

Subject:- BIOLOGY

A-Draw diagram of chapter -2 and chapter -3

1. T.S. of microsporangium
2. Development of pollen grain
3. A typical anatropous ovule
4. Development of embryo sac
5. Development of dicot embryo
6. L.S. of embryo of grass
7. Sectional view of seminiferous tubule
8. Structure of a sperm
9. Section view of ovary
10. Ovum
11. Transport of zygote upto implantation

B- Preparation of investigatory project

C- Solve the following questions

- a. Explain the significance of meiocytes in a diploid organism.
- b. Why is breast-feeding recommended during the initial period of an infant's growth ? Give reasons
Reproductive and Child Healthcare (RCH) programmes are currently in operation. One of the major tasks of these programmes is to create awareness amongst people about the wide range of reproduction related aspects. As this is important and essential for building a reproductively healthy society.

(a) "Providing sex education in schools is one of the ways to meet this goal." Give four

points in support of your opinion regarding this statement.

- (b) List any two 'indicators' that indicate a reproductively healthy society.
- c. (a) Explain the post-pollination events leading to seed production in angiosperms.
(b) List the different types of pollination depending upon the source of pollen grain.
- d. (a) Briefly explain the events of fertilization and implantation in an adult human female.
(b) Comment on the role of placenta as an endocrine gland.
- e. explain the importance of syngamy and meiosis in a sexual life cycle of an organism.

Subject:- CHEMISTRY

PRACTICE QUESTION FROM THE CHAPTER – "SOLID STATES"

1. Mention the characteristic properties of solid.
2. Mention the differences between crystalline solid and amorphous solid.
3. Explain the terms a) anisotropy b) isotropy. Why is crystalline solid anisotropic while amorphous solid isotropic in nature?
4. What makes glass different from quartz? Under what condition quartz is converted to glass?
5. Why are amorphous solids called pseudo solids or super cooled liquids?
6. How are crystalline solids classified on the basis of intermolecular forces? Give two examples of each type and mention their properties.
7. Compare the properties of diamond and graphite on the basis of their structures.
8. Classify the following as ionic, metallic, molecular, covalent, or amorphous.

- a) P_4O_{10}
- b) $(NH_4)_3PO_4$
- c) I₂
- d) Plastic
- e) graphite

- f) Brass
- g) Rb
- h) LiBr
- i) Si

9. How are molecular solids subdivided further? Give two examples each and mention their properties.

10. Account for the following:

- a) Glass panes fixed to windows of old buildings become slightly thicker at the bottom than at the top.
- b) NaCl(s) does not conduct electricity but it conducts either in molten state or in aqueous solution.
- c) Diamond is a non-conductor while graphite is a conductor of electricity.
- d) Diamond is hard while graphite is soft.
- e) Graphite is a lubricant.
- f) Ionic solids are hard and brittle.
- g) MgO and NaCl are ionic solids but MgO has a higher melting point than NaCl.
- h) NaCl exhibits Schottky defect and not Frenkel defect.

11. Explain the terms

- a) lattice point
- b) crystal lattice
- c) unit cell.

12. What are Bravais lattices? Mention the characteristics of a crystal lattice.

13. Mention the characteristics of a unit cell. Draw a neat diagram of a unit cell and show its parameters.

14. What is the difference between primitive and centered unit cell?

15. Calculate the number of atoms in

- a) SCC
- b) BCC
- c) FCC unit cells.

16. Mention the characteristics of seven primitive unit cells and their possible variation as centered unit cells.

17. Name the centered unit cells and position of atoms in each centered unit cell.

18. What do you mean by coordination number? Give the coordination number of atoms in

- a) one-dimensional arrangement of atoms
- b) square close packing in two dimensions.
- c) hexagonal close packing in two dimensions
- c) hexagonal close packing in three dimensions
- d) cubic close packing or FCC in three dimensions
- e) cation in triangular void.
- f) cation in tetrahedral void
- g) cation in cubic void
- h) BCC

19. A compound has hexagonal close packing structure. Determine the total number of voids, number of tetrahedral voids, and number of octahedral voids in 0.5 mole of this compound.

20. Calculate the number of octahedral and tetrahedral voids in unit cells of a) SCC b) BCC c) FCC

21. Distinguish between

- a) octahedral and tetrahedral voids
- b) Schottky and Frenkel defect.
- c) Hexagonal closed packing and cubic close packing
- d) crystal lattice and unit cell.
- e) para magnetism and ferro magnetism
- f) hexagonal and monoclinic unit cell
- g) face centered and end centered unit cell.

22. Calculate the % efficiency of packing in

- a) SCC
- b) BCC
- c) FCC

23. If the radius of octahedral void is r and the radius of atoms in close packing is R , derive the relationship between r and R .

24. What are interstitial defects? Mention its effect on density of a solid.

25. What is the effect of adding

- a) SrCl_2 to NaCl
- b) CdCl_2 to AgCl ?

26. Explain the terms with suitable examples

- a) Stoichiometric and non stoichiometric defects
- b) F centre
- c) Metal deficiency defect
- d) 12-16 and 13-15 compounds
- e) paramagnetism
- f) diamagnetism
- g) ferromagnetism
- h) ferrimagnetism
- i) antiferromagnetism

27. What happens when

- a) NaCl crystal is heated with Na vapors
- b) ZnO is heated
- c) Fe_3O_4 is heated.

28. Explain n type and p type conduction with suitable examples.

29. Classify the following as n type or p type semi conductors.

- a) Ge doped with In
- b) B doped with Si.

30. In terms of band theory explain the differences between conductor, insulator, and semi conductor. Draw a neat diagram to show the valence band and conduction band in conductor, insulator and semi conductor.

31. Derive the expression for determining the density of unit cell.

PRACTICE QUESTIONS FROM THE CHAPTER - "SOLUTIONS"

1. Define the following terms:

- a) molarity
- b) molality
- c) mole fraction
- d) mass%
- e) volume %
- f) parts per million
- g) azeotrope.

2. What is the effect of temperature on the molarity of the solution ?

3. molality, mole fraction, and mass% are independent of temperature. Why?

4. What is the effect of temperature on the solubility of

- a) solid in a liquid
- b) gas in a liquid ?

5. State Henry's law. Give the mathematical expression for the law.

6. Mention three applications of Henry's law.

7. State Raoult's law for a solution containing two volatile solvents. Give the mathematical expression for the law.

8. Derive the mathematical expression to show that the relative lowering of vapor pressure of a solution containing a nonvolatile solute and a volatile solvent is equal to the mole fraction of the solute.

9. Mention the condition where Raoult's law becomes a special case of Henry's law.

10. What are ideal solutions? Mention the conditions for a solution to behave ideally. Draw a graph of vapor pressure vs mole fraction for an ideal solution.

11. What are non ideal solutions? Mention the conditions for a solution to behave non ideally.

12. Explain the type of deviation exhibited by a mixture of

- a) ethanol and acetone
- b) acetone and chloroform.
- c) phenol and aniline. Draw a graph of vapor pressure vs mole fraction in each case.

13. What do you mean by the terms

- a) maximum boiling azeotrope
- b) minimum boiling azeotrope. Give one example each.

14. What are colligative properties? Give four examples.

15. Explain the following colligative properties with suitable graphs.

- a) elevation of boiling point
- b) depression of freezing point.

16. Define K_f and K_b . Give mathematical expression to show that K_f and K_b depends on the nature of the solvent.

17. Define osmosis and osmotic pressure. Why is osmotic pressure method is considered as a better method when compared to other colligative properties to determine molar mass of the solute.

18. What is reverse osmosis? Mention one application of the same.

19. What do you mean by abnormal molar mass? How does it occur due to

- a) association of solute?
- b) dissociation of solute?

20. What is Van't Hoff factor i ? Give its value for

- a) association of solute.
- b) dissociation of solute.
- c) solute which is neither associates nor dissociates

21. Which is more concentrated? 1 molar or 1 molal solution. Why?

22. What do you mean by the terms

- a) isotonic solution.

b) hypertonic solution

c) hypotonic solution?

23. Account for the following:

a) intravenous injection is given by using 0.9% NaCl (mass/volume) solution.

b) Dried fruits and vegetables swell when kept in fresh water.

c) The tanks used by scuba divers are diluted with helium.

d) Mountain climbers sometimes get symptoms of a condition known as anoxia.

e) Calcium chloride is added to clear the roads covered by snow.

f) Raw mango placed in concentrated salt solution shrivel in to pickle.

g) People suffering from high blood pressure are advised to take minimum quantity of salty food.

h) People taking lot of salty food get affected by edema.

i) Meat is preserved by salting and fruits are preserved by adding sugar.

24. What will happen when a blood cell is placed in

a) solution having NaCl concentration less than 0.9%(mass/volume)

b) solution having NaCl concentration higher than 0.9%(mass/volume)?

Subject:- PHYSICS

1. Show does the force between two point charges change if the dielectric constant of the medium in which they are kept increase?
2. A charged rod P attracts rod R where as P repels another charged rod Q. What type of force is developed between Q and R?
3. A free proton and a free electron are placed in a uniform field. Which of the two experience greater force and greater acceleration?
4. No two electric lines of force can intersect each other? Why?
5. A particle of mass m and charge q is released from rest in a uniform electric field of intensity E . calculate the kinetic energy it attains after moving a distance s between the plates?
6. Two point charges $+q$ and $+9q$ are separated by a distance of $10a$. Find the point on the line joining the two charges where electric field is zero?
7. Define the term dipole moment \mathbf{P} of an electric dipole indicating its direction. Write its S.I unit. An electric dipole is placed in a uniform electric field \mathbf{E} .
8. Two charges each 2×10^{-7} C but opposite in sign forms a system. These charges are located at points A (0,0, -10) cm and B(0,0, +10) cm respectively. What is the total charge and electric dipole moment of the system?
9. (a) Sketch electric lines of force due to (i) isolated positive charge (i.e $q > 0$) and (ii) isolated negative charge (i.e $q < 0$)
(b) Two point charges q and $-q$ are placed at a distance $2a$ apart. Calculate the electric field at a point P situated at a distance r along the perpendicular bisector of the line joining the charges. What is the field when $r \gg a$?
10. State Gauss's Theorem in electrostatics? Using this theorem define an expression for the field intensity due to an infinite plane sheet of charge of charge density ρ c/m^2 ?
11. (a) Define dielectric constant in terms of the capacitance of a capacitor? On what factor does the capacitance of a parallel capacitor with dielectric depend?
(b) Find the ratio of the potential differences that must be applied across the
(1) parallel
(2) Series combination of two identical capacitors so that the energy stored in the two cases becomes the same

12. Prove that energy stored per unit volume in a capacitor is given by $\frac{1}{2}\epsilon E^2$, where E is the electric field of the capacitor?
13. (a) An air capacitor is given a charge of 2×10^{-6} C raising its potential to 200 V. If on inserting a dielectric medium, its potential falls to 50 V, what is the dielectric constant of the medium?
(b) A conducting slab of thickness 't' is introduced without touching between the plates of a parallel plate capacitor separated by a distance d (t<d). Derive an expression for the capacitance of a capacitor?
14. With the help of a labelled diagram, explain the principle, construction and working of a van de Graaff generator. Mention its applications?
15. A Carbon resistor has three strips of red colour and a gold strip. What is the value of resistor? What is tolerance?
16. What happens to the resistance of the wire when its length is increased to twice its original length?
17. What is drift velocity? Derive expression for drift velocity of electrons in a good conductor in terms of relaxation time of electrons?
18. Two heated wires of same dimensions are first connected in series and then it's parallel to a source of supply. What will be the ratio of heat produced in the two cases?

SUBJECT- ENGLISH

HOMEWORK- Extensive Reading of the three Texts:

1. Flamingo
2. Vistas
3. The Invisible Man

(Read these books thoroughly from the beginning to end.)

WRITING SKILLS:

Write as much as possible on the following genres of writing:

1. Notice
2. Poster
3. Advertisement
4. Invitation(Informal)
5. Article
6. Report
7. Formal letter
8. Speech
9. Debate

Literature:

1. Describe Mr M.Hamel with reference to his confession.
2. Who was Master Franz?
3. Why did Kamala Das feel helpless?
4. What was the effect of war on Alsace?
5. What was the effect of the pigeon episode in the story?
6. What can be done to save the interest of the linguistic minority?
7. What is the role of language in the life of a man?
8. Describe the figures of speeches used in the poem by Kamala Das.
9. Have you ever changed your mind on any decision of your life? If so, write about it in brief.
10. Comment on the appropriateness of the title: The Last Lesson.

PALLAVAN SCHOOL
CLASS - XII
SESSION - 2017-18
SUMMER ASSIGNMENT
SUB - MATHEMATICS

1. Taking $A = \begin{bmatrix} 2 & 1 & 0 \\ -3 & 0 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 2 & 3 \\ 1 & 1 & 4 \end{bmatrix}$ and

$C = \begin{bmatrix} -1 & 0 & 2 \\ 1 & 3 & 1 \\ 2 & -1 & 3 \end{bmatrix}$ verify that $A(B+C) = AB+AC$

2. If $A = \begin{bmatrix} 2 & -2 \\ -3 & 1 \end{bmatrix}$, then show that

$$(A+I)(A-4I) = 0$$

3. Let $A = \begin{bmatrix} 2 & 4 \\ 3 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 3 \\ -2 & 5 \end{bmatrix}$, $C = \begin{bmatrix} -2 & 5 \\ 3 & 4 \end{bmatrix}$

Find the following (i) $A+B$, (ii) $A-B$

(iii) $3A-C$ (iv) $2A-B-3C$

4. Find the values of a and b for which the following holds:

$$\begin{bmatrix} a & b \\ -a & 2b \end{bmatrix} \begin{bmatrix} 2 \\ -1 \end{bmatrix} = \begin{bmatrix} 5 \\ 4 \end{bmatrix}$$

5. By using elementary transformations, find

A^{-1} , where $A = \begin{bmatrix} 2 & -3 & 3 \\ 2 & 2 & 3 \\ 3 & -2 & 2 \end{bmatrix}$

6. Evaluate

(i) $\begin{vmatrix} 265 & 240 & 219 \\ 240 & 225 & 198 \\ 219 & 198 & 181 \end{vmatrix}$ (ii) $\begin{vmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{vmatrix}$

7. Prove that

$$\begin{vmatrix} x+4 & x & x \\ x & x+4 & x \\ x & x & x+4 \end{vmatrix} = 16(3x+4)$$

8. (i) If the points (x, y) , $(a, 0)$ and $(0, b)$ are collinear, prove that $\frac{x}{a} + \frac{y}{b} = 1$, $ab \neq 0$

(ii) If the points $(a, 0)$, $(0, b)$ and $(1, 1)$ are collinear prove that $\frac{1}{a} + \frac{1}{b} = 1$, $ab \neq 0$.

9. Solve using matrices, for x , y and z

$$2x - y - z = 7, \quad 3x + y - z = 7, \quad x + y - z = 3$$

10. Solve the following system of linear equations

$$x - y + z = 4$$

$$x - 2y - 2z = 9$$

$$2x + y + 3z = 1$$