seven water molecules and becomes anhy. magnesium sulphate ②



(ii) The number of grams of a solute that can be dissolved in 100g of solvent to form its saturated sol. at a given T & P. ②

Solubility =  $\frac{\text{mass of solute}}{\text{mass of solvent}} \times 100$  ①



(iii) When ionic substances crystallize with definite numbers of H<sub>2</sub>O from the saturated solution. (1)

35. a (i) 1. Pollination 2. Fertilization (1)

(ii) First event is pollination

The transfer of pollen grains from anther to stigma (1)

Types  $\left\{ \begin{array}{l} \text{Self-pollination} \\ \text{Cross-pollination} \end{array} \right.$  (1)

(iii) Advantages of Self pollination? (1m)

- a) possible in bisexual flowers
- b) not depending agents of pollination
- c) no wastages of pollen grains.

Disadvantages (1m)

- a) Less number of seeds
- b) minute endosperm
- c) New varieties cannot be produced

Advantage of Cross-pollination (1m)

- a) It leads to the production of new varieties
- b) more viable seeds are produced

Disadvantages (1m)

- a) more wastage of pollen grains
- b) Depends agents of pollination
- c) Un wanted characters may formed.

(Or)

35. b) (i) picture : (1m)

parts : (1m)

Cyton : (1m) (explanation)

Dendrites (1m) (explanation)

Axon : (1m) (explanation)

(ii) Reflex arc:

The path way taken by nerve impulse to accomplish reflex action is called reflex arc (2m)