

HOLIDAY HOMEWORK

I. Project Work :

GRADE XII

ENGLISH

Create a project on the Topic :

Language and Identity: The Power of Linguistic Resistance in History and Literature" with reference to the chapter - The Last Lesson.

This project will allow students to critically engage with the role of language in shaping personal and societal identity, making connections to historical struggles and literary depictions.

Guidelines:

The students will explore the significance of language in shaping identity and resistance, considering historical and literary examples. The following aspects must be covered:

1. Importance of Language:
 - How language preserves culture and identity.
 - The role of language in resistance and empowerment.
2. Understanding Linguistic Chauvinism:
 - Define linguistic chauvinism and examine its impact.
 - Discuss modern examples of linguistic discrimination.
3. Historical Cases of Language Suppression:
 - Instances where conquered people lost their language or had another imposed.
 - The consequences of forced linguistic assimilation.
4. Challenges Faced by Linguistic Minorities:
 - Social, economic, and cultural difficulties due to language suppression.
 - Struggles in education and opportunities.
5. Strategies to Preserve Minority Languages:
 - Role of education, literature, and cultural movements.
 - Policies supporting linguistic diversity.
6. Linguistic Human Rights:
 - The significance of language rights in maintaining freedom and heritage.
 - International efforts to protect endangered languages.
7. Examples of Linguistic Chauvinism in English Literature:
 - Analyse literary works that depict linguistic dominance and suppression.

Project Submission Requirements:

1. Handwritten File
 - Minimum six pages explaining the concepts with examples and analysis.
 - Include personal reflections on linguistic identity and preservation.
2. Create a PowerPoint Presentation (10-12 slides) using relevant images, historical references, and literary excerpts.

II. What are Literary devices? Explain the following literary devices with examples:

1. Metaphor
2. Simile
3. Oxymoron
4. Enjambment
5. Transferred Epithet
6. Imagery
7. Synecdoche
8. Alliteration
9. Irony
10. Repetition

English –Literature

Make a list of Elizabethan writers. Who is the most prominent writer of that age.

1. What do you know about Banquet Scene?
2. Whose ghost appears in that scene?
3. What was its effect on Macbeth? Write in 300 words.

PHYSICS

GENERAL INSTRUCTIONS:

Part – A (Numerical Based Questions)

Q.1

A small water droplet of mass 1 g carries a charge of $8 \times 10^{-19}\text{ C}$. Calculate the electric field strength required to suspend the droplet against gravity.

Q.2

In a parallel plate capacitor with air between the plates, each plate has an area of $6 \times 10^{-3}\text{ m}^2$ and the separation between the plates is 3 mm. Calculate:

1. The capacitance of the capacitor
2. The charge on each plate when connected to a 100 V supply

(Given: $C \approx 18\text{ pF}$, $q = 1.8 \times 10^{-9}\text{ C}$)

Q.3

An electric dipole held at an angle of 30° with a uniform electric field of 10^4 NC^{-1} experiences a torque of $9 \times 10^{-26}\text{ Nm}$. Calculate the dipole moment of the dipole.

Q.4

State Coulomb's law in electrostatics. Define one coulomb of charge. Explain how the electrostatic force between two charges depends upon:

- the magnitude of charges,
- distance between them,
- nature of the medium.

Use $F = \frac{1}{4\pi\epsilon_0} \frac{q_1 q_2}{r^2}$ in your explanation.

.Q.5

State and prove Gauss's theorem in electrostatics. Using Gauss's law, derive an expression for the electric field intensity due to a uniformly charged spherical shell.

Q.6

Define electric flux and electric field intensity. Obtain an expression for the electric field due to an infinitely long straight charged conductor using Gauss's theorem.

Q.7

Explain the principle and construction of a parallel plate capacitor. Derive an expression for its capacitance when air is used as dielectric medium between the plates.

Q.8

Define dielectric constant. Explain the effect of introducing a dielectric slab between the plates of a capacitor when:

1. the capacitor remains connected to the battery,
2. the capacitor is disconnected from the battery.

Q.9

Define electric potential and potential difference. Derive the relation between electric field intensity and electric potential.

Q.10

Derive an expression for the torque acting on an electric dipole placed in a uniform electric field. Hence define dipole moment and discuss the stable and unstable equilibrium positions of a dipole.

Q.11

Explain the working principle of a potentiometer. How is a potentiometer preferred over a voltmeter for comparing emf of two cells?

Q.12

State Kirchhoff's laws for electrical networks. Using these laws, derive the condition for balance in a Wheatstone bridge. Mention one practical application of Wheatstone bridge.

Q.13

Define drift velocity of electrons in a conductor. Derive the relation:

$$I = nevA$$

where the symbols have their usual meanings.

Q.14

State Ohm's law. Explain the factors affecting resistance of a conductor. Define resistivity and distinguish between resistance and resistivity.

Q.15

Explain the colour code system used for carbon resistors. How is the tolerance of a resistor determined using colour coding?

Instructions

- Attempt all questions neatly.
- Draw labelled diagrams wherever required.
- Show all necessary steps in derivations.
- Write answers in a systematic and logical manner.

MATHEMATICS

Q.1- Define function and write formula of number of function.

Q.2- Write principal value of all inverse trigonometric function.

Q.3- Define all types of matrix.

Q.4- Define symmetric, and anti symmetries, transpose of matrix.

Q.5- Prove every square matrix can be expressed as sum of symmetric matrix and anti-symmetric matrix with example.

Q.6- Define, cost, average cost, revenue function, marginal cost, marginal revenue, total fixed variable.

Q.7- Solve using matrix method –

$$\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 9, \frac{2}{x} + \frac{5}{y} + \frac{7}{z} = 52, \frac{2}{x} + \frac{1}{y} - \frac{1}{z} = 0$$

Q.8- Prove-

$$\begin{vmatrix} (b+c)^2 & a^2 & a^2 \\ b^2 & (a+c)^2 & b^2 \\ c^2 & c^2 & (a+b)^2 \end{vmatrix} = 2abc(a+b+c)^3$$

Q.9- Using properties of determinant . Find value of –

$$\begin{vmatrix} 1 & 1 & 1 \\ nc_1 & n+2c_2 & n+4c_2 \\ nc_2 & n+2c_2 & n+4c_2 \end{vmatrix}$$

Q.10- Find inverse by elementary row operation –

$$\begin{vmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{vmatrix}$$

CHEMISTRY

GENERAL INSTRUCTIONS:

PART – A SOLUTION

Q-1: Which of the following statements is correct for the Van't Hoff factor?

- (a) In the case of dissociation, it is less than one (b) In the case of association, it is more than one
(c) It is never greater than one (d) In the case of association, it is less than one

Q-2: Which pair will not show positive deviation from Raoult's law?

- (a) Methanol and chloroform (b) Methanol and cyclopentane
(c) Ethanol and cyclohexane (d) Toluene and benzene

Q-3: Define Raoult's law for a binary solution containing a non-volatile solute.

Q-4: Determine the boiling point of a solution made by combining 15.00 g of NaCl with 250 g of water.

($K_b = 0.512 \text{ K kg/mol}$ and NaCl molar mass = 58.44 g/mol)

Q-5: Manali is where Neha's grandmother lives. There is a lot of snow in front of the house in the winter. She requested that Neha clear the snow. To clear the snow, Sneha added NaCl.

- a) Why does Sneha do so ?
b) What is the value in Sneha's thinking ?
c) Define molal freezing point depression constant, K_f .

ELECTROCHEMISTRY

Q-6: Why is a salt bridge required in a galvanic cell?

Q-7: Why does a solution's conductivity decrease with dilution?

Q-8: Predict the product of electrolysis of an aqueous CuCl_2 solution with an inert electrode.

Q-9: For the strong electrolytes NaOH, NaCl and BaCl_2 , the molar ionic conductivities at infinite dilution are 248.1×10^{-4} , 126.5×10^{-4} , and $280 \times 10^{-4} \text{ mho cm}^2 \text{mol}^{-1}$ respectively. Calculate the molar conductivity of Ba(OH)_2 at infinite dilution.

Q-10. What are fuel cells? Why they are very demanding these days?

AMINES

Q-11. Account for the following.

- (a) Ethylamine is soluble in water, whereas aniline is not.
(b) Aniline does not undergo Friedel-Crafts reaction.

Q12. Write short notes on the following.

(i) Carbylamine reaction (ii) Diazotisation (iii) Hofmann's bromamide reaction (iv) Coupling reaction.

Q-13 Write the necessary tests to distinguish between different types of amines.

Q-14 An aromatic compound „A“ on treatment with aqueous ammonia and heating forms compound „B“, which on heating with Br_2 and KOH forms a compound „C“ of molecular formula $\text{C}_6\text{H}_7\text{N}$. Write the structures and IUPAC names of compounds A, B and C.

BIOLOGY

Q.1

Explain double fertilisation in angiosperms. Trace the post-fertilisation changes leading to the formation of endosperm, embryo, seed, and fruit in a typical dicotyledonous plant. Add suitable diagrams wherever necessary.

Q.2

Describe the structure of a mature anatropous ovule with the help of a labelled diagram. Explain the process of megasporogenesis and development of the female gametophyte in angiosperms.

Q.3

Describe the asexual and sexual phases in the life cycle of Plasmodium responsible for causing Malaria in humans. Explain the role of female Anopheles mosquito in the transmission of the disease.

Q.4

Draw a well-labelled diagram showing the replication cycle of Human Immunodeficiency Virus in human cells and explain the mechanism of infection and replication stepwise.

Q.5

(a) Cancer is one of the most dreaded diseases. Explain the terms *contact inhibition* and *metastasis* with reference to cancer cells.

(b) Name the category of genes in normal cells that may become cancerous under certain conditions. Explain how mutation in these genes can lead to uncontrolled cell division.

(c) Describe any two modern techniques used for the detection of cancers of internal organs.

Q.6

Describe the process of transcription in eukaryotes. Explain the roles of promoter, structural gene, terminator, and RNA polymerase in transcription. How is hnRNA processed to form functional mRNA?

Q.7

Explain the process of recombinant DNA technology in detail. Describe the functions of:

- Restriction endonucleases
- DNA ligase
- Cloning vectors
- Competent host cells

Mention any two important applications of recombinant DNA technology in medicine and agriculture.

Q.8

Explain Mendel's Law of Independent Assortment with the help of a dihybrid cross. Why did Mendel choose pea plants for his experiments? Mention any four advantages of using pea plants.

Q.9

Describe the structure of an antibody molecule with the help of a labelled diagram. Differentiate between humoral immunity and cell-mediated immunity. Explain the principle of vaccination.

Q.10

Explain Darwin's theory of natural selection. Discuss the observations made by Charles Darwin during his voyage that contributed to the formulation of the theory of evolution. Mention any two criticisms of Darwinism.

Instructions

- Answer all questions in detail.
- Draw neat and properly labelled diagrams wherever required.
- Use biological terms correctly.
- Write answers in a systematic and sequential manner.
- Assignment must be completed in a separate practical/assignment notebook.

Hindi

1. 'विज्ञान ने विश्व को निवास योग्य बना दिया है'— इस संदर्भ में जीवन में विज्ञान की उपयोगिता का उल्लेख कीजिए।
2. "जल ही जीवन है। जल के बिना सुनहरे कल की कल्पना करना व्यर्थ है।" वर्तमान युग में जल संकट की समस्या किस प्रकार विकराल रूप लेती जा रही है? जल संरक्षण की आवश्यकता तथा इसके विभिन्न उपायों पर प्रकाश डालते हुए अपना विचार स्पष्ट कीजिए। (350 से 400 शब्दों में लिखिए)

