

Holiday Homework (English)
Class: XII (SPD)

Project:

Interview-Based Research:

Introduction

The project is a mandatory assignment for students. It contains **10 MARKS** out of which, **5 MARKS** will be awarded on timely submission of the **PROJECT FILE** and the remaining **5 MARKS** will be for the **VIVA** based on the file.

Objective:

This holiday homework aims at keeping the students connected with their syllabus of English and prepare them for the board examination. This also focuses on nurturing the creativity of the students and engage them constructively.

Topic:

1. "Child Labour in India, an Endless Misery"

Or

2. "The impacts of Superheroes on School Going Children"

Instructions:

- Frame a questionnaire based on the preliminary research/background of the topic you choose.
- Conduct interviews with the target group.
- Record the minutes of the interviews.
- Prepare a report in about 800-1000 words describing the topic/issue/ giving your own opinion/ suggestions/measures/ viewpoints/its impact on people/your learning experience.
- The project should be neat, legible, with an emphasis on quality of content, accuracy of information, creative expression, proper sequencing and should be relevant as per the assigned topic.
- Use coloured practical sheets.
- Plagiarism is strictly prohibited.

Content of the Project File:

The Project must include the following:

- Cover page, with title of project, school, and student details.
- Statement of purpose/objectives.
- Certificate of completion under the guidance of the teacher.
- Action plan for the completion of the assigned task.
- Materials such as questionnaire for interview, notes taken during the interviews and evidence of the interview conducted (photograph)
- The 1000 words Report.
- List of resources/bibliography.

Answer the following questions in about 150 words each:

Q.1: The story 'The Rattrap' explores the idea that given the right motivation the human beings possess the innate tendency to redeem themselves from their dishonest ways. Discuss.

Q.2: The world is nothing but a trap of worldly baits. Discuss the essential values required by a person to overcome the temptations of life.

Q.3: The peddler's instance speaks on a general level to the entire society, urging for a different outlook towards those maligned individuals who can be redeemed by compassion and understanding. The rehabilitation programmes at prisons follow the same value. In the light of the instance mentions above, how do you think society can help individuals, especially juvenile delinquents, from falling prey to petty crimes and bad habits?

Date of Submission: 05 July 2023.

CLASS – XII

Subject : Physics (V P)

SUMMER VACATION HOMEWORK (2023-24)

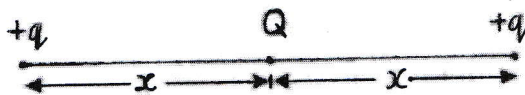
1. Solve the given assignment.
2. Solve NCERT book exercises of chapter 1 and Chapter 2.
3. Write and learn all formulae and key points of the completed chapters.
4. Explore the investigatory project and prepare a report file on it.

SUMMER VACATION ASSIGNMENT

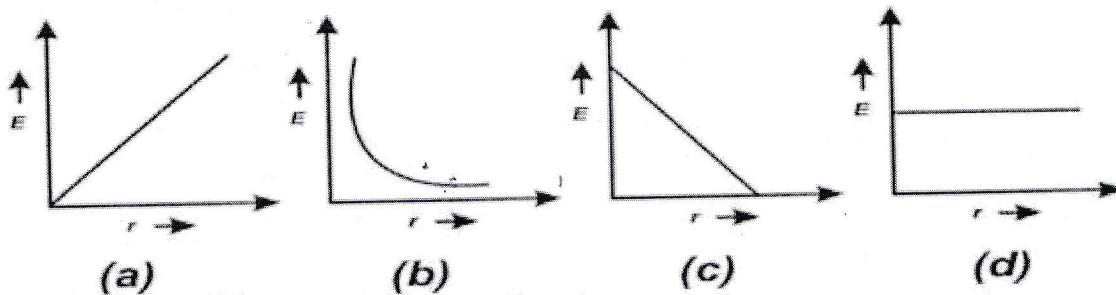
Class : XII

Subject : PHYSICS

- When a glass rod is rubbed with silk, it
(a) gains electrons from silk. (b) gives electrons to silk.
(c) gains protons from silk. (d) gives protons to silk.
- The force between two charges is 120N. If the distance between the two charges is doubled, the force will be
(a) 30N (b) 60N (c) 15N (d) 40N
- Two large metal sheets having surface charge density $+\sigma$ and $-\sigma$ are kept parallel to each other at a small separation distance d . The electric field at any point in the region between the plates is
(a) σ/ϵ_0 (b) $\sigma/2\epsilon_0$ (c) $2\sigma/\epsilon_0$ (d) $\sigma/4\epsilon_0$
- SI unit of permittivity of free space is
(a) Farad (b) Weber (c) $C^2N^{-1} m^{-2}$ (d) $C^2N m^{-2}$
- A charge Q is placed at the centre of the line joining two-point charges $+q$ and $+q$ as shown in the figure. The ratio of charges Q and q is



- (a) 4 (b) 1/4 (c) -4 (d) -1/4
- For a point charge, the graph between electric field versus distance is given by:



- When an electric dipole is placed in a uniform electric field, it experiences
a) Force as well as torque (b) Torque but no net force
c) Force but no torque (d) Neither any force nor any torque
- The angle between area of equipotential surface and electric field is-
(a) 0° (b) 90°
(c) Between 0° and 90° (d) Between 90° and 180°

These questions consist of two statements, each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses.

(a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.

(b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.

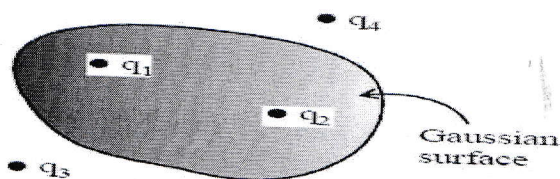
(c) If the Assertion is correct but Reason is incorrect.

(d) If both the Assertion and Reason are incorrect

9. Assertion When a charged body is brought near to an uncharged conducting body equal and opposite charge is induced on the nearer surface of the conducting body.

Reason Net electric field inside the conductor is zero.

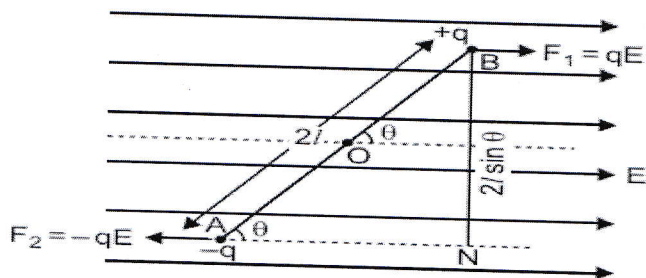
10. Assertion: Four-point charges q_1, q_2, q_3 and q_4 are as shown in figure. The flux over the shown Gaussian surface depends only on charges q_1 and q_2 .



Reason In coulombic attraction two bodies are oppositely charged.

CASE STUDY BASED MCQs

11. When electric dipole is placed in uniform electric field, its two charges experience equal and opposite forces, which cancel each other and hence net force on electric dipole in uniform electric field is zero. However these forces are not collinear, so they give rise to some torque on the dipole. Since net force on electric dipole in uniform electric field is zero, so no work is done in moving the electric dipole in uniform electric field. However, some work is done in rotating the dipole against the torque acting on it.



1. The dipole moment of a dipole in a uniform external field \vec{E} is P . Then the torque τ acting on the dipole is

(a) $\tau = P \times E$

(b) $\tau = P \cdot \vec{E}$

(c) $\tau = 2(P + \vec{E})$

(d) $\tau = (P + E)$

2. An electric dipole consists of two opposite charges, each of magnitude $1.0 \mu\text{C}$ separated by a distance of 2.0 cm . The dipole is placed in an external field of 10^5 NC^{-1} . The maximum torque on the dipole is

(a) $0.2 \times 10^{-3} \text{ Nm}$

(b) $1 \times 10^{-3} \text{ Nm}$

(c) $2 \times 10^{-3} \text{ Nm}$

(d) $4 \times 10^{-3} \text{ Nm}$

3. Torque on a dipole in uniform electric field is minimum when θ is equal to

(a) 0°

(b) 90°

(c) 180°

(d) Both (a) and (c)

4. When an electric dipole is held at an angle in a uniform electric field, the net force F and torque τ on the dipole are

(a) $F = 0, \tau = 0$

(b) $F \neq 0, \tau \neq 0$

(c) $F = 0, \tau \neq 0$

(d) $F \neq 0, \tau = 0$

5. An electric dipole of moment p is placed in an electric field of intensity E . The dipole acquires a position such that the axis of the dipole makes an angle with the direction of the field. Assuming that potential energy of the dipole to be zero when $\theta = 90^\circ$, the torque and the potential energy of the dipole will respectively be

(a) $pE \sin \theta, -pE \cos \theta$

(b) $pE \sin \theta, -2pE \cos \theta$

(c) $pE \sin \theta, 2pE \cos \theta$

(d) $pE \cos \theta, -pE \sin \theta$

MULTIPLE CHOICE QUESTIONS

- Two small spheres each carrying a charge q are placed r meter apart. If one of the spheres is taken around the other one in a circular path of radius r , the work done will be equal to
 - force between them $\times r$
 - force between them $\times 2\pi r$
 - force between them $/2\pi r$
 - zero
- The electric potential V at any point $O(x, y, z)$ all in meters) in space is given by $V = 4x^2$ volt. The electric field at the point $(1 \text{ m}, 0, 2 \text{ m})$ in volt/meter is
 - 8 along negative x -axis
 - 8 along positive x -axis
 - 16 along negative x -axis
 - 16 along positive z -axis
- If a unit positive charge is taken from one point to another over an equipotential surface, then
 - work is done on the charge.
 - work is done by the charge.
 - work done is constant.
 - No work is done
- A hollow metal sphere of radius 5 cm is charged so that the potential on its surface is 10 V. The potential at the centre of the sphere is
 - 0 V
 - 10 V
 - Same as at point 5 cm away from the surface
 - Same as at point 25 cm away from the surface
- The electrostatic force between the metal plates of an isolated parallel plate capacitor C having a charge Q and area A , is
 - proportional to the square root of the distance between the plates.
 - Linearly proportional to the distance between the plates.
 - Independent of the distance between the plates.
 - Inversely proportional to the distance between the plates.
- A capacitor is charged by a battery. The battery is removed and another identical uncharged capacitor is connected in parallel. The total electrostatic energy of resulting system
 - increases by a factor of 4.
 - Decreases by a factor of 2.
 - Remains the same.
 - Increases by a factor of 2
- Assertion (A): Sensitive instruments can protect from outside electrical influence by enclosing them in a hollow conductor.
Reason (R): Potential inside the cavity is zero.

Assertion (A): Electrostatic forces are conservative in nature.

Reason (R): Work done by electrostatic force is path dependent.

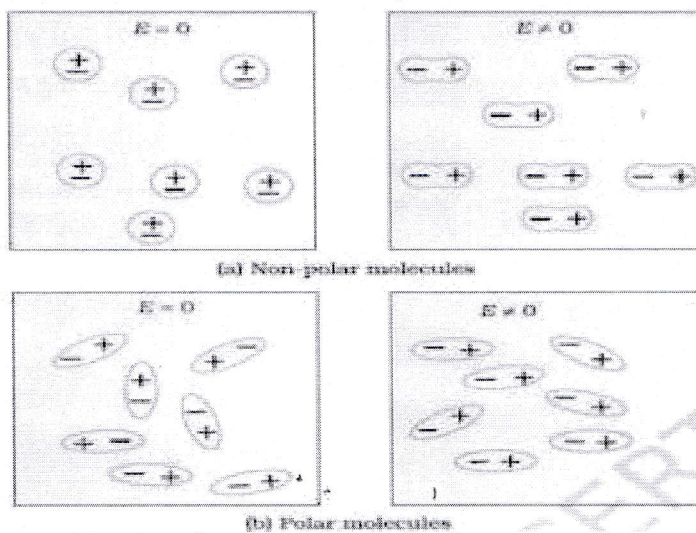
9.

CASE STUDY BASE

Attempt any 4 sub parts out of 5 of question.

Dielectric with polar molecules also develops a net dipole moment in an external field, but for a different reason. In the absence of any external field, the different permanent dipoles are oriented randomly due to thermal agitation; so, the total dipole moment is zero. When an external field is applied, the individual dipole moments tend to align with the field. When summed overall the molecules, there is then a net dipole moment in the direction of the external field, i.e., the dielectric is polarized. The extent of polarisation depends on the relative strength of two factors: the dipole potential energy in the external field tending to align the dipoles mutually opposite with the field and thermal energy tending to disrupt the alignment. There may be, in addition, the 'induced dipole moment' effect as for non-polar molecules, but generally the alignment effect is more important for polar molecules. Thus, in either case, whether polar or non-polar, a dielectric develops a net dipole moment in the presence of an external field. The dipole moment per unit volume is called polarization.

(i) The best definition of polarisation is



(a) Orientation of dipoles in random direction (b) Electric dipole moment per unit volume

(c) Orientation of dipole moments (d) Change in polarity of every dipole

(ii) Calculate the polarisation vector of the material which has 100 dipoles per unit volume in a volume of 2 units.

(a) 200 (b) 50 (c) 0.02 (d) 100

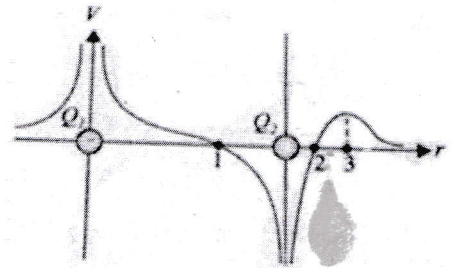
(iii) The total polarisation of a material is the

(a) Product of all types of polarisation (b) Sum of all types of polarisation
(c) Orientation directions of the dipoles (d) Total dipole moments in the material

- (iv) Dipoles are created when dielectric is placed in _____
- (a) Magnetic Field (b) Electric field
(c) Vacuum (d) Inert Environment
- (v) Identify which type of polarisation depends on temperature.
- (a) Electronic (b) Ionic (c) Orientational (d) Interfacial

CASE STUDY BASED QUESTION

10. The potential at any observation point P of a static electric field is defined as the work done by the external agent (or negative of work done by electrostatic field) in slowly bringing a unit positive point charge from infinity to the observation point. Figure shows the potential variation along the line of charges. Two-point charges Q_1 and Q_2 lie along a line at a distance from each other.



- (i) At which of the points 1, 2 and 3 is the electric field is zero?
- (a) 1 (b) 2 (c) 3 (d) Both (a) and (b)
- (ii) The signs of charges Q_1 and Q_2 respectively are
- (a) positive and negative
(b) negative and positive
(a) positive and positive
(b) negative and negative
- (iii) Which of the two charges Q_1 and Q_2 is greater in magnitude?
- (a) Q_1 (b) Q_2 (c) cannot determine (d) same
- (iv) Which of the following statement is not true?
- (a) Electrostatic force is a conservative force.
(b) Potential at a point is the work done per unit charge in bringing a charge from infinity to that point in an electric field.
(c) Electrostatic force is non-conservative.
(d) Potential is the ratio of work to charge.

ASSERTION REASONING QUESTIONS

These questions consist of two statements, each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses.

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(b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.

(c) If the Assertion is correct but Reason is incorrect.

(d) If both the Assertion and Reason are incorrect.

1. Assertion: If the distance between parallel plates of a capacitor is halved and dielectric constant is three times, then the capacitance becomes 6 times.

Reason : Capacity of the capacitor does not depend upon the nature of the material.

2. Assertion : Two concentric charged shells are given. The potential difference between the shells depends on charge of inner shell.

Reason : Potential due to charge of outer shell remains same at every point inside the sphere.

3. Assertion : Electric field inside a conductor is zero.

Reason: The potential at all the points inside a conductor is same.

4. Assertion : Work done in moving a charge between any two points in an electric field is independent of the path followed by the charge, between these points.

Reason: Electrostatic force is a non-conservative force.

5. Assertion : Polar molecules do not have permanent dipole moment.

Reason : In polar molecules, the centres of positive and negative charges coincide even when there is no external field.

6. Assertion: A capacitor can be given only a limited quantity of charge.

Reason: Charge stored by a capacitor depends on the shape and size of plates of capacitor and the surrounding medium.

7. Assertion: Electron move away from a region of lower potential to a region of higher potential.

Reason: An electron has a negative charge.

8. Assertion: A charged capacitor is disconnected from a battery. Now, if its plate are separated further, the potential energy will fall.

Reason Energy stored in a capacitor is equal to the work done in charging it.

9. Assertion: Due to two-point charges electric field and electric potential can't be zero at some point simultaneously

Reason Field is a vector quantity and potential a scalar quantity.

Birla Shishu Vihar, Pilani

Session – (2023-24)

Class XII

Subject – Chemistry (G4P)

Summer Vacation Holiday Homework

1. Solve NCERT Example, Intext & Exercise question of Chapter-2 (Solution) in your school notebook.
2. Solve the given Assignments in your class notebook.
3. Learn standard electrode potential series and Periodic table.
4. Revise Practical work
 - (a) Titration
 - (b) Salt analysis with chemical reaction from practical notebook of class XI.

Assignment-1 (Solution)

- Q1. Mole fraction of glycerine $C_3H_5(OH)_3$ in solution containing 36 g of water and 46 g of glycerine is
- (a) 0.46
 - (b) 0.40
 - (c) 0.20
 - (d) 0.36
- Q2. Out of molality (m), molarity (M), formality (F) and mole fraction (x), those which are independent of temperature are
- (a) M, m
 - (b) F, x
 - (c) m, x
 - (d) M, x
- Q3. Which of the following condition is not satisfied by an ideal solution?
- (a) $\Delta H_{\text{mixing}} = 0$
 - (b) $\Delta V_{\text{mixing}} = 0$
 - (c) Raoult's Law is obeyed
 - (d) Formation of an azeotropic mixture
- Q4. The boiling point of an azeotropic mixture of water and ethanol is less than that of water and ethanol. The mixture shows
- (a) no deviation from Raoult's Law.
 - (b) positive deviation from Raoult's Law.
 - (c) negative deviation from Raoult's Law.
 - (d) that the solution is unsaturated.
- Q5. Which has the lowest boiling point at 1 atm pressure?
- (a) 0.1 M KCl
 - (b) 0.1 M Urea
 - (c) 0.1 M $CaCl_2$
 - (d) 0.1 M $AlCl_3$
6. Osmotic pressure of a solution is 0.0821 atm at a temperature of 300 K. The concentration in moles/litre will be
- (a) 0.33
 - (b) 0.666
 - (c) 0.3×10^{-2}
 - (d) 3
7. People add sodium chloride to water while boiling eggs. This is to
- (a) decrease the boiling point.
 - (b) increase the boiling point.
 - (c) prevent the breaking of eggs.
 - (d) make eggs tasty.

8. The van't Hoff factor (i) accounts for
- degree of solubilisation of solute.
 - the extent of dissociation of solute.
 - the extent of dissolution of solute.
 - the degree of decomposition of solution.
9. Which relationship is not correct?

$$(a) \Delta T_b = \frac{K_b \cdot 1000 \cdot W_2}{M_2 \cdot W_1} \quad (b) M_2 = \frac{K_f \cdot 1000 \cdot W_1}{W_2 \cdot \Delta T_b}$$

$$(c) \pi = \frac{n_2}{V} \quad (d) \frac{p^\circ - p_s}{p^\circ} = \frac{W_2}{M_2} \times \frac{M_1}{W_1}$$

10. The molal elevation constant depends upon
- nature of solute.
 - nature of the solvent.
 - vapour pressure of the solution.
 - enthalpy change.

Assignment-2 (Solution)

Q1. The molality of pure water is

- 55.5
- 50.5
- 18
- 60.5

Q2. The number of moles of NaCl in 3 litres of 3M solution is

- 1
- 3
- 9
- 27

3. 4L of 0.02 M aqueous solution of NaCl was diluted by adding one litre of water. The molality of the resultant solution is _____

- 0.004
- 0.008
- 0.012
- 0.016

4. Low concentration of oxygen in the blood and tissues of people living at high altitude is due to

- low temperature
- low atmospheric pressure
- high atmospheric pressure
- both low temperature and high atmospheric pressure

5. Considering the formation, breaking and strength of hydrogen bond, predict which of the following mixtures will show a positive deviation from Raoult's law?

- Methanol and acetone.
- Chloroform and acetone.
- Nitric acid and water.
- Phenol and aniline.

6. Which of the following aqueous solutions should have the highest boiling point?

- 1.0 M NaOH
- 1.0 M Na₂SO₄
- 1.0 M NH₄NO₃
- 1.0 M KNO₃

7. In comparison to a 0.01 M solution of glucose, the depression in freezing point of a 0.01 M $MgCl_2$ solution is _____

- (a) the same
- (b) about twice
- (c) about three times
- (d) about six times

8. An unripe mango placed in a concentrated salt solution to prepare pickle, shrivels because _____.

- (a) it gains water due to osmosis.
- (b) it loses water due to reverse osmosis.
- (c) it gains water due to reverse osmosis.
- (d) it loses water due to osmosis.

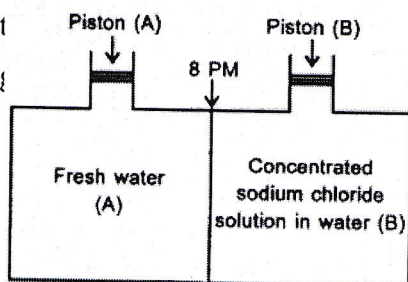
9. Which of the following statements is false?

- (a) Two different solutions of sucrose of same molality prepared in different solvents will have the same depression in freezing point.
- (b) The osmotic pressure of a solution is given by the equation $\pi = CRT$ (where C is the molarity of the solution).
- (c) Decreasing order of osmotic pressure for 0.01 M aqueous solutions of barium chloride, potassium chloride, acetic acid and sucrose is $BaCl_2 > KCl > CH_3COOH > \text{sucrose}$.
- (d) According to Raoult's law, the vapour pressure exerted by a volatile component of a solution is directly proportional to its mole fraction in the solution.

10. The value of Henry's constant K_H is _____

- (a) greater for gases with higher solubility.
- (b) greater for gases with lower solubility.
- (c) constant for all gases.
- (d) not related

11. Consider the figure



- (a) water will move from side (A) to side (B) if a pressure lower than osmotic pressure is applied on piston (B).
- (b) water will move from side (B) to side (A) if a pressure greater than osmotic pressure is applied on piston (B).
- (c) water will move from side (B) to side (A) if a pressure equal to osmotic pressure is applied on piston (B).
- (d) water will move from side (A) to side (B) if pressure equal to osmotic pressure is applied on piston (A).

12. We have three aqueous solutions of NaCl labelled as 'A', 'B' and 'C' with concentrations 0.1M, 0.01M and 0.001M, respectively. The value of van't Hoff factor for these solutions will be in the order _____.

- (a) $i_A < i_B < i_C$
- (b) $i_A > i_B > i_C$
- (c) $i_A = i_B = i_C$
- (d) $i_A < i_B > i_C$

13. A solution containing 10 g per dm³ of urea (molar mass 60 g mol⁻¹) is isotonic with 5% solution of non-volatile solute, MB of solute is
- 300 g mol⁻¹
 - 350 g mol⁻¹
 - 200 g mol⁻¹
 - 250 g mol⁻¹
14. Cone. H₂SO₄ is 98 % H₂SO₄ by mass has $d = 1.84 \text{ g cm}^{-3}$. Volume of acid required to make one litre of 0.1 M H₂SO₄ is
- 5.55 mL
 - 10 mL
 - 20 mL
 - 30 mL
15. What is mole fraction of solute in 1.00 m aqueous solution?
- 0.0354
 - 0.0177
 - 0.177
 - 1.770
16. When 1 mole of benzene is mixed with 1 mole of toluene (vapour pressure of benzene –12.8 kPa, Toluene = 3.85 kPa)
- The vapour will contain equal amount of benzene and toluene.
 - Not enough information is given for prediction.
 - The vapour will contain a higher percentage of benzene.
 - The vapour will contain higher percentage of toluene.
17. At 100°C, the vapour pressure of a solution of 6.5 g of solute in 100 g of water is 732 mm. If K_b is 0.52 K/m, the boiling point of solution will be [HOTS]
- 102°C
 - 103°C
 - 101 °C
 - 100°C
18. Which of the following is incorrect for an ideal solution?
- $\Delta H_{\text{mix}} = 0$
 - $\Delta V_{\text{mix}} = 0$
 - $\Delta P = P_{\text{obs}} - P_{\text{calculated}} = 0$
 - $\Delta G_{\text{mix}} = 0$
19. If molality of dilute solution is doubled, the value of molal depression constant (K_f) will be
- halved
 - tripled
 - unchanged
 - doubled
20. The temperature at which 10% aqueous solution of (W/V) of glucose will show the osmotic pressure of 16.4 atm is ($R = 0.082 \text{ L atm K}^{-1} \text{ mol}^{-1}$)
- 360°C
 - 180 K
 - 300 K
 - 360 K

Assignment-3 (Solution)

1. What are azeotropes? Give an example.
 2. Define Ebullioscopy constant or molal elevation constant.
 3. Calculate the freezing point of a solution containing 60 g of glucose (molar mass 180 g mol⁻¹) in 250 g of water. [K_f for water = 1.86 K kg mol⁻¹].
 4. What is anti-freeze?
 5. What is 'semipermeable' membrane?
 6. Define osmotic pressure.
 7. Measurement of which colligative property is preferred for determination of molar mass.
 8. A person suffering from high blood pressure should take less common salt, why?
 9. What is meant by 'reverse osmosis'?
 10. Give an example of a material used for making semipermeable membrane for carrying out reverse osmosis.
 11. A 10% solution of urea is isotonic with 20% solution of V at same temperature. Calculate molecular weight of x.
 12. Why do doctors advise gargles by saline water in case of sore throat?
 13. When outer shell of two eggs is removed, one of the eggs is placed in pure water and other is placed in saturated solution of NaCl, what will be observed and why?
 14. Of 0.1 molal solutions of glucose and potassium chloride respectively, which one will have a higher boiling point?
 15. What is expected value of van't Hoff factor for $K_3[Fe(CN)_6]$.
 16. What would be the value of van't Hoff factor for a dilute solution of K_2SO_4 in water?
 17. In the determination of molar mass of $A^+ B^-$ using a colligative property, what may be the value of van't Hoff factor if the solute is 50% dissociated?
 18. What possible value of 'i' will it have if solute molecules undergo association in solution?
 19. Predict whether van't Hoff factor,
 - (i) is less than one or greater than one in the following:
 - (ii) CH_3COOH dissolved in water.
 - (iii) CH_3COOH dissolved in benzene.
 20. Why is osmotic pressure of 1 M KCl is higher than that of 1 M urea solution?
-

Handwritten initials or mark.

Summer Vacation Homework
Class XII, Mathematics (BS)

1. Prepare Concepts notes of the following chapters:
 - a. Relations and Functions
 - b. Inverse Trigonometric Functions
 - c. Matrices

2. Activity:

To verify that the relation R in a set L of all lines in plane defined as $\{(l_1, l_2): l_1 \perp l_2 \text{ and } l_1, l_2 \in L\}$ is symmetric but neither reflexive nor transitive.

3. Solve the given Assignments.

Assignment
Mathematics, Class XII
Relations and Functions

1. Let $f: R \rightarrow R$ be defined by $f(x) = x^2 + 1$. Find the pre image of (i) 17 (ii) -3 .
2. Let $A = \{a, b, c\}$ and R is a relation in A given by $R = \{(a, a), (a, b), (a, c), (b, a), (c, c)\}$. Is R symmetric? Give reasons.
3. Let R be a relation in the set of natural numbers N , defined by $R = \{(a, b) \in N \times N : a < b\}$. Is relation R reflexive? Give reasons.
4. Show that the relation R in the set $\{1, 2, 3\}$, given by $R = \{(1, 1), (2, 2), (3, 3), (1, 2), (2, 3)\}$ is reflexive but not symmetric.
5. For the set $A = \{1, 2, 3\}$, define a relation R in the set A as follows :
 $R = \{(1, 1), (2, 2), (3, 3), (1, 3)\}$. Write the ordered pairs to be added to R to make it the smallest equivalence relation.
6. Prove that $f: R \rightarrow R$ given by $f(x) = x^3 + 1$ is one-one function.
7. Let $f: R \rightarrow R$ be defined by $f(x) = x^2$. Is f one-to-one?
8. Is the function $f: N \rightarrow N$, defined by $f(x) = 4 + 3x$ one-one? Check with reasons.
9. Given function $f: Z \rightarrow Z$, defined as $f(x) = 4x$. Is function onto? Give reasons.
10. Let the function $f: R \rightarrow R$ to be defined by $f(x) = \cos x \forall x \in R$. Show that f is neither one-one nor onto.
11. Let a relation R_1 on the set R of real numbers be defined as $(a, b) \in R_1 \Leftrightarrow 1 + ab > 0$ for all $a, b \in R$. Show that R_1 is reflexive and symmetric but not transitive.
12. Let N be the set of all natural numbers and let R be a relation on $N \times N$, defined by $(a, b)R(c, d) \Leftrightarrow ad = bc$ for all $(a, b), (c, d) \in N \times N$. Show that R is an equivalence relation on $N \times N$.
13. Show that the number of equivalence relations in the set $\{1, 2, 3\}$ containing $(1, 2)$ and $(2, 1)$ is two.
14. Show that the relation $R: N \rightarrow N$ defined by $(a, b)R(c, d) \Leftrightarrow a + d = b + c$ for all $(a, b), (c, d) \in N \times N$ is an equivalence relation.
15. Let relation R , on the set of natural numbers N is defined as follows :
 $R = \{(x, y) \in N \times N : 2x + y = 41\}$. Find the domain and range of the relation R . Also verify whether R is reflexive, symmetric and transitive.
16. Consider function $f: \left[0, \frac{\pi}{2}\right] \rightarrow R$ given by $f(x) = \sin x$ and $g: \left[0, \frac{\pi}{2}\right] \rightarrow R$ given by $g(x) = \cos x$. Show that ' f ' and ' g ' are one-one but ' $f + g$ ' is not one-one.
17. Let $A = \{x \in R : -1 \leq x \leq 1\} = B$. Show that $f: A \rightarrow B$ given by $f(x) = x|x|$ is a bijection.
18. Show that the function $f: R - \{0\} \rightarrow R - \{0\}$ defined by $f(x) = \frac{1}{x}$ is one-one onto. Is the result true if the domain $R - \{0\}$ is replaced by N ?
19. Show that the function $f: R \rightarrow R$ defined by $f(x) = \frac{x}{x^2+1}, \forall x \in R$ is neither one-one nor onto.
20. Let $f: W \rightarrow W$ be defined as
$$f(x) = \begin{cases} x + 1, & \text{if } x \text{ is even} \\ x - 1, & \text{if } x \text{ is odd} \end{cases}$$
Where W is a set of whole numbers. Show that f is a bijection.
21. Show that the function $f: R - \{b\} \rightarrow R - \{1\}$ given by $f(x) = \frac{x-a}{x-b}$ is a bijection, where $a \neq b$.

Birla Shishu Vihar, Pilani
Summer break Holiday Home Work
Session-(2023-24)
Class XII - Biology (HJ)

Q1: Draw well labelled diagrams of chapter 2 and 3 in your notebook.

Q2: Plan and prepare a rough draft of investigatory project for practical assessment.

Q3: Make notes of the chapter taught to you.

Q4: Do the given assignment in your notebook.

Q5: Prepare a ppt. on the following topic.

- a) Spermatogenesis
- b) Oogenesis
- c) Reproductive health
- d) Gametogenesis in plants.

CLASS – XII
SUBJECT – COMPUTER SCIENCE (083) (AN)
CHAPTER – 3 [FUNCTIONS]
ASSIGNMENT

Q 1. Rewrite the following code after removing error. Underline each correction done by you.

```
def SI(p,t=2,r):
    return (p*r*t)/100

def chksum :
    x = input ( "Enter a number")
    if (x % 2 = 0) :
        for i range ( 2 * x ):
            print (i)
        loop else:
            print ( "#")

def Tot(Number) #Method to find Total
    Sum=0
    for C in Range (1, Number+1):
        Sum+=C
    RETURN Sum
print Tot[3] #Function Calls
print Tot[6]
```

```
DEF execmain( ):
    x = input ( "Enter a number")
    If (abs(x)=x) :
        Print ("You Entered a
        positive number ..")
    else:
        x=-1
        print("Number made
        positive:"x)
    execmain()
```

```
def checkval:
    x = raw_input("Enter a number")
    if x % 2 = 0 :
        print x,"is even"
    else if x<0 :
        print x,"should be positive"
    else ;
        print x,"is odd"
```

Q 2. Define functions. Why there is a need to use a function in a program.

Q 3. Differentiate between the following with the help of an example:

- (a) Actual and Formal Parameters
- (b) Local and Global Variables
- (c) Positional and Default arguments

Q 4. Write the type of tokens from the following :

if roll_no Else int

Q 5. Name the Python Library modules which need to be imported to invoke the following functions:

(i) sin() (ii) randint () (iii) uniform() (iv) ceil()

Q 6. Find and write the output of the following:

```
a=10
def call():
    global a
    a=15
    b=20
    print(a)
call()
```

Q 7. How can you access a global variable inside the function, if function has a variable with same name?

Q 8. Write the output of the following code:

(a)

```
x = 50
def func(x):
    print('x is', x)
    x = 2
    print('Changed local x to', x)
func(x)
print('x is now', x)
```

(b)

```
x = 50
def func():
    global x
    print('x is', x)
    x = 2
    print('Changed global x to', x)
func()
print('Value of x is', x)
```

(c)

```
def func(a, b=5, c=10):
    print('a is', a, 'and b is', b, 'and c is', c)
func(3, 7)
func(25, c = 24)
func(c = 50, a = 100)
```

(d)

```
a=10
b=20
```

```
def change():
    global b
    a=45
    b=56
change()
print(a)
print(b)
```

Q 9. Find the output of the following:

```
def Change (P , Q=30) :
    P=P+Q
    Q=P-Q
    print ( P, "#", Q)
    return (P)

R=150
S=100
R=Change (R, S)
print (R, "#", S)
S=Change (S)
```

Q 10. Find the output of the following:

```
def Position(C1, C2, C3):
    C1[0] = C1[0] + 2
    C2 = C2 + 1
    C3 = "python"

P1 = [20]
P2 = 4
P3 = "school"

Position(P1, P2, P3);
print(P1, ", ", P2, ", ", P3)
```

WORKSHEET – FUNCTIONS

1	Function name must be followed by _____
Ans	_____
2	_____ keyword is used to define a function
Ans	_____
3	Function will perform its action only when it is _____
Ans	_____
4	<p>Write statement to call the function.</p> <pre>def Add(): X = 10 + 20 print(X) _____ #statement to call the above function</pre>
Ans	_____
5	<p>Write statement to call the function.</p> <pre>def Add(X,Y): Z = X+Y print(Z) _____ #statement to call the above function</pre>
Ans	_____
6	<p>Write statement to call the function.</p> <pre>def Add(X,Y): Z = X+Y return Z _____ #statement to call the above function print("Total =",C)</pre>
Ans	_____
7	<p>Which Line Number Code will never execute?</p> <pre>def Check(num): if num%2==0: print("Hello") return True print("Bye") else: return False C = Check(20) print(C)</pre> <p style="margin-left: 100px;">#Line 1 #Line 2 #Line 3 #Line 4 #Line 5 #Line 6 #Line 7</p>
Ans	_____
8	<p>What will be the output of following code?</p> <pre>def Cube(n): print(n*n*n) Cube(n) # n is 10 here print(Cube(n))</pre>
Ans	_____

9 What are the different types of actual arguments in function? Give example of any one of them.

Ans

10 **What will be the output of following code:**

```
def Alter(x, y = 10, z=20):  
    sum=x+y+z  
    print(sum)  
  
Alter(10,20,30)  
Alter(20,30)  
Alter(100)
```

Ans

11 Ravi a python programmer is working on a project, for some requirement, he has to define a function with name CalculateInterest(), he defined it as:

```
def CalculateInterest(Principal,Rate=.06,Time):  
    # code
```

But this code is not working, Can you help Ravi to identify the error in the above function and what is the solution.

Ans

12 **Call the given function using KEYWORD ARGUMENT with values 100 and 200**

```
def Swap(num1,num2):  
    num1,num2=num2,num1  
    print(num1,num2)
```

Swap(_____, _____)

Ans

13 **Which line number of code(s) will not work and why?**

```
def Interest(P,R,T=7):  
    I = (P*R*T)/100  
    print(I)  
  
Interest(20000,.08,15)           #Line 1  
Interest(T=10,20000,.075)       #Line 2  
Interest(50000,.07)             #Line 3  
Interest(P=10000,R=.06,Time=8)  #Line 4  
Interest(80000,T=10)            #Line 5
```

Ans

14 **What will be the output of following code?**

```
def Calculate(A,B,C):  
    return A*2, B*2, C*2  
  
val = Calculate(10,12,14)  
print(type(val))  
print(val)
```

Ans

15 **What is Local Variable and Global Variables? Illustrate with example**

Ans

o
c
o

16 **What will be the output of following code?**

```
def check():  
    num=50  
    print(num)  
  
num=100  
print(num)  
check()  
print(num)
```

Ans

17	<p>What will be the output of following code?</p> <pre>def check(): global num num=1000 print(num) num=100 print(num) check() print(num)</pre>
Ans	
18	<p>What will be the output of following code?</p> <pre>print("Welcome!") print("Iam ",__name__) # __ is double underscore</pre>
Ans	
19	Function can alter only Mutable data types? (True/False)
Ans	
20	A Function can call another function or itself? (True/False)
Ans	
21	<p>What will be the output of following code?</p> <pre>def display(s): l = len(s) m="" for i in range(0,l): if s[i].isupper(): m=m+s[i].lower() elif s[i].isalpha(): m=m+s[i].upper() elif s[i].isdigit(): m=m+"\$" else: m=m+"*" print(m) display("EXAM20@cbse.com")</pre>
Ans	
22	<p>What will be the output of following code?</p> <pre>def Alter(M,N=50): M = M + N N = M - N print(M,"@",N) return M</pre>

```
A=200
B=100
A = Alter(A,B)
print(A,"#",B)
B = Alter(B)
print(A,'@',B)
```

Ans

23 **What will be the output of following code?**

```
def Total(Number=10):
    Sum=0
    for C in range(1,Number+1):
        if C%2==0:
            continue
        Sum+=C
    return Sum

print(Total(4))
print(Total(7))
print(Total())
```

Ans

24 **What will be the output of following code?**

```
X = 100
def Change(P=10, Q=25):
    global X
    if P%6==0:
        X+=100
    else:
        X+=50
    Sum=P+Q+X
    print(P,'#',Q,'$',Sum)

Change()
Change(18,50)
Change(30,100)
```

Ans

25 **What will be the output of following code?**

```
a=100
def show():
    global a
    a=200
```

```
def invoke():
    global a
    a=500
show()
invoke()
print(a)
```

Ans

26 **What will be the output of following code?**

```
def drawline(char='$',time=5):
    print(char*time)
drawline()
drawline('@',10)
drawline(65)
drawline(chr(65))
```

Ans

27 **What will be the output of following code?**

```
def Updater(A,B=5):
    A = A // B
    B = A % B
    print(A,'$',B)
    return A + B
A=100
B=30
A = Updater(A,B)
print(A,'#',B)
B = Updater(B)
print(A,'#',B)
A = Updater(A)
print(A,'$',B)
```

Ans

28 **What will be the output of following code?**

```
def Fun1(num1):
    num1*=2
    num1 = Fun2(num1)
    return num1
```

```
def Fun2(num1):
    num1 = num1 // 2
    return num1

n = 120
n = Fun1(n)
print(n)
```

Ans

29 **What will be the output of following code?**

```
X = 50

def Alpha(num1):
    global X
    num1 += X
    X += 20
    num1 = Beta(num1)
    return num1

def Beta(num1):
    global X
    num1 += X
    X += 10
    num1 = Gamma(num1)
    return num1

def Gamma(num1):
    X = 200
    num1 += X
    return num1

num = 100
num = Alpha(num)
print(num,X)
```

Ans

30 **What will be the output of following code?**

```
def Fun1(mylist):
    for i in range(len(mylist)):
        if mylist[i]%2==0:
            mylist[i]/=2
        else:
            mylist[i]*=2

list1 =[21,20,6,7,9,18,100,50,13]
Fun1(list1)
print(list1)
```

Ans

Birla Shishu Vihar , pilani
Holiday homework
Music - Class 12th (CS)

- 1) Make a file any of the following topic (mm 10 file pages)
 - 1) classical singers
 - 2) Classical Instrumentalist
 - 3) Classical instruments
 - 4) Classical singing forms
 - 5) Sufi music
 - 6) Music as medicationor any other topic related to classical music
- 2) prepare some Bollywood songs/ album songs (new /old) or bhajans based on your syllabus raagas as Bhairav , Bageshwari , Malkauns and also make a list of 5 songs (bollywood) per raag which you have heard very commonly

CLASS-XII Physical Edu. (BSS) *BSV*

* Prepare Practical Manual

***Record File shall include: ➤ Practical-1: Fitness tests administration. (SAI Khelo India Test) ➤ Practical-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease. ➤ Practical-3: Anyone one IOA recognized Sport/Game of choice. Labelled diagram of Field & Equipment. Also, mention its Rules, Terminologies & Skills.