GEETA DEVI DAV PUBLIC SCHOOL

BHANDARKOLA, SATAR ROAD, DEOGHAR

DIWALI & CHHAT PUJA HOLIDAY HOME WORK-(2026-27)

CLASS: -XI (SCIENCE ,COMMERCE & HUMANATIES)

ENGLISH

PART A: PROJECT WORK

Topic: Discovering Tut: The Saga Continues

Prepare an attractive and informative project file on "Discovering Tut: The Saga Continues" by A.R. Williams.

Explorations to Be Covered

1. **Introduction:** An overview of the chapter and its central theme.
2. **King Tutankhamun:** His life, reign and mysterious death.
3. **Discovery of the Tomb:** Howard Carter's discovery of Tutankhamun's tomb in 1922.
4. **Treasures of the Tomb:** A study of the gold mask, jewellery, coffins and other valuable artefacts.
5. **The Mummy Examination:** The scientific examination and investigation of King Tut's mummy.
6. **The CT Scan:** The significance of the 21st-century CT scan in uncovering the mysteries surrounding his death.
7. **Modern Technology and Archaeology:** How scientific advancements help historians explore the past.
8. **Mystery Behind His Death:** Different theories and findings related to the young king's death.
9. **Historical Significance:** Tutankhamun's contribution to our understanding of ancient Egyptian civilisation.
10. **Conclusion:** What we learn from the continued exploration of history.

Additional Instructions

- Include relevant pictures, illustrations, maps and captions.
- Use clear headings, subheadings and creative page designs.
- Add an index and bibliography.
- Ensure that the project is original, informative and neatly presented.

PART B: WRITTEN ASSIGNMENT

Q1. Advertisement Writing
You are Mohan/Mohini, General Manager of P.K. Industries, Hyderabad. You need an accountant for your company. Draft an advertisement in not more than 50 words to be published in the classified columns of The Hindu.

Q2. Advertisement Writing
You want to sell your set of CBSE Class XII books, which contains rare reference books. Draft an advertisement in about 50 words for the classified columns, giving all the necessary details.

Q3. Grammar – Gap Filling
Fill in the blanks with suitable forms of the verbs given in brackets.

Anyway, we (a) _____ (sit) in the plane and (b) _____ (just/take) off when there (c) _____ (be) a loud bang from the right-hand side of the plane, and I could see a lot of smoke coming from one of the engines. Of course, everyone (d) _____ (start) looking around, but the plane (e) _____ (carry) on flying normally. And then, a few minutes later, the pilot (f) _____ (come) on to the PA and said there was a problem with one of the engines and we'd have to return to the airport.

Q4. Creative Writing – Poetry Composition
Compose an original poem or song inspired by the themes of the story "The Summer of the Beautiful White Horse" by William Saroyan.

You may explore any of the following themes:

- The joy of freedom and adventure.
- The value of honesty and integrity.
- The importance of family values and traditions.
- Friendship, trust and responsibility.
- The conflict between temptation and moral values.

Instructions
Give your poem/song a suitable and attractive title.
Write at least 12–16 lines.
Use appropriate poetic devices such as rhyme, imagery, simile and metaphor.
Ensure that your composition reflects the central message of the story.

GENERAL INSTRUCTIONS FOR STUDENTS
Complete all questions in your English assignment notebook.
Prepare the project in a separate, well-decorated project file.
Maintain proper presentation, handwriting and neatness.

Write answers in your own words.
Avoid unnecessary decoration and focus on quality content.
Mention your name, class, section and roll number on both submissions.

MATHEMATICS

1. Graphical Activity

- Draw the graphs of different types of functions on chart paper. Clearly label the axes and mark the important points.

2. Written Practice

- Solve all the questions based on Trigonometric Functions in a separate Mathematics notebook.

Important Instructions

- Complete all the assigned work neatly and sincerely.
- Ensure that your work is well-presented.
- Submit all assignments immediately after the holidays.
- Make the most of your holidays by learning something new!

Wishing all students and their families a Happy Diwali and a Blessed Chhath Puja!

BIOLOGY

Become a Young Biologist!

Q1.Select one organism from your surroundings and prepare its scientific profile, including its classification, habitat, adaptations, ecological importance and a labelled illustration.
Make your work original, informative and visually appealing.

Q2. Biology Through Art

Choose any ONE:

- Draw and colour the five kingdoms of classification.
- Create a mind map on the classification of plants.
- Design an infographic on the importance of biomolecules.

Message to Students:

Biology is not merely a subject to be studied; it is a fascinating journey to understand life. Use your holidays to observe nature, ask questions, explore scientific ideas and develop the curiosity of a young scientist.

Happy Holidays! Keep Exploring, Keep Learning!

PHYSICS

1. NCERT EXERCISE — SIMPLE HARMONIC MOTION (SHM)

Complete all numerical problems and conceptual questions from the standard NCERT textbook chapter on Simple Harmonic Motion.

- Identify periodic vs. simple harmonic motion from given force/displacement equations.
- Calculate time period (T), frequency (f), and phase angle (ϕ).
- Solve problems involving spring-mass combinations (series and parallel) and simple pendulums.
- Determine energy distribution (Kinetic Energy, Potential Energy, and Total Mechanical Energy).

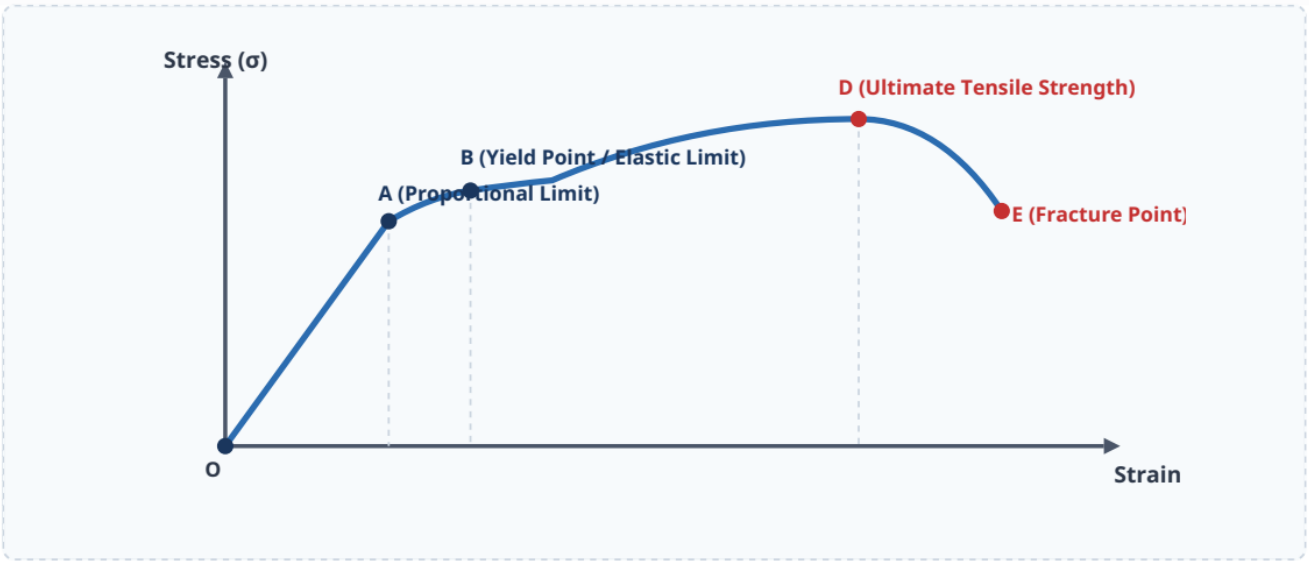
2. OBJECTIVE QUESTIONS (Q1 TO Q21)

Solve all 21 multiple-choice questions provided in the study group and record your option responses in the response matrix below:

Q. No.	Option	Q. No.	Option	Q. No.	Option
Q01		Q08		Q15	
Q02		Q09		Q16	
Q03		Q10		Q17	
Q04		Q11		Q18	
Q05		Q12		Q19	
Q06		Q13		Q20	
Q07		Q14		Q21	

3. STRESS-STRAIN CURVE (MECHANICAL PROPERTIES OF SOLIDS)

Explain and sketch the complete stress-strain relation for a metallic wire under increasing tensile load:



4. KEY FORMULAE REFERENCE SHEET

A. MECHANICAL PROPERTIES OF SOLIDS

- **Stress:** $\sigma = F / A$
- **Strain:** $\varepsilon = \Delta L / L$
- **Young's Modulus:** $Y = (F \cdot L) / (A \cdot \Delta L)$
- **Shear Modulus:** $G = (F / A) / \theta$
- **Bulk Modulus:** $B = - \Delta P / (\Delta V / V)$
- **Compressibility:** $C = 1 / B$
- **Elastic Energy:** $U = \frac{1}{2} \cdot F \cdot \Delta L$
- **Energy Density:** $u = \frac{1}{2} \cdot Stress \cdot Strain$

B. SIMPLE HARMONIC MOTION (SHM)

- **Displacement:** $x(t) = A \sin(\omega t + \phi)$
- **Velocity:** $v(t) = \pm \omega \sqrt{(A^2 - x^2)}$
- **Acceleration:** $a(t) = - \omega^2 x$
- **Angular Frequency:** $\omega = 2\pi/T = \sqrt{(k/m)}$
- **Pendulum Period:** $T = 2\pi \sqrt{(L/g)}$
- **Spring Period:** $T = 2\pi \sqrt{(m/k)}$
- **Potential Energy:** $U = \frac{1}{2} k x^2$
- **Total Energy:** $E = \frac{1}{2} k A^2$

CHEMISTRY

Syllabus: Chapters 1–5

1. Some Basic Concepts of Chemistry
2. Structure of Atom
3. Classification of Elements and Periodicity in Properties
4. Chemical Bonding and Molecular Structure
5. Thermodynamics

General Instructions

1. Attempt all questions in a separate assignment notebook.
2. Write answers neatly and systematically.
3. Show all steps in numerical problems.
4. Draw neat and labelled diagrams wherever required.
5. Write balanced chemical equations wherever necessary.
6. Complete the assignment and submit it on the first working day after vacation.

Section A – Chapter-wise Assignment

Chapter 1: Some Basic Concepts of Chemistry

1. Define mole. How is it related to Avogadro's number?
2. Differentiate between empirical formula and molecular formula with examples.
3. State and explain the law of conservation of mass.
4. Calculate the number of molecules present in 9 g of water.
5. Calculate the molarity of a solution containing 5.85 g of NaCl dissolved in 500 mL of solution.
6. Calculate the empirical formula of a compound containing 40% carbon, 6.67% hydrogen and 53.33% oxygen.
7. Explain the difference between molarity and molality.
8. A compound contains 24% carbon, 4% hydrogen and 72% oxygen. Determine its empirical formula.
9. Calculate the mass of 0.5 mole of H_2SO_4.
10. What is a limiting reagent? Explain with a suitable example.

Chapter 2: Structure of Atom

1. Explain Rutherford's alpha-particle scattering experiment and write its conclusions.
2. State the main postulates of Bohr's atomic model.

3. Explain the significance of the four quantum numbers.
4. Differentiate between orbit and orbital.
5. Write the electronic configurations of Cr, Cu, Fe^{2+} and Fe^{3+}.
6. Calculate the de Broglie wavelength of a particle having mass 9.1×10^{-31} kg and velocity 2×10^{6} m/s.
7. State Heisenberg's uncertainty principle and write its mathematical expression.
8. Explain Aufbau principle, Pauli's exclusion principle and Hund's rule.
9. How many orbitals are present in the 3d subshell? What is the maximum number of electrons it can accommodate?
10. Calculate the wavelength of radiation emitted when an electron jumps from n = 3 to n = 2 in a hydrogen atom.

Chapter 3: Classification of Elements and Periodicity in Properties

1. State the modern periodic law.
2. Explain the long form of the periodic table.
3. Define atomic radius and explain its variation across a period and down a group.
4. What is ionisation enthalpy? Discuss its periodic trend.
5. Explain electron gain enthalpy and electronegativity.
6. Why is the first ionisation enthalpy of nitrogen greater than that of oxygen?
7. Arrange the following in increasing order of atomic radius: Na, Mg, Al, Si.
8. Why does fluorine have a smaller atomic radius than chlorine?
9. Explain the anomalous behaviour of second-period elements.
10. Compare the metallic and non-metallic character of elements across a period.

Chapter 4: Chemical Bonding and Molecular Structure

1. Explain the octet rule and its limitations.
2. Differentiate between ionic and covalent bonds.
3. Draw the Lewis structures of CO_2, NH_3, H_2O and BF_3.
4. Explain the VSEPR theory with suitable examples.
5. Predict the shapes and bond angles of CH_4, NH_3 and H_2O.
6. Explain hybridisation. Discuss sp, sp^2 and sp^3 hybridisation with examples.
7. What is hydrogen bonding? Differentiate between intermolecular and intramolecular hydrogen bonding.
8. Explain molecular orbital theory and write the electronic configuration of O_2.
9. Calculate the bond order of N_2, O_2 and O_2^+.
10. Why is BF_3 non-polar whereas NH_3 is polar?

Chapter 5: Thermodynamics

1. Define system, surroundings and boundary in thermodynamics.
2. Differentiate between open, closed and isolated systems.
3. Explain intensive and extensive properties with examples.
4. State the first law of thermodynamics and write its mathematical

expression.

5. Define enthalpy, internal energy and entropy.
6. Differentiate between exothermic and endothermic reactions with examples.
7. Explain Hess's law of constant heat summation.
8. Calculate the work done when a gas expands against a constant external pressure of 2 bar from 5 L to 10 L.
9. Define standard enthalpy of formation and standard enthalpy of combustion.
10. Explain the relationship between Gibbs energy, enthalpy and entropy.

Section B – Competency-Based Questions

1. A student dissolves 4 g of NaOH in water and makes the total volume of solution 500 mL. Calculate its molarity.
2. An element has atomic number 17. (a) Identify the element. (b) Write its electronic configuration. (c) Find its group and period. (d) Predict its valency.
3. Two elements X and Y have atomic numbers 11 and 17 respectively. (a) Identify the type of bond formed between them. (b) Write the formula of the compound. (c) Explain the formation of the bond.
4. Why does water have a higher boiling point than hydrogen sulphide, although both are group 16 hydrides?
5. An electron in a hydrogen atom jumps from a higher energy level to a lower energy level. (a) What happens to the energy of the atom? (b) Is energy absorbed or emitted? (c) What type of spectrum is produced?

Section C – Assertion and Reasoning

Choose the correct option:

(a) Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

1. Assertion: The atomic radius decreases across a period.
Reason: Effective nuclear charge generally increases across a period.
2. Assertion: O_2 is paramagnetic in nature.
Reason: O_2 contains two unpaired electrons in its antibonding molecular orbitals.
3. Assertion: The first ionisation enthalpy of nitrogen is higher than oxygen.
Reason: Nitrogen has a stable half-filled 2p subshell.
4. Assertion: Water is a polar molecule.
5. Reason: Water has a bent molecular geometry.
6. Assertion: An exothermic reaction releases heat.

Reason: The enthalpy change of an exothermic reaction is negative.

Section D – HOTS (Higher Order Thinking Skills)

1. Why is the electron affinity of chlorine more negative than that of fluorine?
2. Why does the bond angle of NH_3 differ from that of CH_4?
3. Why is the bond order of O_2^+ greater than that of O_2?
4. Why is the ionisation enthalpy of noble gases very high?
5. Can a reaction be spontaneous even when it is endothermic? Explain using Gibbs energy.
6. Why is the second ionisation enthalpy of sodium exceptionally high?
7. Explain why the dipole moment of CO_2 is zero but that of H_2O is not.
8. Why is the enthalpy of neutralisation of a strong acid and strong base nearly constant?

Section E – Holiday Activity / Project Work

1. Prepare a colourful chart showing the first 20 elements with their atomic numbers, symbols, electronic configurations and valencies.
2. Draw and label the shapes of at least ten molecules using VSEPR theory.
3. Prepare a chart showing the periodic trends of atomic radius, ionisation enthalpy, electron gain enthalpy and electronegativity.
4. Collect five examples each of exothermic and endothermic processes from daily life.
5. Prepare a comparative table of ionic, covalent and coordinate bonds with suitable examples.

6. Submission and Evaluation

7. Particulars	8. Marks
9. Chapter 1	10. 10
11. Chapter 2	12. 10
13. Chapter 3	14. 10
15. Chapter 4	16. 10
17. Chapter 5	18. 10
19. Competency & HOTS	20. 10
21. Holiday activities	22. 10
23. Presentation and neatness	24. 5
25. Total	26. 75

ACCOUNTANCY

1. Complete the homework for the first seventeen (17) chapters, if it has not already been completed.
2. Solve one practical problem everyday from each of the following chapters for practice during the vacation:
a) Accounting Equation
b) Journal
c) Other Books
d) Cash Book
e) Goods and Services Tax (GST)
f) Bank Reconciliation Statement (BRS)
g) Depreciation
h) Rectification of Errors
i) Financial Statements (without Adjustments)

3. Prepare the formats and contents of the financial statements of a sole proprietorship firm on chart paper, and memorise them:
a) Trading and Profit & Loss Account (on a separate sheet of chart paper).
b) Balance Sheet (on a separate sheet of chart paper).

4. Learn all the important journal entries from the different chapters and write them on chart paper, chapter-wise.

BUSINESS STUDIES.

ASSIGNMENTS QUESTIONS
(IN NOTE BOOK)

1) Write the difference between Equity shares and Preference shares.
2) Write the difference between Shares and Debentures.
3) Write the difference between Article of Association and Memorandum of Association.
4) Write the Process of Entrepreneurship.
5) Write a Short note of Startup India Scheme and write the initiatives taken by government to promote Entrepreneurship.
6) Explain in points the role of government to promote Entrepreneurship in Hilly, rural and Backward Areas

PROJECT
(ON CHART PAPER)

7) Copyright, Trade Mark, Patent and Geographical Indication (write and paste pictures)

ECONOMICS

Part A: Statistics for Economics

Measures of Central Tendency

Multiple Choice Questions (1 Mark Each)

1. If the mean of a distribution is 25 and the median is 23, what is the empirical mode of the distribution?

a) 19 b) 21 c) 27 d) 29

2. Which measure of central tendency can be calculated graphically using an Ogive (cumulative frequency curve)?

a) Mean b) Median c) Mode d) Geometric Mean

3. The arithmetic mean of 5 numbers is 18. If one number is excluded, their mean becomes 16. The excluded number is:

a) 24 b) 26 c) 22 d) 20

Short Answer Questions (3–4 Marks Each)

4. The mean marks obtained by 100 students were found to be 40. Later, it was discovered that a score of 53 was misread as 83. Find the corrected mean. [3 Marks]
5. Explain two advantages and two limitations of Arithmetic Mean over Median. [4 Marks]
6. Calculate the median from the following continuous frequency distribution: [4 Marks]

Class Interval	Frequency
0–10	5
10–20	8
20–30	15
30–40	10
40–50	2

Long Numerical Questions (6 Marks Each)

7. Calculate the missing frequencies x and y from the following table if the median is 32 and the total frequency is 100: [6 Marks]

Marks	0–10	10–20	20–30	30–40	40–50	50–60	Total
Number of Students	10	x	25	30	y	10	100

8. Find the Mode of the following grouped data

9. using the grouping method and modal formula: [6 Marks]

ize	Frequency
10–15	7
15–20	12
20–25	18
25–30	25
30–35	16
35–40	8

Part B: Microeconomics

1. Production Function

1. When Marginal Product (MP) is zero, Total Product (TP) is: [1 Mark]

a) Zero b) Falling c) Maximum d) Negative

2. Distinguish between Short-Run Production Function (Variable Proportions Type) and Long-Run Production Function (Returns to Scale Type).
3. Complete the following schedule: [4 Marks]

Units of Variable Factor	Total Product (TP)	Marginal Product (MP)	Average Product (AP)
1	20	—	—
2	—	18	—
3	54	—	—
4	—	6	—

4. State and explain the Law of Variable Proportions with the help of a schedule and diagram. Specify the phase in which a rational producer will choose to operate. [6 Marks]

2. Cost

1. Which cost curve is horizontal to the x-axis? [1 Mark]

- a) Total Cost (TC)
- b) Total Fixed Cost (TFC)
- c) Total Variable Cost (TVC)
- d) Average Fixed Cost (AFC)

2. Why is the Average Fixed Cost (AFC) curve shaped like a rectangular hyperbola? Can it ever touch the x-axis? Explain. [3 Marks]
3. Calculate TFC, TVC, ATC, and MC from the given data: [4 Marks]

Output	Total Cost (TC)	Total Fixed Cost (TFC)	Total Variable Cost (TVC)	Average Total Cost	Marginal Cost (MC)

(Units)				(ATC)	
0	40	—	—	—	—
1	60	—	—	—	—
2	78	—	—	—	—
3	90	—	—	—	—
4	110	—	—	—	—

4. Explain the relationship between: [6 Marks]

a) Average Cost (AC) and Marginal Cost (MC)

b) Total Cost (TC) and Marginal Cost (MC)

3. Revenue

1. Under Perfect Competition, the shape of the Marginal Revenue (MR) curve is: [1 Mark]

- a) Downward sloping
- b) Horizontal parallel to the x-axis
- c) Vertical parallel to the y-axis
- d) U-shaped

2. Prove that Average Revenue (AR) is always equal to Price (P) under all market structures. [3 Marks]
3. Complete the following revenue table: [4 Marks]

Output (Units)	Price per unit (₹)	Total Revenue (TR)	Marginal Revenue (MR)
1	10	—	—
2	9	—	—
3	—	24	—
4	7	—	—

4. Explain the relationship between Total Revenue (TR) and Marginal Revenue (MR) when a firm can sell more units only by reducing the price. [4 Marks]

4. Forms of Market

1. A firm is a "Price Taker" under which form of market? [1 Mark]

a) Monopoly b) Monopolistic Competition

c) Perfect Competition d) Oligopoly

2. Why are products homogeneous in a perfectly competitive market? What is its implication on price? [3 Marks]
3. Distinguish between Monopoly and Monopolistic Competition based on the following parameters: [4 Marks]

a) Number of sellers b) Product differentiation

c) Nature of demand curve d) Entry/Exit conditions

4. Explain the significance of the following features of Perfect Competition: [6 Marks]

a) Large number of buyers and sellers

b) Freedom of entry and exit of firms

HISTORY

POLITICAL SCIENCE

COMPUTER SCIENCE

COMPLETE THE NOTES OF SOCIETY LAW & ETHICS IN COMPUTER NOTEBOOK
and also try to solve the QUESTION ANSWERS

Chapter: Digital Footprints, Society, Law and Ethics

1. Digital Footprints

Meaning: A digital footprint is the trail of data or information that a person leaves behind while using the internet and digital devices.

Types of Digital Footprints

1. Active Digital Footprint: Information that a user intentionally shares online.
   - Posting photos and videos on social media.
   - Writing comments or reviews.
   - Sharing personal information on websites.
   - Sending emails and messages.

2. Passive Digital Footprint: Information collected automatically without the user's direct involvement.
   - Browsing history. IP address.
   - Cookies stored by websites. Location data collected by apps.

Ways to Manage Digital Footprints
   - Think before posting anything online. Avoid sharing personal information.
   - Use privacy settings on social media. Delete unnecessary accounts.
   - Avoid visiting suspicious websites. Regularly review online activities.

2. Digital Society and Netizen

Digital Society: A society in which people use digital technologies and the internet for communication, education, business, entertainment and other activities.

Netizen: A person who actively uses the internet and participates in online communities is called a netizen (Internet Citizen).

Characteristics of a Digital Society

1. Online communication.

2. Digital payments and banking.
3. Online education.
4. E-commerce and online shopping.
5. Social networking.
6. Digital government services.

2.1 Netiquettes

Definition: Netiquettes are the rules and guidelines of good behaviour that people should follow while communicating on the internet.

Important Netiquettes

1. Be polite and respectful while communicating online.
2. Do not use abusive or offensive language.
3. Avoid writing messages in ALL CAPITAL LETTERS because it may look like shouting.
4. Respect others' opinions.
5. Do not spread fake news or rumours.
6. Avoid sending unnecessary messages or spam.
7. Do not share someone's personal information without permission.
8. Always check the facts before forwarding information.
9. Respect copyright and intellectual property.
10. Use appropriate language in online discussions.

2.2 Communication and Social Media Etiquettes

Communication Etiquettes

- Use clear and meaningful language. Write a proper subject line in emails.
- Avoid unnecessary abbreviations in formal communication. Reply to messages politely.
- Do not interrupt others during online meetings. Keep microphone muted when not speaking in online meetings.

Social Media Etiquettes

- Think before posting or sharing anything. Do not upload photographs of others without permission.
- Avoid cyberbullying and online arguments. Do not spread fake news.
- Respect other users' privacy. Give proper credit to the original creator of content.
- Avoid excessive tagging and unnecessary comments.

3. Data Protection

Definition: Data protection refers to the process of protecting personal and sensitive information from unauthorized access, misuse, loss, modification or theft.

Importance of Data Protection

1. Protects personal information. Prevents identity theft.
2. Maintains privacy and confidentiality. Prevents financial fraud.
3. Protects important documents and files. Methods of Data Protection

- Use strong passwords. Enable two-factor authentication (2FA).
- Install updated antivirus software. Take regular data backups.
- Avoid sharing OTPs and passwords. Use secure websites (HTTPS).
- Avoid public Wi-Fi for banking transactions.

3.1 Intellectual Property Rights (IPR)

Definition: Intellectual Property Rights are legal rights given to creators and inventors to protect their original creations, inventions and ideas.

Types of Intellectual Property Rights

Type	Meaning	Example
Copyright	Protects original creative works	Books, music, software, photographs

Patent	Protects new inventions and processes	A newly invented machine
Trademark	Protects brand names, logos and symbols	Nike logo, brand names

1. Copyright
   - Copyright protects original literary, artistic, musical and digital works.
   - It gives creators legal rights over their work.
   - Others cannot copy, distribute or use the protected work without permission, except where legally permitted.

Examples: Books, songs, movies, photographs and computer programs.

2. Patent
   - A patent protects a new invention.
   - It gives the inventor exclusive legal rights for a limited period.
   - Others cannot commercially make, use or sell the patented invention without authorization, subject to applicable law.

Example: A newly developed medical device.

3. Trademark
   - A trademark protects a brand's identity.
   - It may include a name, logo, symbol, word or slogan.
   - It helps customers identify the products or services of a particular company.

Example: The Apple logo.

3.2 Violation of Intellectual Property Rights

Violation of IPR means using someone else's protected intellectual property without proper permission or legal authority.

Major Types of IPR Violations

1. Plagiarism
   - Presenting someone else's work or ideas as your own without giving proper credit.
   - It is considered academic dishonesty.
   - Example: Copying an assignment from the internet and submitting it under your own name.
2. Copyright Infringement
   - Using or distributing copyrighted material without permission or a valid legal exception.
   - Example: Downloading and distributing pirated movies or software.
3. Trademark Infringement
   - Unauthorized use of a registered trademark that may cause confusion about the source of goods or services.
   - Example: Selling fake products using another company's registered brand logo.

3.3 Open Source Software and Licensing

Open Source Software (OSS): Software whose source code is made available under a licence that allows users to use, study, modify and redistribute it according to the licence conditions.

Features of Open Source Software

1. Source code is available.
2. Users can study the program.
3. Users can modify the source code.
4. Redistribution is permitted under licence conditions.
5. Developers can contribute to its improvement.

Examples:

- Linux, Mozilla Firefox ,LibreOffice, GIMP

Types of Open Source Licences

1. Creative Commons (CC)
   - Creative Commons licences are used to share creative works such as images, music, videos and educational materials.
   - They allow creators to specify how others can use their work.
   - Some licences require attribution, while others may restrict commercial use or modifications

2. GNU General Public License (GPL)
   - GPL is a free and open-source software licence.
   - It allows users to use, study, modify and distribute software.
   - When distributing modified versions, certain conditions apply, including making the corresponding source code available under the GPL.
   - It is known as a copyleft licence.

Example: GNU/Linux.

3. Apache Licence
   - Apache Licence is a permissive open-source software licence.
   - It allows users to use, modify and distribute software.
   - It permits commercial use.
   - It requires preservation of copyright and licence notices.
   - It also provides an express patent licence with conditions.

Example: Apache HTTP Server.

4. Cyber Crime

Definition: Cybercrime refers to illegal activities carried out using computers, digital devices, networks or the internet.

Examples of Cybercrime

- Hacking. Phishing. Identity theft. Online banking fraud.
- Ransomware attacks. Data theft. Cyberstalking.

4.1 Hacking

Definition: Hacking is the act of gaining access to computer systems, networks or data by identifying and exploiting security weaknesses.

- Unauthorized hacking is illegal.
- Ethical hacking is performed with proper permission to identify security weaknesses.

Example: Accessing someone's email account without permission.

4.2 Eavesdropping

Definition: Eavesdropping is the unauthorized interception or monitoring of private communication or data transmitted over a network.

Example: A hacker secretly monitoring information transmitted over an unsecured public Wi-Fi network.

Prevention

- Use secure Wi-Fi networks.
- Avoid sensitive transactions on public Wi-Fi.
- Use HTTPS websites.
- Use a trusted VPN when appropriate.

4.3 Phishing and Fraud Emails

Phishing: Phishing is a cyberattack in which criminals send fake emails, messages or websites to trick users into revealing sensitive information such as passwords, bank details and OTPs.

Example: Receiving a fake email claiming that your bank account will be blocked unless you click a link and enter your password.
Fraud Emails: Emails sent with the intention of cheating users, stealing money or collecting confidential information.
Signs of Phishing Emails

1. Unknown sender's email address.
2. Spelling and grammatical mistakes.
3. Urgent messages demanding immediate action.
4. Suspicious links and attachments.
5. Requests for passwords, PINs or OTPs.
6. Fake offers, prizes or lottery notifications.

Prevention

- Never click suspicious links.
- Never share OTPs or passwords.
- Verify the sender's identity.
- Do not download unknown attachments.
- Report suspicious emails as phishing.

4.4 Ransomware
Definition: Ransomware is a type of malicious software that locks or encrypts a victim's files and demands money (ransom) to restore access.
Working of Ransomware

1. The user receives a malicious email or visits an infected website.
2. Ransomware enters the computer.
3. It encrypts or locks important files.
4. A ransom message appears demanding money.
5. The attacker demands payment to restore access.

Prevention

- Keep antivirus software updated.
- Avoid suspicious email attachments.
- Take regular backups of important files.
- Keep the operating system updated.
- Avoid downloading software from untrusted websites.

4.5 Preventing Cybercrime

1. Use strong and unique passwords.
2. Enable two-factor authentication.
3. Never share OTPs, PINs or passwords.
4. Install updated antivirus software.
5. Avoid suspicious websites and links.
6. Use secure internet connections.
7. Keep software and operating systems updated.
8. Take regular backups of important data.
9. Avoid sharing personal information publicly.
10. Report cybercrime to the appropriate authorities.

5. Cybers afety
Definition: Cyber safety refers to the safe and responsible use of the internet and digital technologies to protect users from online threats, fraud, harassment and privacy violations.
5.1 Safely Browsing the Web
Important Safety Measures

1. Visit trusted websites only.
2. Check whether the website uses HTTPS.
3. Avoid clicking unknown links.
4. Do not download files from suspicious websites.
5. Keep browsers updated.
6. Avoid entering personal information on untrusted websites.
7. Log out after using public computers. Do not save passwords on shared computers.

5.2 Identity Protection

Definition: Identity protection means safeguarding personal information that can be used to identify or impersonate an individual.

Examples of Personal Information

- Full name.
- Date of birth.
- Address.
- Phone number.
- Aadhaar and PAN details.
- Bank account information.
- Passwords and OTPs.

Methods of Identity Protection

1. Do not share personal details unnecssarily.
2. Use strong passwords.
3. Enable two-factor authentication.
4. Avoid sharing identity documents on unknown websites.
5. Do not share OTPs with anyone.
6. Check bank statements regularly.
7. Use privacy settings on social media.

5.3 Confidentiality

Definition: Confidentiality means ensuring that private or sensitive information is accessible only to authorized persons.

Examples

- Keeping passwords secret.
- Protecting students' academic records.
- Keeping bank details confidential.
- Sharing confidential documents only with authorized persons.

Methods to Maintain Confidentiality

- Use passwords and access controls.
- Encrypt sensitive information.
- Do not share confidential data publicly.
- Lock computers when not in use.
- Avoid using public computers for sensitive work.

5.4 Cyber Trolls and Cyber bullying

Cyber Trolls: Cyber trolls are people who deliberately post offensive, insulting or provocative messages online to annoy or upset others.

Cyber bullying: Cyber bullying refers to repeatedly harassing, threatening, humiliating or intimidating someone using digital devices or online platforms.

Examples of Cyber bullying

1. Sending threatening messages.
2. Posting insulting comments.
3. Sharing embarrassing photographs without permission.

4. Spreading false rumours online.
5. Creating fake accounts to harass someone.

Difference Between Cyber Trolls and Cyberbullying

Cyber Trolls	Cyberbullying
Deliberately provoke people online.	Repeatedly harass or intimidate a person.
Often aim to create arguments or disturbances.	Aim to hurt, threaten or humiliate someone.
May target discussions or communities.	Often targets a particular individual.

How to Prevent Cyberbullying

- Do not respond to abusive messages.
- Block the person involved.
- Save screenshots as evidence.
- Report the account to the platform.
- Inform parents, teachers or trusted adults.
- Report serious threats to the police or cybercrime authorities.

6. Safely Accessing Websites

While browsing the internet, users may encounter harmful software called malware.

6.1 Malware

Definition: Malware (Malicious Software) is any software intentionally designed to damage, disrupt, steal information from or gain unauthorized access to computer systems.

Types of Malware

1. Virus
   - A computer virus is a malicious program that attaches itself to a file or program.
   - It spreads when the infected file or program is executed.
   - It may corrupt files, damage data or slow down the computer.

Example: A virus attached to an infected document.

2. Trojan Horse
   - A Trojan Horse is malicious software that disguises itself as a genuine or useful program.
   - It tricks users into installing it.
   - It may steal information or provide unauthorized access to attackers.
   - Unlike viruses, Trojans do not normally self-replicate.

Example: A fake software installer containing malicious code.

3. Adware
   - Adware is software that automatically displays advertisements.
   - Some adware may track users' browsing activities.
   - It may slow down computers or display unwanted pop-up advertisements.

Example: Unwanted advertisements appearing repeatedly while browsing.

Difference Between Virus, Trojan Horse and Adware

Virus	Trojan Horse	Adware
Attaches itself to files or programs.	Disguises itself as genuine software.	Displays unwanted advertisements.
Can spread when infected files are executed.	Tricks users into installing it.	May track browsing activities.
Can damage or corrupt data.	Can steal information or provide unauthorized access.	Can slow down the computer.

Safety Measures While Accessing Websites

1. Visit trusted websites.
2. Avoid downloading unknown files.
3. Install antivirus software.
4. Keep browsers and operating systems updated.
5. Avoid clicking pop-up advertisements.
6. Check website URLs carefully.
7. Use a firewall.
8. Scan downloaded files before opening them.

7. E-Waste Management

Definition: E-waste (Electronic Waste) refers to discarded electrical and electronic devices that are no longer useful or required.

Examples of E-Waste

- Computers and laptops.
- Mobile phones.
- Printers and scanners.
- Keyboards and mice.
- Television sets.
- Batteries and chargers.
- Electronic circuit boards.

7.1 Harmful Effects of E-Waste

1. Soil pollution due to harmful chemicals.
2. Water pollution due to toxic substances.
3. Air pollution from improper burning of electronic waste.
4. Health problems caused by exposure to toxic materials.
5. Environmental damage due to improper disposal.

7.2 Proper Disposal of Electronic Gadgets

Methods of E-Waste Management

1. Reduce: Avoid unnecessary purchases of electronic devices.
2. Reuse: Use old electronic devices whenever possible.
3. Repair: Repair damaged gadgets instead of throwing them away.
4. Recycle: Send discarded electronics to authorized recycling centres.
5. Donate: Donate working electronic devices to people who need them.
6. Safe Disposal: Dispose of batteries and electronic components through authorized collection centres.

Important: Electronic waste should not be thrown into regular dustbins or burned in open areas. It should be handed over to authorized e-waste collection or recycling facilities.

8. Indian Information Technology Act (IT Act)

Definition: The Information Technology Act, 2000 is an Indian law enacted to provide legal recognition to electronic records and electronic transactions and to address certain cyber offences.

It came into force on 17 October 2000.

Objectives of the IT Act, 2000

1. To provide legal recognition to electronic records.
2. To provide legal recognition to digital and electronic signatures.
3. To promote electronic commerce.
4. To facilitate electronic governance.
5. To prevent and punish certain cybercrimes.
6. To provide legal provisions for dealing with cyber-related offences.

8.1 Important Provisions of the IT Act

Section	Provision
Section 43	Compensation for unauthorized access, downloading, damage, etc.
Section 65	Tampering with computer source documents.
Section 66	Computer-related offences involving dishonest or fraudulent acts.
Section 66C	Identity theft.
Section 66D	Cheating by personation using computer resources.
Section 66E	Violation of privacy.
Section 67	Publishing or transmitting obscene material in electronic form.
Section 69	Certain powers to intercept, monitor or decrypt information subject to legal conditions.
Section 72	Breach of confidentiality and privacy.

Important Note: Section 66A of the IT Act, which dealt with sending offensive messages through communication services, was struck down by the Supreme Court of India in 2015. It is not a valid offence provision today.

8.2 Cybercrime Reporting in India

- Cybercrime can be reported through the National Cyber Crime Reporting Portal.
- Website: National Cyber Crime Reporting Portal.
- Cybercrime helpline: 1930, particularly for reporting financial cyber fraud promptly.

9. Technology and Society

Technology has changed the way people learn, communicate, work and live. However, technology should be accessible to everyone without discrimination.

9.1 Gender Issues in Teaching and Using Computers

Meaning: Gender issues refer to inequalities or discrimination faced by people based on their gender while accessing, learning or using computer technology.

Examples of Gender Issues

1. Girls may get fewer opportunities to learn computer skills in some communities.
2. Gender stereotypes may discourage girls from choosing computer science.
3. Unequal access to computers and the internet.
4. Gender-based harassment on social media.
5. Lack of equal participation in technology-related careers.

Ways to Reduce Gender Inequality

- Provide equal computer education to boys and girls.
- Encourage girls to participate in coding and technology activities.
- Provide equal access to computers and the internet.
- Promote gender equality in schools.
- Prevent online harassment and discrimination.
- Encourage women to pursue careers in technology.

9.2 Disability Issues in Teaching and Using Computers

Meaning: Disability issues refer to difficulties faced by persons with disabilities while accessing or using computers and digital technologies.

Examples

1. Visually impaired students may face difficulties reading computer screens.
2. Hearing-impaired students may face difficulties understanding audio-based lessons.
3. Students with physical disabilities may find it difficult to use a standard keyboard or mouse.
4. Students with learning disabilities may need additional support to understand digital content.

Assistive Technologies

Assistive technology refers to devices or software that help persons with disabilities use computers more effectively.

Assistive Technology	Purpose
Screen Reader	Reads text displayed on the screen aloud.
Screen Magnifier	Enlarges text and images.
Speech Recognition	Allows users to control computers through voice commands.
Braille Display	Converts digital text into Braille characters.
On-Screen Keyboard	Allows users to type using a mouse or other pointing device.
Closed Captions	Displays spoken words as text in videos.
Text-to-Speech	Converts written text into spoken words.

Ways to Make Computer Education Inclusive

1. Provide accessible computers and learning materials.
2. Use screen readers and magnification tools.
3. Provide captions and transcripts for audio-video lessons.
4. Use adjustable keyboards and other assistive devices.
5. Design websites and applications that follow accessibility standards.
6. Give equal learning opportunities to all students.

10. Quick Revision – Important Definitions

Term	One-Line Definition
Digital Footprint	Trail of information left by a user while using digital devices and the internet.
Netizen	A person who actively uses the internet.
Netiquette	Rules of good behaviour while communicating online.
Data Protection	Protecting data from unauthorized access, misuse or loss.
IPR	Legal rights that protect intellectual creations and inventions.
Plagiarism	Using someone else's work without proper acknowledgement.
Copyright	Legal protection for original creative works.
Patent	Legal protection for a new invention.
Trademark	Protection of a brand name, logo or symbol.
Open Source Software	Software whose source code is available under an open-source licence.
Cybercrime	Illegal activities performed using computers or the internet.
Hacking	Gaining access to computer systems by exploiting security weaknesses.
Eavesdropping	Secretly monitoring private communication.
Phishing	Tricking users into revealing confidential information.

Ransomware	Malware that locks or encrypts data and demands ransom.
Cybersafety	Safe and responsible use of the internet.
Confidentiality	Ensuring that information is accessible only to authorized persons.
Cyberbullying	Repeated harassment or intimidation using digital technology.
Malware	Software designed to harm, disrupt or gain unauthorized access to systems.
E-waste	Discarded electrical and electronic devices.
Assistive Technology	Technology that helps persons with disabilities use digital devices.

11. Important Questions for Examination

Exam Preparation

A. Very Short Answer Questions (1 Mark)

1. What is a digital footprint?Define a netizen.
2. What is netiquette? What is data protection?
3. Expand IPR.
4. What is plagiarism?
5. Define open-source software.
6. What is phishing?
7. What is ransomware?
8. What is cyberbullying?
9. Expand OSS.
10. What is malware?
11. What is e-waste?
12. What is a Trojan Horse?
13. What is the full form of GPL?
14. When did the IT Act, 2000 come into force?
15. What is a screen reader?
16. What is identity protection?

B. Short Answer Questions (2 Marks)

1. Differentiate between active and passive digital footprints.
2. Write any four netiquettes.
3. Differentiate between copyright and patent.
4. What is the difference between phishing and fraud emails?
5. Write any four methods of preventing cybercrime.
6. What is the difference between a virus and a Trojan Horse?
7. Explain any two harmful effects of e-waste.
8. Write two differences between cyber trolls and cyberbullying.
9. What is confidentiality? Give two examples.
10. Explain Creative Commons and GPL licences.

C. Long Answer Questions (3-5 Marks)

1. Explain the different types of Intellectual Property Rights with examples.
2. Explain plagiarism, copyright infringement and trademark infringement.
3. Describe hacking, eavesdropping, phishing and ransomware.
4. Explain different types of malware with suitable examples.
5. What is e-waste? Explain its harmful effects and methods of proper disposal.
6. Explain the objectives and important provisions of the Indian IT Act, 2000.
7. What is cybersafety? Explain various measures to ensure safe internet browsing.
8. Explain the role of assistive technologies in making computer education inclusive.
9. Explain gender-related issues in teaching and using computers.

10. Explain the different types of open-source licences.

D. Application-Based Questions

Q1. Rahul copied an assignment from a website and submitted it as his own work. Identify the violation.
Answer: Plagiarism.
Q2. A person receives an email asking him to click a link and enter his bank password to avoid account suspension. Identify the cyberattack.
Answer: Phishing.
Q3. A computer suddenly locks all files and displays a message demanding money to unlock them. Identify the malware.
Answer: Ransomware.
Q4. A company uses another company's registered logo on its products without permission. Identify the violation.
Answer: Trademark infringement.
Q5. A visually impaired student uses software that reads the contents of a computer screen aloud. Name the technology.
Answer: Screen Reader.
Q6. A student distributes pirated copies of copyrighted software. Identify the violation.
Answer: Copyright infringement.
Q7. A person secretly monitors communication over an unsecured network. Identify the cybercrime.
Answer: Eavesdropping.
Q8. A person sells discarded computers to an authorized electronic recycling centre. Identify the environmental practice.
Answer: E-waste recycling.
Teaching suggestion: Cover this chapter in 4–5 classroom periods. Give special attention to IPR, types of cybercrime, malware, IT Act sections and assistive technologies, as these topics are particularly suitable for MCQs, short-answer and case-based questions.

INFORMATICS PRACTICES

Section A – Short Answer Questions

1) Write two points of difference between a **list** and a **dictionary**.
2) What is the output of the following code:
    a. L = [2, 4, 6, 8]
    b. print(L[1:3])
3) What will be the output?
    i. fruits = ["apple", "banana", "mango"]
    ii. fruits.append("grape")
    iii. print(fruits)
4) Write the syntax and use of the following list functions:
   (a) append() (b) sort()
5) How can you **update** a value in a dictionary? Give an example.
6) Write a Python statement to remove a key 'age' from the dictionary student.

7) What will be the result of the following code?

i. L1 = [10, 20, 30]

ii. print(len(L1))

Section B – Short Answer Questions

1) Explain any **three list functions** with examples.
2) Write a Python code to input five numbers into a list and display their sum.
3) How are **dictionary keys** different from **values**? Give one example for each.
4) Write Python code to store and display marks of three subjects using a dictionary.
5) Explain **three properties of tuples** with suitable examples.

Section C – Long Answer Questions)

6) Write a Python program to create a list of 5 numbers entered by the user.

i) Display the list

ii) Display the **maximum**, **minimum**, and **average** value of the list

7)Write a program to create a dictionary storing student names as **keys** and their marks as **values**.

i) Display all key-value pairs

ii) Display the average marks of the class

8)Explain the differences among **List, and Dictionary** with at least four points and examples for each.

9)Write a Python program to:

i) Create a LIST of integers

ii) Count how many times a number (say 5) appears in the List

iii) Display the index of its first occurrence

9)Explain with example the use of these dictionary methods:

i) keys()

ii) values()

iii) items()

iv) get()

v) copy()

vi) update( )

vii) pop()

Questions (For Practice)

1. Differentiate between **mutable** and **immutable** data types with examples.
2. Predict the output of:

```
a = [1, 2, 3]
b = a
b.append(4)
   print(a)
```

SUB- FINE ART

1) Traditional Art
2) City Composition

**********THE END**********