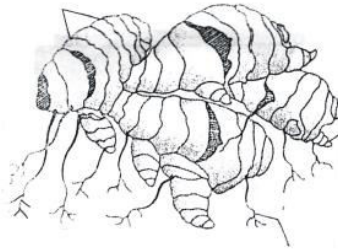


# ***KENDRIYA VIDYALAYA NO.2 JALANDHAR CANTT***

## **HOLIDAY HOMEWORK( XII)-BIO**

### **SECTION – A**

1. A male honeybee has 16 chromosomes whereas female has 32 chromosomes. Give one reason
2. If in the leaf cell of a plant 32 chromosomes are present then how many chromosomes will be there in the endosperm and in the antipodal cell of the this plant?
3. Name the organisms in which asexual reproductive structures are conidia and gemmules.
4. Why testes of human males are considered extra abdominal? What is the significance of this condition?
- 5.



Identify the picture and mention the vegetative part that helps it to propagate.

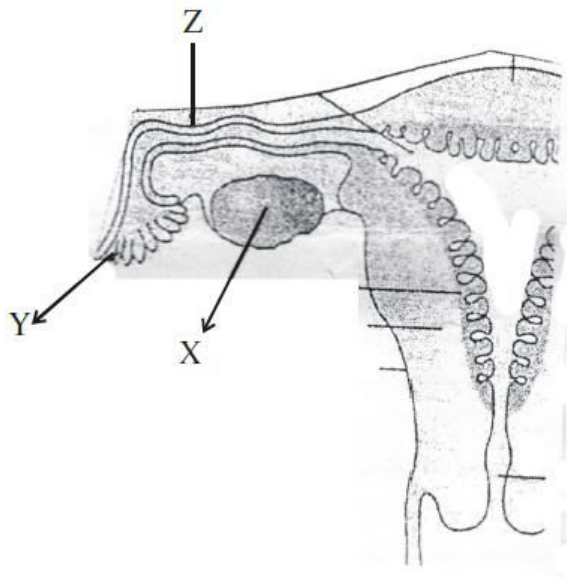
### **SECTION – B**

6. Gynaeceum of a flower may be apocarpous or syncarpous. Explain with the help of suitable examples.
7. Why do moss plants produce large numbers of male gametes? Provide one reason. What are these gametes called?
8. What happens to corpus luteum in human female if the ovum is (i) fertilized, (ii) not fertilized?
9. Write the difference between the tender coconut water and the thick, white kernel of a mature coconut and their ploidy.
10. Out of many papaya plants growing in your garden, only a few bear fruits. Give reason.

### **SECTION – C**

11. (a) Name the organic material exine of pollen grain is made up of. How is this material advantageous to pollen grains.  
(b) Still it is observed that it does not form a continuous layer around the pollen grain. Give reason.  
(c) How are 'pollen banks' useful.
- 12.(a) How does the farmer use the dormancy of the seed to his advantage?  
(b)What advantages a seed provide to a plant?
13. What send the signal for parturition also explain foetal ejection reflex.
14. Explain various outbreeding devices in detail.
15. Along with diagrams explain the the process of spermatogenesis.
16. Explain the development of female gametophyte upto 7 celled 8 nucleated stage.
- 17 Draw the well labelled diagram of human sperm.
18. How polyspermy is prevented in human beings

19.



This diagram above shows a part of the human female reproductive system.

- (a) Name the gamete cells that would be present in 'X' if taken from a newborn baby.
- (b) Name 'Y' and write its function.
- (c) Name 'Z' and write the events that take place here.

20. How does pollination take place in salvia. List any four adaptations required for such type of pollination.

21. Trace the events that would take place in flower from the time of Pollen grain of species fall on stigma up to completion of fertilization.

22. Explain the events in a normal woman during her menstrual cycle on the following days:

- (a) Pituitary hormone levels from 8 to 12 days.
- (b) Uterine events from 13 to 15 days.
- (c) Ovarian events from 16 to 23 days.

### SECTION – D

23 Your younger sister Nandita has seen a banana tree in backyard of a house. She could see the fruits but no seeds. She wants to know how a new plant of banana will be produced without seed. Based on this answer the following questions.

- a) How new plants are produced by banana plant?
- b) What values are shown by Nandita?
- c) How fruits can be produced without seeds?
- d) How the fruit of apple differ from these types of fruits?

### SECTION – E

24. a) Explain the menstrual phase in the human female. State the level of ovarian and pituitary hormones during this phase.

b) Why is the follicular phase in the menstrual cycle also referred as proliferative phase? Explain.

c) Explain the events that occur in a graafian follicle at the time of ovulation and thereafter.

d) Draw a graafian follicle and label antrum and secondary oocyte.

25. (a) Describe in sequence the process of microsporogenesis in angiosperms.

(b) Draw a labelled diagram of a two celled final structure formed.

26. (a) Draw a sectional view of a seminiferous tubule of human. Label sertoli cell, spermatogonia and leydig cell on it and write their functions.

(b) Explain the role of pituitary and sex hormones in the process of spermatogenesis.

27. Explain Spermatogenesis and oogenesis along with diagrams.

28. Explain menstrual cycle in detail (along with hormonal variations)

29. Draw diagram no. 3.11

30. Explain parturition and lactation.

# **CHEMISTRY HOLIDAY HOMEWORK 2021**

## **UNIT: 1:-SOLID STATE**

1. Why are solids rigid?
2. Why do solids have a definite volume?
3. Define the term 'amorphous'. Give a few examples of amorphous solids.
4. Write three main differences between Amorphous and Crystalline Solids.
5. Crystalline solids are anisotropic in nature. What does this statement mean.
6. Why is glass considered a super cooled liquid.
7. Refractive index of a solid is observed to have the same value along all directions. Comment on the nature of this solid. Would it show cleavage property?
8. Classify the following as amorphous or crystalline solids: (i) Polyurethane, (ii) naphthalene, (iii) benzoic acid, (iv) Teflon, (v) potassium nitrate, (vi) cellophane, (vii) polyvinyl chloride, (viii) fibre (ix) glass, (x) copper.
9. In a tabular form Classify the solids on the basis of different binding forces also mention Nature of binding force, physical nature & electrical conductivity
10. Why is glass of window panes of very old buildings found to be thicker at the bottom than at the top.
11. Some of the very old glass objects appear slightly milky instead of being transparent. why?
12. In a tabular form Classify the solids on the basis of different binding forces also mention Nature of binding force, physical nature & electrical conductivity
13. Classify each of the following solids as ionic, metallic, molecular, network (covalent) or amorphous. (a) Tetra phosphorus decoxide ( $P_4O_{10}$ ) (b) Graphite (c) Ammonium phosphate ( $(NH_4)_3PO_4$ ) (d) Brass (e) SiC (f) Rb (g)  $I_2$  (h) LiBr (i)  $P_4$  (j) Si (k) Plastic
14. Classify the following solids in different categories based on the nature of intermolecular forces operating in them: (a) Potassium sulphate, (b) tin, (c) benzene, (d) urea, (e) ammonia, (f) water, (g) zinc sulphide, (i) graphite, (j) rubidium, (k) argon, (l) silicon carbide.
15. Based on intermolecular forces classify following : Potassium sulphate Tin Benzene Urea Ammonia  $H_2O$  zinc sulphide Graphite Rubidium Argon Silicon carbide Silver Sodium Sulphate Hydrogen  $I_2$   $CO_2$   $SO_2$
16. What type of solids are electrical conductors, malleable & ductile.
17. What type of interactions hold the molecules together in a polar molecular solid.
18. Write a distinguishing feature of metallic solids.
19. What makes a glass different from a solid such as quartz? Under what conditions could quartz be converted into glass?
20. How do metallic and ionic substances differ in conducting electricity?
21. Ionic solids conduct electricity in molten state but not in solid state. Explain.
22. What type of solids are electrical conductors, malleable and ductile?
23. Solid A is a very hard electrical insulator in solid as well as in molten state and melts at extremely high temperature. What type of solid is it?
24. Copper is conducting such while copper sulphate is conducting only in molten state or in aqueous solution. why
25. Explain the basis of similarities and differences between metallic and ionic crystals.
26. Why ionic solids are hard and brittle.

## ***CHEMISTRY HOLIDAY HOME WORK 2021***

27. What is Unit cell? Name the parameters that characterize unit cell.
28. Give the significance of Lattice point. Write difference between : Crystal lattice and unit cell
29. Distinguish between (i) Hexagonal and monoclinic unit cells (ii) Face-centred and end-centred unit cells.
30. How much portion of an atom located at (i) corner and (ii) body centre (iii) faces of a cubic unit cell is part of its neighbouring unit cell .
31. Calculate the Number of atoms per unit cell in Simple cubic; Body centred Cubic (bcc), Face-centred cubic (fcc).
32. How many lattice points are there in one unit cell of each of the following lattice? (i) Face-centred cubic (ii) Face-centred tetragonal (iii) Body-centred
33. A cubic solid is made of two elements P and Q. Atoms of Q are at the corners of the cube and P at the body-centre. What is the formula of the compound? What are the coordination numbers of P and Q?
34. A cubic solid is made of two elements A and B. Atoms of A are at the corners of the cube and B at the Face-centre. What is the formula of the compound?
35. An ionic compound made up of atoms A & B has a face centred cubic arrangement in which atoms are at the corners and B atoms are at face centres. If one of the atoms is missing from the corner, what is the simplest formula of the compound.
36. In a face centred cubic lattice, atom A occupies the corner positions and atom B occupies the face centre positions. If one atom of B is missing from one of the face centred points. What is the formula of the compound?
37. A cubic solid is made of two elements X and Y. Atoms of A are at the corners of the cube and B at the centre of alternate Faces. What is the formula of the compound?
38. A compound made up of elements A and B crystallizes in the cubic structure. Atoms a are present on the corners as well as face centres whereas atoms B are present on the edge centres as well as body centre. What is the formula of the compound?
39. If three elements P, Q, & R crystallizes in the cubic structure with P atoms at the corners, Q atoms at the cube centre and R atoms at the centre of the faces of the cube What is the formula of the compound?
40. A solid has a cubic structure in which X atoms are located at the corners of the cube, Y atoms are at the cube centres and O atoms are at the edge centres. What is the formula of the compound?
41. In an alloy of gold and cadmium, gold crystallizes in cubic structure occupying the corners only and cadmium fits into the face centre voids. What is quantitative composition of the alloy ?
42. Calculate the number of unit cells in 8.1 g of aluminum if it crystallizes in f.c.c structure. (Atomic mass of Al=27gm/mol). **[Ans:  $4.515 \times 10^{22}$ ]**
43. Calculate the number of unit cells in 9.2 g of sodium if it crystallizes in b.c.c structure. (Atomic mass of Na=23 gm/mol). **[Ans:  $1.204 \times 10^{23}$ ]**
44. Potassium crystallizes in a body centered cubic lattice. What is the approximate number of unit cells in 4.0g of potassium? Atomic mass of potassium = 39. **[Ans:  $3.09 \times 10^{22}$ ]**
45. Derive the relationship between edge length (a) of unit cell and radius of atom (r) for (i) simple cubic (ii) body –centered cubic (iii) face –centered cubic (with the assumptions that atoms are touching each other) or hcp or ccp

## **CHEMISTRY HOLIDAY HOME WORK 2021**

46. Silver crystallizes in fcc lattice. Each side of the unit cell has a length of 409 pm. What is the radius of an atom of silver.
47. Aluminium crystallises in a cubic close-packed structure. Its metallic radius is 125 pm. (i) What is the length of the side of the unit cell? (ii) How many unit cells are there in  $1.00 \text{ cm}^3$  of aluminium?
48. Gold (atomic radius = 0.144 nm) crystallises in a face-centred unit cell. What is the length of a side of the cell?
49. Calculate the efficiency of packing in case of a metal crystal for (i) simple cubic (ii) body-centred cubic (iii) face-centred cubic (with the assumptions that atoms are touching each other) or hcp or ccp Structures.
50. Calculate the packing fraction for the Ca unit cell, given that Ca crystallizes in a face-centred cubic unit cell.
51. How can you determine the atomic mass of an unknown metal if you know its density and the dimension of its unit cell? Explain.
52. Silver crystallizes in fcc lattice. If edge length of the cell is  $4.07 \times 10^{-8} \text{ cm}$  and density is  $10.5 \text{ g cm}^{-3}$ , calculate the atomic mass of silver.
53. Niobium crystallises in body-centred cubic structure. If density is  $8.55 \text{ g cm}^{-3}$ , calculate atomic radius of niobium using its atomic mass 93 u.
54. X-ray diffraction studies show that copper crystallises in an fcc unit cell with cell edge of  $3.608 \times 10^{-8} \text{ cm}$ . In a separate experiment, copper is determined to have a density of  $8.92 \text{ g/cm}^3$ , calculate the atomic mass of copper.
55. Silver forms ccp lattice and X-ray studies of its crystals show that the edge length of its unit cell is 408.6 pm. Calculate density of silver (Atomic mass = 107.9 u)
56. An element (atomic mass = 60) having FCC unit cell has a density of  $6.23 \text{ g/cm}^3$ . What is the edge length of the unit cell?
57. An element (atomic mass = 27) has a density of  $2.7 \text{ g/cm}^3$ . If edge length of the cell is  $4.07 \times 10^{-8} \text{ cm}$ . what is the nature of the cubic unit cell?
58. Iron has bcc unit cell with cell edge of 286.65 pm. The density of iron is  $7.874 \text{ g/cm}^3$ . Calculate the value of Avogadro constant (atomic mass of Fe =  $56 \text{ g mol}^{-1}$ )
59. Determine the type of cubic lattices to which the iron crystal belongs if its unit cell has an edge length of 286 pm and the density of iron crystals is  $7.86 \text{ g/cm}^3$ .
60. The well known mineral fluorite is chemically calcium fluoride. It is known that in one unit cell of this mineral there are 4  $\text{Ca}^{2+}$  ions & 8  $\text{F}^-$  ions and that  $\text{Ca}^{2+}$  ions are arranged in a fcc lattice. The  $\text{F}^-$  ions fill all the tetrahedral holes in the fcc lattice of  $\text{Ca}^{2+}$  ions. The edge of the unit cell is  $5.46 \times 10^{-8} \text{ cm}$  in length. The density of solid is  $3.18 \text{ g/cm}^3$  in length. Using this information Calculate the value of Avogadro constant (Molar mass of  $\text{CaF}_2 = 78.08 \text{ g mol}^{-1}$ ).
61. An element has a body-centred cubic structure with a cell edge of 288 pm. The density of the element is  $7.2 \text{ g/cm}^3$ . How many atoms are present in 208 g of the element?
62. An element with molar mass  $2.7 \times 10^{-2} \text{ kg mol}^{-1}$  forms a cubic unit cell with edge length 405 pm. If its density is  $2.7 \times 10^3 \text{ kg m}^{-3}$ , what is the nature of the cubic unit cell?
63. An element crystallizes into a structure which may be described by a cubic lattice of unit cell having one atom on each corner of the cube and two atoms on one of its diagonals. If the volume of this unit cell is  $24 \times 10^{-24} \text{ cm}^3$  and density of element is  $7.2 \text{ g cm}^{-3}$ , calculate the number of atoms present in 200 g of the element.

## **CHEMISTRY HOLIDAY HOME WORK 2021**

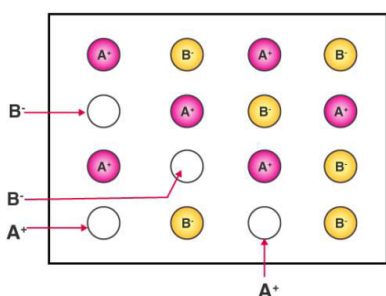
64. The density of copper metal is  $8.95 \text{ g/cm}^3$ . If the radius of copper atom be  $127.8 \text{ pm}$ , is the copper unit cell simple cubic, body centred cubic or face centred cubic?
65. An element X with an at. mass  $60 \text{ g/mol}$  has density  $6.23 \text{ g/cm}^3$ . If the edge length of cubic unit cell is  $400 \text{ pm}$ . Identify the type of cubic unit cell. Calculate the radius of an atom of this element.
66. An element crystallizes in BCC structure. If the edge length of the cell is  $1.469 \times 10^{-10} \text{ m}$ . & density is  $19.3 \text{ g/cm}^3$ . Calculate the at. Mass of this element. Also calculate the radius of an atom of this element.
67. Ag crystallizes in FCC lattice. The edge length of its unit cell is  $4.077 \times 10^{-8} \text{ cm}$ . & its density is  $10.5 \text{ g/cm}^3$ . Calculate the at. Mass of Ag.
68. An element has a body –centered cubic structure with a cell edge of  $314 \text{ pm}$ . The density of the element is  $10.3 \text{ g/cm}^3$ . Calculate the atomic mass of element.
69. Gold has a close-packed structure which can be viewed as-spheres  $0.74$  occupying of the total volume. If the density of gold is  $19.3 \text{ g/cc}$ , calculate the apparent radius of a gold ion in the solid
70. The edge length of a unit cell of a metal having molecular mass  $75 \text{ g/mol}$  is  $5 \text{ \AA}$  which crystallizes in a cubic lattice. If the density is  $2 \text{ gm cm}^{-3}$  then find the radius of metal atom.
71. KF has ccp structure. Calculate the radius of unit cell if the side of the cube or edge length is  $400 \text{ pm}$ . How many  $\text{F}^-$  ions and octahedral voids are there in this unit cell.
72. Calculate the value of Avogadro constant from the following data. Density of NaCl =  $2.165 \text{ g/cm}^3$ . Distance b/w  $\text{Na}^+$  &  $\text{Cl}^-$  is  $281 \text{ pm}$ .
73. What is meant by the term 'coordination number'?
74. What is the coordination number of atoms in a cubic close-packed structure.
75. What is the coordination number of atoms in a Hexagonal close packing hcp in 2-D & 3-D.
76. What is the two dimensional coordination number of a molecule in Square close packed layer. What is the coordination number of atoms in a Body centered cubic & Face centered cubic.
77. Write the 'coordination number' of Rock salt (NaCl) CsCl, ZnS, CaF<sub>2</sub> Fluorite .
78. How will you distinguish between the following pairs of terms: (i) Hexagonal close-packing and cubic close-packing (ii) Tetrahedral void and octahedral void
79. A cubic solid is made of two elements P and Q. Atoms of Q are at the corners of the cube and P at the body-centre. What is the formula of the compound? What are the coordination numbers of P and Q?
80. A cubic solid is made of two elements A and B. Atoms of A are at the corners of the cube and B at the Face-centre. What is the formula of the compound?
81. In a face centred cubic lattice, atom A occupies the corner positions and atom B occupies the face centre positions. If one atom of B is missing from one of the face centred points. What is the formula of the compound?
82. A compound is formed by two elements X and Y. Atoms of the element Y (as anions) make ccp and those of the element X (as cations) occupy all the octahedral voids. What is the formula of the compound?
83. Atoms of element B form hcp lattice and those of the element A occupy  $\frac{2}{3}$ rd of tetrahedral voids. What is the formula of the compound formed by the elements A and B?

## **CHEMISTRY HOLIDAY HOME WORK 2021**

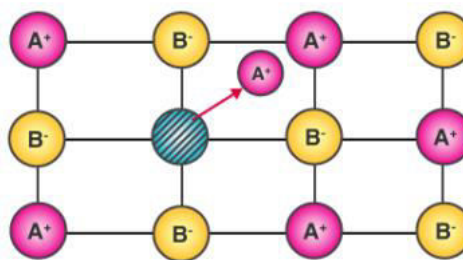
84. A compound forms hexagonal close-packed structure. What is the total number of voids in 0.5 mol of it? How many of these are tetrahedral voids?
85. A compound is formed by two elements M and N. The element N forms *ccp* and atoms of M occupy 1/3rd of tetrahedral voids. What is the formula of the compound?
86. Ferric oxide crystallises in a hexagonal close-packed array of oxide ions with two out of every three octahedral holes occupied by ferric ions. Derive the formula of the ferric oxide
87. If the radius of the octahedral void is  $r$  and radius of the atoms in close packing is  $R$ , derive relation between  $r$  and  $R$ .
88. Explain the following: (a) Point defect (b) intrinsic or thermodynamic defect (c) vacancy defect (d) interstitial defect
89. Explain the following with suitable examples : (a) Schottky defect (b) Frenkel defect (dislocation defect)
90. What is the effect of Schottky defect and Frenkel defects on the density of crystals.
91. What is the effect of Schottky defect on the density of crystals.
92. Name the crystal defect which lowers the density of an ionic crystal.
93. Which point defect increases the density of crystal?
94. Which point defect does not alter the density of crystal?
95. Why are Frenkel defects not found in pure alkali halides?
96. What type of defect can arise when a solid is heated?
97. Why are Frenkel defects found in  $\text{AgCl}$ ?
98. What type of stoichiometric defect is shown by  $\text{ZnS}$
99. What type of stoichiometric defect is shown by  $\text{AgBr}$
100. Explain how vacancies are introduced in an ionic solid when a cation of higher valence is added as an impurity in it?
101. What type of defect is produced when  $\text{NaCl}$  is doped with  $\text{SrCl}_2$ .
102. What is the nature of crystal defect produced when sodium chloride is doped with  $\text{MgCl}_2$  ?
103. What type of defect is produced when  $\text{AgCl}$  is doped with  $\text{CdCl}_2$
104. Define the term F-centers.
105. Ionic solids which have anionic vacancies due to metal excess develop colour. Explain with the example.
106. Name the non-stoichiometric defect responsible for colour in alkali halides.
107. What makes the crystal of  $\text{KCl}$  appear sometimes violet?
108. What is the effect of Frenkel defects on the density of crystals.
109. Why is Lithium chloride sometimes pink in colour?
110. Why common salt is sometime yellow instead of being pure white.
111. Mention one property which is caused due to presence of F-centre in a solid?
112. Zinc oxide is white but it turns yellow on heating. Why
113. What makes alkali metal halides sometimes coloured, which are otherwise colourless
114. Explain the following non-stoichiometric defects: (i) metal excess defect due to presence interstitial cation (ii) Metal deficiency defect.
115. A sample of ferrous oxide has actual formula  $\text{Fe}_{0.93}\text{O}_{1.00}$ . In this sample what fraction of metal ions are  $\text{Fe}^{2+}$  ions?
116. What type of nonstoichiometric defect is present in the sample of  $\text{Fe}_{0.93}\text{O}_{1.00}$ ?

**CHEMISTRY HOLIDAY HOME WORK 2021**

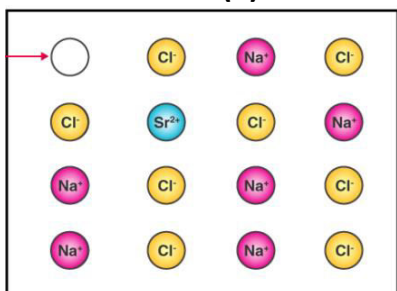
117. If NaCl is doped with  $10^{-3}$  mol % of  $\text{SrCl}_2$ , what is the concentration of cation vacancies.
118. Name a substance which on addition to AgCl causes cation vacancy in it.
119. Why is FeO (s) not formed in stoichiometric composition?
120. Why does zinc oxide exhibit enhanced electrical conductivity on heating ?
121. Name the defect in which equal number of cations and anions are missing from lattice positions .
122. Name the defect in which the smaller ion is dislocated from its normal site to an interstitial site.
123. Name the defect in which a negative ion from the crystal lattice may be missing from its lattice site leaving a hole or vacancy which is occupied by the electron originally associated with the anion
124. Name the defect type of defect generally occurs when metal shows variable valency.
125. Analysis shows that nickel oxide has the formula  $\text{Ni}_{0.98}\text{O}_{1.00}$ . What fractions of nickel exist as  $\text{Ni}^{+2}$  ions?
126. Identify the type of defects shown in following figures :



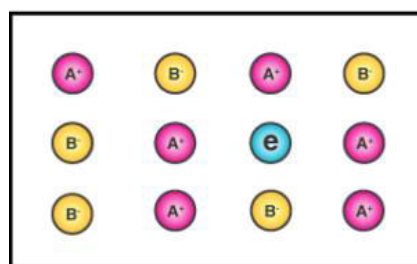
(a)



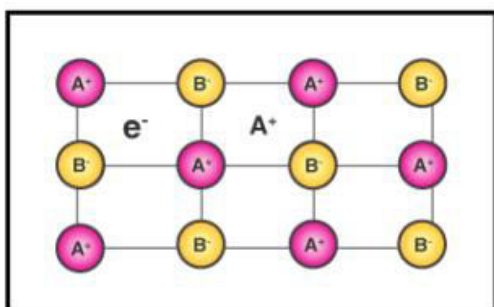
(c)



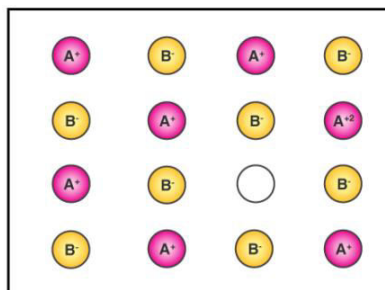
(b)



(d)



(e)



(f)



**UNIT: 2:-SOLUTIONS**

1. Give one example of solution having gas as solute & gas as solvent.
2. Give one example of solution having liquid as solute & gas as solvent
3. Give one example of solution having solid as solute & gas as solvent.
4. Give one example of solution having gas as solute & liquid as solvent.
5. Give one example of solution having liquid as solute & liquid as solvent
6. Give one example of solution having solid as solute & liquid as solvent.
7. Give one example of solution having gas as solute & solid as solvent.
8. Give one example of solution having liquid as solute & solid as solvent
9. Give one example of solution having solid as solute & solid as solvent
10. Amongst the following compounds, identify which are insoluble, partially soluble and highly soluble in water?(i) phenol (ii) toluene (iii) formic acid(iv) ethylene glycol (v) chloroform (vi) Pentanol.
11. Suggest the most important type of intermolecular attractive interaction in the following pairs.(i) n-hexane and n-octane(ii)  $I_2$  and  $CCl_4$ (iii)  $NaClO_4$  and water(iv) methanol and acetone (v) Acetonitrile ( $CH_3CN$ ) and acetone ( $C_3H_6O$ ).
12. Based on solute-solvent interactions, arrange the following in order of increasing solubility in n-octane and explain. Cyclohexane, KCl,  $CH_3OH$ ,  $CH_3CN$ .
13. Define: Molality, Molarity, Mass percentage, Volume percentage, Parts per million (ppm), Mole fraction. Write their formulas also.
14. Which out of the Molality & Molarity is better way to express the concentration of solution and why?
15. How does a change in temperature influence values of molarity and molality.
16. Concentration terms such as mass percentage, ppm, mole fraction and molality are independent of temperature, however molarity is a function of temperature.Explain.
17. Under what conditions molarity and molality of a solution nearly the same.
18. A solution is heated from  $25^\circ C$  to  $50^\circ C$ .Will its molarity be same less or more. Comment.
19. What is the sum of the mole fractions of all the components in a three component system?
20. State Henry law with its mathematical expressions. Explain the significance of Henry's law constant. At same temperature, hydrogen is more soluble in water than helium .Which will have larger value of  $K_H$
21. What is the significance of Henry's Law constant  $K_H$ ?
22. Mention some of important applications Henry law.
23. Why do gases always tend to be less soluble in liquids as the temperature is raised?
24. What is the effect of rise in temperature on solubility of a gas?
25. Why do aquatic species remain more comfortable in lakes in winters than in summers?
26. Explain the following phenomena with the help of Henry's law.(i) Painful condition known as bends. (ii) Feeling of weakness and discomfort in breathing at high altitude.
27. Why soda water bottle kept at room temperature fizzes on opening?
28. State Raoult's law for a solution of volatile liquids .Give its mathematical relationship.
29. How is the vapour pressure of a solvent affected when a non volatile solute is dissolved in it.
30. Why is vapour pressure of a solution of glucose in water lower than that of Water?

## ***CHEMISTRY HOLIDAY HOME WORK 2021***

31. What is an ideal solution? What type of solutions are likely to behave as ideal solutions? Draw the plot of vapour pressure and mole fraction of an ideal solution at constant temperature.
32. Explain along with diagrams the conditions for the Non ideal solutions exhibiting Positive deviations. Write some examples of Non ideal solutions exhibiting Positive deviations.
33. Explain along with diagrams the conditions for the Non ideal solutions exhibiting Negative deviations. Write some examples of Non ideal solutions exhibiting Negative deviations
34. Draw a diagram to illustrate the relationship between vapour pressure and mole fraction of a components in a solution to represent negative deviation.
35. What role does the molecular interaction play in solution of alcohol and water?
36. When X and Y are mixed the solution becomes warmer and Y and Z are mixed the solution becomes cooler? Which of these solutions will exhibit positive deviation and solutions will exhibit negative deviation?
37. What type of non idealities are exhibited by cyclohexane –ethanol and acetone-chloroform mixtures? Give reasons for your answer.
38. Why a mixture of carbondisulphide and acetone shows positive deviation from Raoult's law? What type of azeotropic mixture will be formed by this solution.
39. What are Azeotropes? Give one example each of minimum boiling and maximum boiling azeotropes.
40. In non ideal solution what type of deviation shows the formation of maximum boiling azeotrope.
41. In non ideal solution what type of deviation shows the formation of minimum boiling azeotrope.
42. Components of a binary mixture of two liquids A and B were being separated by distillation. After some time separation of components stopped and composition of vapour phase became same as that of liquid phase. Both the components started coming in the distillate. Explain why this happened.
43. What general name is given to binary mixtures which show deviation from Raoult's law and whose components cannot be separated by fractional distillation. How many types of such mixtures are there?
44. Acetone (bp329K) and carbon disulphide (bp320K) are mixed in a definite composition so that the mixture of two behaves like pure liquid and boils at 312 what name can be given to such a mixture?
45. 10cc of a liquid A is mixed with 10 cc of liquid B. The volume of resulting solution was found to be 19.9cc. what do you conclude.
46. What type of azeotropic mixture will be formed by the solution of acetone-chloroform mixtures? Justify on the basis of strength of intermolecular interactions that develop in the solution.
47. Define colligative properties.
48. Show that Relative Lowering of vapour pressure is a colligative property.
49. Why does a solution containing no volatile solute have higher boiling point than pure solvent. Show that Elevation of boiling point is a colligative property
50. How will you determine the molecular mass of a non volatile substance by study of Elevation of boiling point of a solution?

## **CHEMISTRY HOLIDAY HOME WORK 2021**

51. Out of 1M glucose and 2M glucose which one has a higher boiling point and why.
52. What is molal elevation constant? What are its units? How is it related to enthalpy of vaporization of solvent?
53. Why common salt is added to water used for boiling eggs to get hard boiled eggs?
54. 10 g of sucrose and 10 g of glucose are dissolved in same volume of water to prepare two solutions X and Y .will they have same or different boiling points?
55. Show that depression of freezing point is a colligative property.
56. How will you determine the molecular mass of a non volatile substance by study of depression of freezing point of a solution.
57. An aqueous solution of sodium chloride freezes below 273 K. Explain the lowering in freezing point of water with the help of a suitable diagram.
58. What is molal depression constant? What are its units? How is it related to enthalpy of fusion of solvent?
59. How does sprinkling of salt help in clearing the snow covered roads in hilly areas? Explain the phenomenon involved in the process.
60. What are antifreeze solutions? Which substance is commonly used as antifreeze?
61. What is osmotic pressure? Show that it is a colligative property.
62. Define (i) Semi permeable membrane (ii) osmosis (iii) isotonic (iv) Hypertonic (v) Hypotonic solution.
63. What is edema.
64. What is reverse osmosis? Give its application.
65. When kept in water, raisin swells in size. Name and explain the phenomenon involved with the help of a diagram. Give three applications of the phenomenon.
66. Discuss biological and industrial importance of osmosis.
67. How can you remove the hard calcium carbonate layer of the egg without damaging its semipermeable membrane? Can this egg be inserted into a bottle with a narrow neck without distorting its shape? Explain the process involved
68. Give an example of a material used for making semipermeable membrane for carrying out reverse osmosis
69. What care is generally taken during intravenous injection and why?
70. What happens when the external pressure applied becomes more than the osmotic pressure of the solution.
71. How will you determine the molecular mass of a substance by study of osmotic pressure
72. Measurement of osmotic pressure method is preferred for the determination of molecular masses of macromolecules such as proteins and polymers. Give two reasons.
73. What will happen if RBC are placed in (i) 0.5% NaCl Solution (ii) 1% NaCl Solution?
74. What happens when we place the blood cell in water (hypertonic solution). Give reason.
75. Give reason :
  - a) A raw mango placed in concentrated salt solution shrivels into pickle.
  - b) Wilted flowers revive when placed in fresh water.
  - c) A carrot that has become limp placed into the water making it firm once again.
  - d) Water movement from soil into plant roots and subsequently into upper portion of the plant
  - e) The preservation of meat by salting and of fruits by adding sugar protects against bacterial action.

## **CHEMISTRY HOLIDAY HOME WORK 2021**

76. Calculate the molarity of a solution containing 5 g of NaOH in 450ml solution.
77. Concentrated nitric acid used in the laboratory work is 68% nitric acid by mass in aqueous solution. What should be the molarity of such a sample of the acid if the density of the solution is 1.504 g/ml?
78. Calculate the amount of benzoic acid required for preparing 250 ml of 0.15M solution in methanol.
79. Calculate molality of 2.5g of ethanoic acid ( $\text{CH}_3\text{COOH}$ ) in 75g of benzene.
80. Calculate the mass of urea ( $\text{NH}_2\text{CONH}_2$ ) required in making 2.5 Kg of 0.25 molal of aqueous solution.
81. Calculate the molarity of each of the following solutions : ( a) 30g of  $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$  in 4.3L of solution (b) 30ml of 0.5 $\text{H}_2\text{SO}_4$  diluted to 500ml.
82. An antifreeze solution is prepared from 222.6g of ethylene glycol.  $\text{C}_2\text{H}_4(\text{OH})_2$  and 200g of water. Calculate molality of solution. If the density of the solution is 1.072 g/ml then what shall be the molarity of the solution?
83. Calculate Molality, Molarity & Mole fraction of KI if the density of 20 % ( mass/mass) aqueous KI is 1.202g/ml.
84. A solution of glucose in water is labelled as 10% w/w. What should be the molality and mole fraction of each component in the solution? If the density of solution is 1.2g/ml, then what shall be the molarity of the solution?
85. If the density of some lake water is 1.25 g/ml and contains 92g of  $\text{Na}^+$  ions per Kg of water, calculate the molality and molarity of  $\text{Na}^+$  ions in the lake.
86. Calculate the mole fraction of ethylene glycol.  $\text{C}_2\text{H}_4(\text{OH})_2$  in a solution containing 20% of ethylene glycol.  $\text{C}_2\text{H}_4(\text{OH})_2$  by mass.
87. Calculate the mole fraction of benzene in solution containing 30% by mass in carbon tetrachloride ( $\text{CCl}_4$ ).
88. A sample of drinking water was found to be contaminated with chloroform ( $\text{CHCl}_3$ ) supposed to be carcinogen. The level of contamination was 15ppm (By mass). (i) Express this in percent by mass. (ii) determine the molality of chloroform in the water sample.
89. Calculate the mass percentage of aspirin ( $\text{C}_9\text{H}_8\text{O}_4$ ) in acetonitrile ( $\text{CH}_3\text{CN}$ ) when 6.5g of ( $\text{C}_9\text{H}_8\text{O}_4$ ) is dissolved in 450g of ( $\text{CH}_3\text{CN}$ ).
90. Calculate the mass percentage of benzene ( $\text{C}_6\text{H}_6$ ) and carbon tetrachloride ( $\text{CCl}_4$ ) if 22g of benzene is dissolved in 122g of carbon tetrachloride ( $\text{CCl}_4$ ).
91. Calculate the percentage composition in terms of mass of a solution obtained by mixing 300g of a 25% and 400g of 40% solution by mass
92. If the solubility product of CuS is  $6 \times 10^{-16}$ , calculate the maximum molarity of CuS in aqueous solution.
93. Nalorphene ( $\text{C}_{19}\text{H}_{21}\text{NO}_3$ ), similar to morphine is used to combat withdrawal symptoms in narcotic users .Dose of Nalorphene, generally is 1.5 mg. Calculate the mass of  $1.5 \times 10^{-3}$  molal aq.
94. If  $\text{N}_2$  gas is bubbled through water at 298 K, how many millimoles of  $\text{N}_2$  gas would dissolve in 1 litre of water .Assume that  $\text{N}_2$  exerts a partial pressure of 0.987 bar . Henry's law constant for  $\text{N}_2$  at 293K is 76.48 bar.
95.  $\text{H}_2\text{S}$  a toxic gas with rotten egg like smell is used for the qualitative analysis. If the solubility of  $\text{H}_2\text{S}$  in water at STP is 0.195m, calculate Henry's law constant

### **CHEMISTRY HOLIDAY HOME WORK 2021**

96. Henry's law constant for CO<sub>2</sub> in water is  $1.67 \times 10^8$  Pa at 298 K .calculate the quantity of CO<sub>2</sub> in 500ml of soda water when packed under 2.5 atm CO<sub>2</sub> pressure at 298 K.
97. The partial pressure of ethane over a solution containing  $6.56 \times 10^{-3}$  g of ethane is 1 bar. If the solution contains  $5.00 \times 10^{-2}$  g of ethane, then what shall be the partial pressure of the gas?
98. Henry's law constant for the molality of methane in benzene at 298 K is  $4.27 \times 10^5$  mm Hg. Calculate the solubility of methane in benzene at 298 K under 760 mm Hg.
99. Vapour pressure of chloroform (CHCl<sub>3</sub>) and dichloroform (CH<sub>2</sub>Cl<sub>2</sub>) at 298 K are 200 mm Hg and 415 mm Hg respectively. (i) Calculate the vapour pressure of the solution prepared by mixing 25.5 g of CHCl<sub>3</sub> and 40.0 g of CH<sub>2</sub>Cl<sub>2</sub> at 298 K and (ii) mole fractions of each component in vapour phase.
100. The vapour pressure of pure liquids A and B are 450 and 700 mm Hg respectively at 350 K .Find out the composition of the liquid mixture if total vapour pressure is 600 mm Hg .Also find the composition of the vapour phase.
101. Heptane and Octane form ideal solution .At 373 K, the vapour pressures of the two liquid components are 105.2kPa and 46.8kPa respectively. What will be the vapour pressure, in bar of a mixture of 25.0g heptane and 35.0g of octane?
102. Benzene and toluene (C<sub>7</sub>H<sub>8</sub>)from ideal solution over entire range of composition .The vapour pressure of pure benzene and toluene at 300K are 50.71mmHg and 32.06 mmHg respectively .Calculate mol fraction of benzene in vapour phase if 80 g of benzene is mixed with 100 g toluene.
103. 100 g of liquid A(molar mass 140g/mol) was dissolved in 1000g of liquid B(molar mass 180g/mol)the vapour pressure of pure B was found to be 500 torr.Calculate the vapour pressure of pure A and its vapour pressure in solution if total vapour pressure of a solution is recorded as 475 torr.
104. Vapour pressure of water at 293K is 17.535 mm Hg .calculate vapour pressure of water at 293 K when 25 g of glucose is dissolved in 450 g of water.
105. A solution is prepared by dissolving 10 g of non volatile solute in 200 g of water .It has a vapour pressure of 31.84 mm of Hg at 308 K.Calculate the molar mass of the solute.(Vapour pressure of pure water at 308K is 32 mm of Hg.)
106. At 25°C the saturated vapour pressure of water is 3.165 k Pa (23.75 mm Hg).Find the saturated vapour pressure of a 5% aqueous solution of urea at same temperature.(molar mass of urea =60.05 g/mol)
107. The vapour pressure of pure benzene at a certain temperature is 0.850 bar. A non volatile, non electrolyte solid weighing 0.5 g when added to 39.0 g benzene (molar mass 78g/mol).vapour pressure of the solution ,then is 0.845 bar. what is the molar mass of the solid substance?
108. Calculate the mass of a nonvolatile solute (molecular mass = 40) which should be dissolved in 114g octane to reduce its vapour pressure to 80%.
109. A solution containing 30g of non-volatile solute exactly in 90g water has a vapour pressure of 2.8 kPa at 298K. Further 18g of water is then added to solution, the new vapour pressure becomes 2.9kpa at 298 K.Calculate (a) Molecular mass of solute (b) Vapour pressure of water at 298K
110. An aqueous solution of 2% nonvolatile solute exerts a pressure of 1.004 bar at the boiling point of the solvent .what is the molecular mass of the solute? (Vapour pressure of pure water =1atm=1.013 bar)

## **CHEMISTRY HOLIDAY HOME WORK 2021**

111. Vapour pressure of pure water at 298 K is 23.8 mmHg .50 g of urea ( $\text{NH}_2\text{CONH}_2$ ) is dissolved in 850 g of water .calculate the vapour pressure of water for this solution and its relative lowering.
112. The vapour pressure of water is 12.3 kPa at 300 K. Calculate vapour pressure of 1 molal solution of a non-volatile solute in it.
113. 18 g glucose  $\text{C}_6\text{H}_{12}\text{O}_6$  is dissolved in 1 kg of water in a saucepan. At what temperature will solution boil?  $K_b$  for water is  $0.512 \text{ K kg mol}^{-1}$ .
114. Find the boiling point of a solution containing 0.520 g of glucose dissolved in 80.2 g of water.  $K_b$  for water is  $0.52 \text{ K kg mol}^{-1}$ .
115. A solution of glycerol( $\text{C}_3\text{H}_8\text{O}_3$ ) in water was prepared by dissolving some glycerol in 500 g of water. This solution has a boiling point of  $100.42^\circ\text{C}$ . What mass of glycerol was dissolved to make this solution? ( $K_b$  for water =  $0.512 \text{ K kg mol}^{-1}$ )
116. The boiling point of benzene is 353.23K.when 1.80 g of a non volatile solute was dissolved in 90 g of benzene, the boiling point is raised to 354.11K.Calculate the molar mass of the solute?  $K_b$  for benzene is  $2.53 \text{ K kg mol}^{-1}$ .
117. Boiling point of water at 750 mmHg is  $99.63^\circ\text{C}$ .How much sucrose is to added to 500 g water such that it boils at  $100^\circ \text{C}$ .
118. What would be the molar mass of a compound if 6.21 g of its dissolved in 24 g of chloroform to form a solution that has a boiling point of  $68.04^\circ\text{C}$  .The boiling point of pure chloroform is  $61.7^\circ\text{C}$  and  $K_b$  for chloroform is  $3.63^\circ\text{C} / \text{m}$ .
119. A solution of 3.800 g of sulphur in 100 g of  $\text{CS}_2$  (boiling point =  $46.30^\circ \text{C}$ ) boils at  $46.66^\circ \text{C}$ . What is the formula of sulphur molecule in this solution ? (Atomic mass of sulphur =  $32 \text{ g mol}^{-1}$  and  $K_b$  for  $\text{CS}_2$  =  $2.40 \text{ K kg mol}^{-1}$ )
120. A solution prepared by dissolving 1.25g of oil of wintergreen in 99.0g of benzene has a boiling point of  $80.31^\circ\text{C}$  .Determine the molar mass of this compound(B.P. of pure benzene =  $80.10^\circ\text{C}$  and  $K_b$  for benzene is  $2.53 \text{ K kg mol}^{-1}$ ..)
121. 1.00 g of non-electrolyte solute is dissolved in 50 g of benzene lowered the freezing point of benzene by 0.40K.The freezing point depression constant of benzene is  $5.12 \text{ K kg mol}^{-1}$  .Find the molar mass of the solute.
122. 45g of ethylene glycol ( $\text{C}_2\text{H}_6\text{O}_2$ ) is mixed with 600g of water .calculate(a)Freezing point depression (b)Freezing point of the solution.  $K_f$  for water =  $1.86 \text{ K kg mol}^{-1}$
123. Calculate the mass of ascorbic acid ( $\text{C}_6\text{H}_8\text{O}_6$ ) to be dissolved in 75g of acetic acid to lower its melting point by  $1.5^\circ\text{C}$ .  $K_f$  for acetic acid =  $3.9 \text{ K kg mol}^{-1}$
124. A solution containing 2.56 gm of sulphur in 100 g of carbon disulphide gave a freezing point lowering of 0.383 K .Calculate the molecular formulae of Sulphur [  $k_f$  of carbon disulphide =  $3.83 \text{ K kg/mol}$  Atomic mass of S =32 amu]
125. 15g of an unknown molecular substance was dissolved in 450g of water.The resulting solution freezes at  $-0.34^\circ\text{C}$ .What is the molar mass of the substance.
126. What mass of ethylene glycol(molar mass =62) must be added to 5.50kg of water to lower the freezing point from  $0^\circ\text{C}$  to  $-10^\circ\text{C}$ ? ( $K_f$  for water =  $1.86 \text{ K kg mol}^{-1}$ )
127. Two elements A & B form compounds having molecular formula  $\text{AB}_2$  &  $\text{AB}_4$ . When dissolved in 20g of  $\text{C}_6\text{H}_6$ , 1g  $\text{AB}_2$  lowers the freezing point by 2.3 & 1.0g  $\text{AB}_4$  lowers it by 1.3K.The molar depression constant for benzene is  $5.1 \text{ K kg mol}^{-1}$ . Calculate atomic mass A & B.
128. A 5% solution (by mass) of cane sugar in water has freezing point of 271.15 K. calculate the freezing point of 5% glucose in water if freezing point of water is 273.15 K.

### **CHEMISTRY HOLIDAY HOME WORK 2021**

129. A 4% solution (by mass) of sucrose in water has freezing point of 271 K. calculate the freezing point of 5% glucose in water if freezing point of water is 273.15 K.
130. Calculate the temperature at which a solution containing 54g of glucose in 250g of water will freeze.  $K_f$  for water is  $1.86 \text{ K kg mol}^{-1}$ .)
131. In a solution of urea, 3.0 g of its is dissolved in 100 ml of water. What will be the freezing point of this solution ? State the approximation made if any. [ $K_f$  for water =  $1.86 \text{ K kg mol}^{-1}$ , molar mass of Urea =  $60 \text{ g mol}^{-1}$ ]
132. Some ethylene glycol ( $\text{C}_2\text{H}_6\text{O}_2$ ) is added to your cars cooling system along with 5 kg of water.If the freezing point water-glycerol is  $-15^\circ\text{C}$  ,what is the boiling point of the solution? ( $K_f=1.86 \text{ K kg mol}^{-1}$  &  $K_b=0.52 \text{ K kg mol}^{-1}$  for water)
133.  $200 \text{ cm}^3$  of an aqueous solution of a protein contains 1.26 g of the protein .The osmotic pressure of such a solution at 300K is found to be  $2.57 \times 10^{-3} \text{ bar}$ .calculate the molar mass of the protein .
134. 10.0 gm of an organic substance when dissolved in 2 litres of water gave an osmotic pressure of 0.60 atm. at  $27^\circ\text{C}$  Calculate the molecular mass of substance.
135. Calculate the osmotic pressure in Pascals exerted by a solution prepared by dissolving 1.0 g of polymer of molar mass 185,000 in 450ml of water at  $37^\circ\text{C}$ .
136. At 300 k, 36g of glucose present per litre in its solution has an osmotic pressure of 4.98 bar. If the osmotic pressure of solution is 1.52 bars at the same temperature, what would be the concentration?
137. A 5 % solution of canesugar is isotonic with 0.877% of substance X.Find the molecular weight of X.
138. 100 mg of a protein is dissolved in enough water to make 10ml of a solution. If this solution has an osomotic pressure of 13.3 mm Hg at  $25^\circ\text{C}$ ,what is the molar mass of protein?( $R=0.0821 \text{ Latmmol}^{-1}\text{K}^{-1}$  and  $760 \text{ mmHg}=1 \text{ atm}$ )
139. A solution prepared by dissolving 8.95mg of a gene fragment in 35.0ml of water has an osmotic pressure of 0.335 torr at  $25^\circ\text{C}$  .Calculate its molar mass.

Class – 12<sup>th</sup>

Subject – English (Holiday Homework)

1) Choose any three unseen comprehension passages from the internet for practice and try to understand the information in depth.

2) Read paper newspaper or e-newspaper daily. Observe and cut the samples of following:-

(a) 3 Articles (How people are fighting with coronavirus)

(b) 3 Reports (on any 3 different topics)

(c) 5 classified advertisement (including matrimony, situation vacant, lost and found, missing pet or person)

3) Write a letter to editor of a national daily highlighting the black marketing of oxygen cylinders in your city and how it is adversely affecting the poor and unprivileged people in your city. You are Jayashree/Jay, a social worker.

4) Write an article on the topic: ‘How screen time causes insomnia in teens?’ 150-200 words.

5) You are Asma/Ashish, the head girl/boy of XYZ international school. Your school is soon going to publish the annual magazine next month. Write a notice for the notice board of your school inviting students to submit write-ups.

6) You are the librarian of LWA Senior Secondary School, Pune. You want to purchase a dictionary, a book on computers, a book for preparing for competitive examinations and a book for IIT entrance examination for use of students and staff of your school. Place an order to a bookshop, Mumbai, giving the details regarding the mode of dispatch and the mode of payment.

6) Learn and revise the syllabus for PERIODIC TEST 1

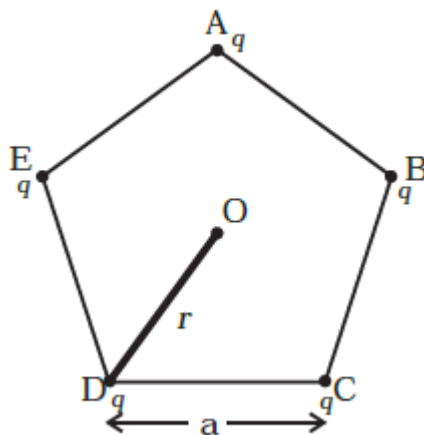


## HOLIDAY HOME WORK

CLASS XII

PHYSICS

Q.1:- Five charges,  $q$  each are placed at the corners of a regular pentagon of side ' $a$ ' (Fig. 1.12).

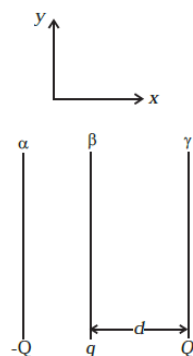


- (a)(i) What will be the electric field at O, the centre of the pentagon?  
 (ii) What will be the electric field at O if the charge from one of the corners (say A) is removed?  
 (iii) What will be the electric field at O if the charge  $q$  at A is replaced by  $-q$ ?  
 (b) How would your answer to (a) be affected if pentagon is replaced by n-sided regular polygon with charge  $q$  at each of its corners?

Q.2:- In 1959 Lyttleton and Bondi suggested that the expansion of the Universe could be explained if matter carried a net charge. Suppose that the Universe is made up of hydrogen atoms with a number density  $N$ , which is maintained a constant. Let the charge on the proton be:  $e_p = -(1 + y)e$  where  $e$  is the electronic charge.

- (a) Find the critical value of  $y$  such that expansion may start.  
 (b) Show that the velocity of expansion is proportional to the distance from the centre.

Q.3:- Two fixed, identical conducting plates ( $\alpha$  &  $\beta$ ), each of surface area  $S$  are charged to  $-Q$  and  $q$ , respectively, where  $Q > q > 0$ . A third identical plate ( $\gamma$ ), free to move is located on the other side of the plate with charge  $q$  at a distance  $d$  (Fig 1.13). The third plate is released and collides with the plate  $\beta$ . Assume the collision is elastic and the time of collision is sufficient to redistribute charge amongst  $\beta$  &  $\gamma$ .



- (a) Find the electric field acting on the plate  $\gamma$  before collision.  
 (b) Find the charges on  $\beta$  and  $\gamma$  after the collision.  
 (c) Find the velocity of the plate  $\gamma$  after the collision and at a distance  $d$  from the plate  $\beta$ .

Q.4:- Total charge  $-Q$  is uniformly spread along length of a ring of radius  $R$ . A small test charge  $+q$  of mass  $m$  is kept at the centre of the ring and is given a gentle push along the axis of the ring.

- (a) Show that the particle executes a simple harmonic oscillation.  
 (b) Obtain its time period.

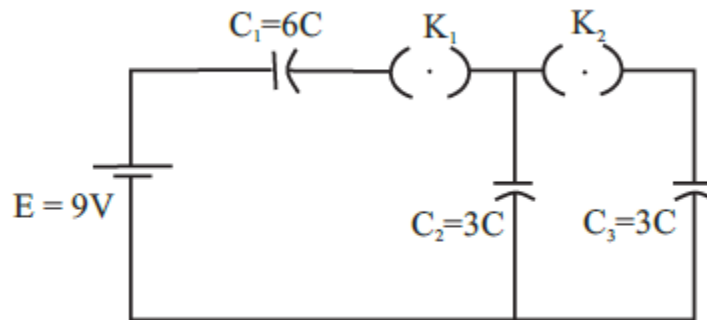
Q.5:- Two point charges of magnitude  $+q$  and  $-q$  are placed at  $(-d/2, 0, 0)$  and  $(d/2, 0, 0)$ , respectively. Find the equation of the equipotential surface where the potential is zero.

Q.6:- A parallel plate capacitor is filled by a dielectric whose relative permittivity varies with the applied voltage ( $U$ ) as  $\epsilon = \alpha U$  where  $\alpha = 2V^{-1}$ . A similar capacitor with no dielectric is charged to  $U_0 = 78$  V. It is then connected to the uncharged capacitor with the dielectric. Find the final voltage on the capacitors.

Q.7:- A capacitor is made of two circular plates of radius  $R$  each, separated by a distance  $d \ll R$ . The capacitor is connected to a constant voltage. A thin conducting disc of radius  $r \ll R$  and thickness  $t \ll r$  is placed at a centre of the bottom plate. Find the minimum voltage required to lift the disc if the mass of the disc is  $m$ .

Q.8:- In the circuit shown in Figure, initially  $K_1$  is closed and  $K_2$  is open. What are the charges on each capacitors?

Then  $K_1$  was opened and  $K_2$  was closed (order is important), What will be the charge on each capacitor now? [ $C = 1\mu F$ ]



Q.9:- Two charges  $q_1$  and  $q_2$  are placed at  $(0, 0, d)$  and  $(0, 0, -d)$  respectively. Find locus of points where the potential is zero.

Q.10:- Two charges  $-q$  each are separated by distance  $2d$ . A third charge  $+q$  is kept at mid point  $O$ . Find potential energy of  $+q$  as a function of small distance  $x$  from  $O$  due to  $-q$  charges. Sketch P.E.  $v/s$   $x$  and convince yourself that the charge at  $O$  is in an unstable equilibrium.

Q.11:- Solve explore problem 1.9, 1.11.

## **HOLIDAYS HOME WORK**

### **CLASS XII**

### **SUBJECT ECONOMICS**

**1 Write and solve all questions from last five year question papers ( given in back exercise of your reference book) from the following topics-**

- i) National income and aggregates**
- ii) Money & banking**
- iii) Govt. Budget**
- iv) Indian economy on the eve of Independence**
- v) Economic Development**

**2. Solve 50 mixed numerical.**

**3. Make a video nearly 10 mts on the topic of your choice from any book that is Macro or Indian Economy .**

**4. Solve and revised the whole syllabus covered in the class.**

**Joyful Learning**

**Enjoy Your Holidays**

Holiday Home work

12 geography

Make one mark questions and answers after reading text for the chapters done

What is data? Types of data

What are means of statistical data analysis

What is mean ,median ,mode? Solve 4sums of each

Make a map file n solve all the maps of syllabus

What is pollution? What are its causes? Types of pollution

**KENDRIYA VIDYALAYA NO.-2**

**HOLIDAYS HOME WORK OF CLASS XII**

**BOOK-A CONTEMPORARY WORLDS POLITICS**

**1. REVISE AND LEARN QUESTION ANSWER OF FIRST FIVE CHAPTERS AND WRITTEN PRACTICE OF PICTURE BASED QUESTIONS**

- The cold war era
- The end of bipolarity
- USA hegemony in world politics

**2. PROJECT WORK**

To choose topic from books and collect information picture and prepare model for project work according to teacher guidance

Decorate their files and model

**3. MAP WORK :- Map of India /World map**

- On the outline map of India locate states after independence and before independence (p.g.15 book B)
- States ruled by congress from 1957-1967(p.g.31 book B)
- On the outline map of world locate the states of Eastern and Western Blocs during cold war (p.g.5)
- Locate US command structure on world map(p.g.39)
- Locate ASEAN Members on world map(p.g.56)

**4. REVISE FULL SYLLABUS OF PERIODIC 1.**

Done



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ग्रीष्मावकाश गृहकार्य कक्षा बारहवीं सत्र 2021-22

1. निम्नलिखित में से किसी एक विषय पर परियोजना तैयार करें

1. आधुनिक युग की मीरा ( महादेवी वर्मा )

2. तुलसीदास जी

परियोजना तैयार करते समय निम्नलिखित बातों का ध्यान रखें:

अनुक्रमणिका , प्रमाण पत्र , प्रस्तावना और जो भी विषय चुने उनका जन्म, विवाह , रचनाएं व संदर्भ.

निम्नलिखित में से किन्हीं दो विषयों पर निबंध लेखन.

आधुनिक शिक्षण प्रणाली अर्थात ऑनलाइन शिक्षण प्रणाली लाभ व हानियां

भारतीय किसान की व्यथा

कोरोना : जब तक दवाई नहीं तब तक दिलाई नहीं

निम्नलिखित दोनों पत्र अनिवार्य हैं

आपके नगर अथवा कब कस्बे का एक नवयुवक सैनिक देश की रक्षा करते हुए वीरगति को प्राप्त हो गया 1 वर्ष बीत जाने पर उसकी बेसहारा मां को कोई सहायता नहीं मिली है उनकी दयनीय दशा बताते हुए तुरंत राहत के लिए रक्षा मंत्रालय नई दिल्ली के नाम पत्र लिखिए

नगरों में दिन-प्रतिदिन बढ़ते हुए प्रदूषण के प्रति चिंता प्रकट करते हुए दैनिक पत्र के संपादक को पत्र लिखिए

समाचार के 6 काकारों का प्रयोग करते हुए इन विषयों पर स्वयं का समाचार तैयार करें

दसवीं की वार्षिक परीक्षा रद्द , केंद्रीय विद्यालय का वार्षिक समारोह

हिंदी समाचार पत्र पढ़ना और एक रोज की महत्वपूर्ण समाचार की कटिंग स्क्रेपबुक पर लगानी

अभी तक करवाए गए सारे पाठ्यक्रम की दोहराई

Full text: 1130



Aa



History Holidays home work ... Class XII

1 frame one marks questions with answers from all 4 chapters of book 1

2 frame questions from all sources of all 4 chapters

3 Read all 4 chapters and write summary of each chapter

4 cbse project... Decide your topic and research on google then write

5 map work all maps from book 1...a) harappan centres

b) mahajanapadas

c) Ashokas rock pillars and edict pillars

d) places related to Buddha

# KENDRIYA VIDYALAYA NO.2 ,JALANDHAR CANTT

## HOLIDAYS HOMEWORK (2021-2022)

CLASS-12<sup>th</sup>

SUBJECT-MATHS

1. Construct problems related to your daily life where concept of addition, subtraction and multiplication of matrices can be used and problems can be solved by using this.
2. Show by means of an example that the product of two non-zero matrices can be a zero matrix.
3. Give an example of matrices A,B and C such that  $AB=AC$ , where A is a non-zero matrix, but  $B \neq C$ .
4. Prove by mathematical induction that  $(A^T)^n = (A^n)^T$ , where  $n \in \mathbb{N}$  for any square matrix A.

5. Find the matrix A satisfying the matrix equation:

$$\begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix} A \begin{bmatrix} -3 & 2 \\ 5 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

6. If A is a square matrix of order 3 and  $|A|=2$ , then evaluate  $A(\text{adj.}A)$ .

7. If  $|A| = \begin{vmatrix} 1 & 2 & 3 \\ 2 & -1 & 0 \\ 3 & 4 & 5 \end{vmatrix}$ , then write  $\begin{vmatrix} 1 & 6 & 3 \\ 4 & -6 & 0 \\ 3 & 12 & 5 \end{vmatrix}$  in terms of  $|A|$ .

8. Prove that the product of matrices

$$\begin{bmatrix} \cos^2 \theta & \cos \theta \sin \theta \\ \cos \theta \sin \theta & \sin^2 \theta \end{bmatrix} \text{ and } \begin{bmatrix} \cos^2 \phi & \cos \phi \sin \phi \\ \cos \phi \sin \phi & \sin^2 \phi \end{bmatrix} \text{ is a null matrix, when } \theta \text{ and } \phi \text{ differ by an odd multiple of } \pi/2.$$

9. Solve by matrix method  $2/x - 3/y + 3/z = 10$ ,  $1/x + 1/y + 1/z = 10$ ,  $3/x - 1/y + 2/z = 13$ .

10. Find the inverse by elementary operations:  $\begin{bmatrix} 2 & -1 & 3 \\ 1 & 3 & -1 \\ 3 & 2 & 1 \end{bmatrix}$



## **Holidays homework**

### **Subject: Accountancy**

#### **Class 12th**

- (1) **Chapter: Not-for-profit organisation:** Solve all questions given at the end of the chapter, 6 marks questions, 3 marks questions, 1 mark questions, MCQ, fill in the blanks, true/ false.
- (2) Solve all questions of not-for-profit organisation asked in CBSE during last five years.
- (3) Solve quizzes given on Diksha app

### **Subject: Business studies**

#### **Class 12th**

- (1) **Chapter: Nature and significance of management:** Answer all the questions of exercise given in the NCERT book , solve case studies, solve all questions of the same chapter asked in CBSE during last five years.
- (2) **Chapter: principles of management:** answer all the questions given at the end of the chapter, solve case studies, MCQ, True/ false, fill in the blanks, reasoning . Solve all questions of the same chapter asked in the CBSE during last five years.
- (3) Attempt quizzes on Diksha app

## XII CS Holiday Homework

1. Prepare a video ( screen recording while doing practical) explaining any 4 queries.
2. Objective type questions and solved questions of Simple Queries in SQL.
3. Practical screenshots of showing use each type command.