

I.I SEMESTER SYLLABUS

COMMUNICATING EFFECTIVELY IN ENGLISH

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Rationale

Interpersonal communication is a natural and necessary part of organizational life. Yet, communicating effectively can be challenging because of our inherent nature to assume, overreact to and misperceive what actually is happening. Poor communication or lack of communication is often cited as the cause of conflict and poor teamwork. In today's team-oriented workplace, managing communication and developing strategies for creating shared meaning are crucial to achieving results and creating successful organizations. The goal of the *Communicating Effectively in English* course is to produce civic-minded, competent communicators. To that end, students must demonstrate oral as well as written communication proficiency. These include organizational and interpersonal communication, public address and performance.

Objectives of Course in Communicating Effectively in English for the First Year (I & II Semesters) are:

- * *Understanding how communication works*
- * *Gaining active listening and responding skills*
- * *Understanding the importance of body language*
- * *Acquiring different strategies of reading texts*
- * *Increasing confidence by providing opportunities for oral and written expressions*

DETAILED CONTENTS FOR FIRST SEMESTER**I SEMESTER****48 HRS****1. COMMUNICATION SKILLS 6 hrs**

- 1.1 Verbal and Non-verbal Communication
- 1.2 Process of Communication
- 1.3 Barriers to Communication; Overcoming Strategies
- 1.4 Listening and Speaking Skills and Sub-Skills
- 2. Spoken English-Introduction, Features of Spoken English

(Note: This module is only for practice. This should not be included in the final examination)

2. DEVELOPING ORAL COMMUNICATION SKILLS**8 hrs**

- 2.1 Greeting, Starting a Conversation
- 2.3 Introducing Oneself
- 2.4 Introducing Others
- 2.5 Leave Taking
- 2.6 Thanking, Wishing Well
- 2.7 Talking about Oneself
- 2.8 Talking about Likes and Dislikes

3. GRAMMAR AND USAGE**12 hrs**

- 3.1 Punctuation
- 3.2 Articles-a, an, the
- 3.3 Framing Questions
- 3.4 Verbs-Classification: Main Verb, Auxiliary Verb, Transitive & Intransitive Verbs, Phrasal Verbs
- 3.5 Word Formation

4. WRITING SKILLS**10 hrs**

- 4.1 Writing Paragraphs
- 4.2 Picture Composition

5. READING SKILLS**12 hrs**

- 5.1 Vocabulary Enhancement
- 5.2 Techniques of Reading: Skimming, Scanning, Intensive and Extensive Reading

NOTE: The Reading Skills of the learners (along with vocabulary enhancement)

will be through reading thematic articles/essays and/or stories.

Section I

Theoretical Concepts of Communication Skills

Unit 1	Communication Skills	
Unit 2	Listening and Speaking Skills and Sub-Skills	24
Unit 3	Pronunciation	29

Section II

Oral Communication Skills

Unit 1	Starting a Conversation	57
Unit 2	Introducing Oneself and Others	58
Unit 3	Greeting and Taking Leave	62
Unit 4	Wishing Well	65
Unit 5	Expressing Thanks	68
Unit 6	Talking about Oneself	69
Unit 7	Expressing Likes and Dislikes	71

Section III Reading

Skills

Unit 1	Who is the Dumbest Animal in the World?	77
Unit 2	The Happy Guy Discovers the Cause of Memory Loss: Defective Glue	86
Unit 3	Himalaya: Tantric Phuchen Lamas	94
Unit 4	Samoa, Heart of Polynesia	100
Unit 5	A Guide to Gas Powered RC Cars	11
Unit 6	Life's a Beach: A Shore Theme in Your Outdoor Space	117
Unit 7	Spanish Tapas: The Small Plate with Big Flavour	124
Unit 8	Himalaya: Cultural Experience—Spiti	134
Unit 9	Paperless Payroll: Going Green Saves More Than Trees	149

Section IV**Writing Skills**

Unit 1	Mechanics of Developing a Paragraph	158
Unit 2	Strategies of Developing a Paragraph	165
Unit 3	Integrated Language Tasks	169
Unit 4	Picture Composition	173

Section V**Grammar and Usage**

Unit 1	Punctuation	180
Unit 2	Articles	188
Unit 3	Word Formation	192
Unit 4	Framing Questions	199
Unit 5	Verbs	210
Unit 6	Transitive and Intransitive Verbs	214
Unit 7	Phrasal Verbs	219
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1.2 BASICS OF INFORMATION TECHNOLOGY

RATIONAL

Information technology has great influence on all aspects of life. Almost all work places and living environment are being computerized. In order to prepare diploma holders to work in these environments, it is essential that they are exposed to various aspects of information technology such as understanding the concept of information technology and its scope; operating a computer; use of various tools of MS office; using internet etc. form the broad competency profile of diploma holders. This exposure will enable the students to enter their professions with confidence, live in a harmonious way and contribute to the productivity.

Note:

1. *Teaching of theory should be dovetailed with practical work*
2. *The following topics may be taught in the laboratory along with the practical exercises.*

DETAILED CONTENTS

1. Information Technology – its concept and scope
2. Computers for information storage, information seeking, information processing and information transmission
3. Elements of computer system, computer hardware and software; data –
numeric data, alpha numeric data; contents of a program, processing
4. Computer organization, block diagram of a computer, CPU, memory
5. Input devices; keyboard, mouse etc; output devices; VDU and Printer, Scanner, Plotter
6. Electrical requirements, inter-connections between units, connectors and cables

7. Secondary storage; magnetic disks – tracks and sectors, optical disk (CD and DVD Memory), primary and secondary memory: RAM, ROM, PROM etc., Capacity; device controllers, serial port, parallel port, system bus
8. Exercises on file opening and closing; memory management; device management and input – output (I/O) management with respect of windows
9. Installation concept and precautions to be observed while installing the system and software
10. Introduction about Operating Systems such as MS-DOS and Windows
11. Special features, various commands of MS word and MS-Excel
12. About the internet – server types, connectivity (TCP/IP, shell); applications of internet like: e-mail and browsing
13. Various Browsers like WWW (World wide web); hyperlinks; HTTP (Hyper Text Transfer Protocol); FTP (File Transfer Protocol)
14. Basics of Networking – LAN,WAN, Topologies

LIST OF PRACTICALS

1. Given a PC, name its various components and list their functions
2. Identification of various parts of a computer and peripherals
3. Practice in installing a computer system by giving connection and loading the system software and application software
4. Installation of DOS and simple exercises on TYPE, REN, DEL, CD, MD, COPY, TREE, BACKUP commands
5. Exercises on entering text and data (Typing Practice)
6. Installation of Windows 98 or 2000 etc.
 - (1) Features of Windows as an operating system
 - Start
 - Shutdown and restore
 - Creating and operating on the icons
 - Opening closing and sizing the windows
 - Using elementary job commands like – creating, saving, modifying, renaming, finding and deleting a file

- Creating and operating on a folder
- Changing setting like, date, time color (back ground and fore ground)
- Using short cuts
- Using on line help

7. MS-WORD

- File Management:
Opening, creating and saving a document, locating files, copying contents in some different file(s), protecting files, Giving password protection for a file
- Page Set up:
Setting margins, tab setting, ruler, indenting
- Editing a document:
Entering text, Cut, copy, paste using tool-bars
- Formatting a document:
Using different fonts, changing font size and colour, changing the appearance through bold/ italic/ underlined, highlighting a text, changing case, using subscript and superscript, using different underline methods
- Aligning of text in a document, justification of document ,Inserting bullets and numbering
- Formatting paragraph, inserting page breaks and column breaks
- Use of headers, footers: Inserting footnote, end note, use of comments
- Inserting date, time, special symbols, importing graphic images, drawing tools
- Tables and Borders:
Creating a table, formatting cells, use of different border styles, shading in tables, merging of cells, partition of cells, inserting and deleting a row in a table
- Print preview, zoom, page set up, printing options

- Using Find, Replace options
- Using Tools like:
Spell checker, help, use of macros, mail merge, thesaurus word content and statistics, printing envelopes and labels
- Using shapes and drawing toolbar,
- Working with more than one window in MS Word,
- How to change the version of the document from one window OS to another
- Conversion between different text editors, software and MS word

8. MS-EXCEL

- Starting excel, open worksheet, enter, edit, data, formulas to calculate values, format data, create chart, printing chart, save worksheet, switching from another spread sheet
- Menu commands:
create, format charts, organise, manage data, solving problem by analyzing data, exchange with other applications. Programming with MS-Excel, getting information while working
- Work books:
Managing workbooks (create, open, close, save), working in work books, selecting the cells, choosing commands, data entry techniques, formula creation and links, controlling calculations, working with arrays
- Editing a worksheet, copying, moving cells, pasting, inserting, deletion cells, rows, columns, find and replace text, numbers of cells, formatting worksheet
- Creating a chart:
Working with chart types, changing data in chart, formatting a chart, use chart to analyze data
- Using a list to organize data, sorting and filtering data in list
- Retrieve data with MS – query: Create a pivot table, customising a pivot table. Statistical analysis of data
- Customise MS-Excel:
How to change view of worksheet, outlining a worksheet,

customise workspace, using templates to create default workbooks, protecting work book

- Exchange data with other application: linking and embedding, embedding objects, linking to other applications, import, export document.

9. Internet and its Applications

- a) Log-in to internet
- b) Navigation for information seeking on internet
- c) Browsing and down loading of information from internet
- d) Sending and receiving e-mail
 - Creating a message
 - Creating an address book
 - Attaching a file with e-mail message
 - Receiving a message
 - Deleting a message

RECOMMENDED BOOKS

1. Fundamentals of Computer by V Rajaraman; Prentice Hall of India Pvt. Ltd., New Delhi
2. Computers Today by SK Basandara, Galgotia publication Pvt Ltd. Daryaganj, New Delhi
3. MS-Office 2000 for Everyone by Sanjay Saxena; Vikas Publishing House Pvt. Ltd., New Delhi
4. Internet for Every One by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi
5. A First Course in Computer by Sanjay Saxena; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi
6. Mastering Windows 95, BPB Publication, New Delhi
7. Computer Fundamentals by PK Sinha; BPB Publication, New Delhi
8. Fundamentals of Information Technology by Leon and Leon; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi

1.3 TYPING (ENGLISH)

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RATIONALE

Typewriter is used in the offices for typing letters, bills, invoices, forms, notices, reports, statements and other written forms of communication. The students of this programme must have the necessary skills to operate the key-board of manual and electronic type-writers and computer systems, which have similar key positions. The proficiency in typing will enable the students to perform in the written communication, necessary for modern offices, efficiently and effectively. Through the series of courses in typing, data processing & Computer application in Modern Office, the necessary skills to operate key-board shall be developed in the students of this diploma programme. Speed and accuracy must be sole aim of the student in this subject.

DETAILED CONTENTS

Note An Introduction and demonstration of following may be given to the students before starting practicals:

1. Importance of typewriting and scope of job opportunities
2. Makes, categories and sizes of typewriters
3. Sitting posture
4. Insertion and removal of paper
5. Fixing and releasing margin stops
6. Carriage operation
7. Touch Vs sight typing and rhythm in typing
8. Knowledge of essential parts of typewriter
9. Carbon copy
10. Stencil cutting.

LIST OF PRACTICALS

1. Operation of the Key Board and location of various parts on the typewriter
2. Insertion of paper, margin fixing

3. Carriage return
4. Line space adjustment
5. Operation of Bichrome switch
6. Operation of home keys on the typewriter with repetitive practice/exercises
7. Operation of top row keys on the typewriter with repetitive exercises.
8. Operation of bottom row keys on the typewriter with repetitive exercises
9. Operation of numeric keys on the typewriter with repetitive exercises.
10. Operation of special signs and additional keys on the typewriter with repetitive exercises.
11. Operation of shift keys
12. Speed practice from various drills given in the book starting from sentences to paragraphs etc.
13. Punctuation marks, spacing after punctuation, syllabification

Attainment

At the end of the semester the student should be able to operate the typewriter correctly.

Speed: 15 w.p.m.

Note: The teacher must consistently take care that the correct habit of typing with touch system be inculcated amongst the students so that the necessary skill of speed and accuracy may be developed.

RECOMMENDED BOOKS A.

For Practicals

1. Typewriting Made Easy for beginners (Book-I) by OP Kuthiala : Pitman Publications
2. Typewriting Speed and Accuracy (Book-II) by OP Kuthiala: Pitman Publications
3. Commercial Typewriting by Welmslay

B. For Theory

1. A Hand Book or Type Writing – Government of India Publications
2. English Typewriting Instructor by Dr GD Bist: Published by Short hand House
3. Typewriting Theory and Practice by R C Bhatia; Stering Publishers Pvt Ltd.

1.4 BUSINESS ORGANIZATIONS

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RATIONALE

Since the diploma holders in office management and computer applications have to work in different types of organizations, the study of the subject is very important for the students of this diploma in understanding the various types of business organizations. The course includes nature, scope and forms of business organizations. This will enable the student get familiar with the environment of an organization and working of different forms of organizations.

DETAIL CONTENTS

- | | | |
|----|---|----------|
| 1. | Introduction | (20 hrs |
| | 1.1 Meaning and scope of business | |
| | 1.2 Business and Profession | |
| | 1.3 Qualities of good businessman | |
| | 1.4 Business ethics | |
| 2. | Forms of Business Organization | (50 hrs |
| | 2.1 Sole Proprietorship: Meaning, features, merits and demerits | |
| | 2.2 Partnership: Meaning, partnership-deed, types of partnerships, merits and demerits | |
| | 2.3 Company: Meaning, features types of companies, difference between private and public company, Merits and demerits | |
| | 2.4 Cooperative Societies: Meaning, types of societies - their functioning, advantages and disadvantages | |
| 3. | Introduction to Sources of Finance | (26 hrs) |
| | Owned and borrowed capital, financial institutions (state industrial development corporation, commercial and state cooperative banks etc) | |

Assignments

1. Collect reports from Newspapers and Magazines regarding various types of business organizations.
2. Chart showing different types of companies.

RECOMMENDED BOOKS

1. Fundamentals of Business Organization and Management by Bhushan, Y.K; Sultan Chand and Sons, New Delhi
2. Business Organization and Management by Gupta, C.B; Sultan Chand and Sons, New Delhi
3. Business Organization Principles and Practices by Katyal, J.C. and Sharma R.K
4. Business Organization and Management by M.C. Shukla

1.5 BOOK-KEEPING AND ACCOUNTANCY - I

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RATIONALE

Diploma holders working in offices as Office Assistants or Private Secretaries has to deal with financial and banking transactions of the institute/industry/company/organization. This subject will provide sufficient knowledge and skill to the students related to accounting procedure.

DETAILED CONTENTS

Note: Tutorial Classes may be organized along with theoretical instructions.

1. Introduction (25 hrs)
 - $\frac{3}{4}$ Definition of Book-Keeping and Accountancy. Need / Importance of Book Keeping and Accountancy. Double entry system of Book Keeping
 - $\frac{3}{4}$ Accounting Equations
 - $\frac{3}{4}$ Types of Accounts Rules for debit and credit
 - $\frac{3}{4}$ Accounting Terms:
 - a. Capital
 - b. Liability
 - c. Asset
 - d. Revenue
 - e. Expense
 - f. Purchas
 - e g. Sales
 - h. Stock
 - i. Debtors
 - j. Creditor
2. Journal including compound entries and special Transactions (30 hrs)
3. Ledger (18 hrs)
4. Cash Book: Single Column, Double Column and Three Column Cash Book (Including Petty Cash Book) (24 hrs)
4. Subsidiary Book – Purchase Book, Sales Book Purchase Return Book, Sales Return Book (12 hrs)
6. Trial Balance (10 hrs)

7. Final Accounts: (25 hrs)
 Meaning and Importance of Trading account Profit and Loss account and Balance Sheet (without Adjustments) and then Preparation

ASSIGNMENTS (Tutorial exercises on following should be taken-up):

1. Journal and Subsidiary Book
2. Ledger and Trial Balance
3. Cash Book, Petty Cash Book
4. Final Account.

RECOMMENDED BOOKS

1. Introduction to Accountancy by Grewal, T.S; Sultan Chand & Sons, New Delhi.
2. Advanced Accounts (Complete) by Shukla, M.C.; Sultan Chand & Sons, New Delhi.
3. Elements of Book-keeping by Juneja, C.M. and Saksena, R.K.; Kalyani Publications.
4. Accountancy – Theory and Practice by Juneja, C.M. and Saksena, R.K; Kalyani Publications.
5. Accountancy by Jain, S.P. and Narang, K.L.; Kalyani Publications
6. Principles of Management Accounting by Man Mohan and Dr. Goyal; Sahitya Bhawan Publications.
7. Principles and Practice of Book-keeping by Patil, V.A. and Kortahalli, J.S: Sultan Chand and Sons, New Delhi.
8. Book-keeping and Accountancy by Gupta and Sharma; Dhanpat Rai and Sons.
9. Fundamentals of Accountancy for 10+1 by H.S. Punia and V.P. Sharma, Unistar Books Private Ltd., Chandigarh.

1.6 PRINCIPLES OF MANAGEMENT

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RATIONALE

The study and understanding of principles of management concepts and different functions of management is very essential for the students of this diploma. The subject includes elementary knowledge of concepts of management viz. planning, organizing, staffing, directing and controlling. The basic knowledge of various functions of management will enable the students to take effective steps for performing various office duties.

DETAILED CONTENTS

- | | | |
|----|---|---------|
| 1. | Introduction | (10 hrs |
| | 1.1 Meaning and Importance of management | |
| | 1.2 Role and objectives of management | |
| | 1.3 Principles and Functions of management | |
| 2. | Planning | (15 hrs |
| | 2.1 Meaning and importance | |
| | 2.2 Planning process | |
| | 2.3 Meaning, importance and Objectives of Short term, Long term and strategic planning | |
| | 2.4 Meaning, importance and process of Decision Making | |
| 3. | Organizing | (20 hrs |
| | 3.1 Meaning and importance | |
| | 3.2 Concepts of Formal, Informal, Functional, line and staff and Committee type organizations | |
| | 3.3 Concepts, Importance and difference between Delegation and Decentralization | |
| 4. | Staffing | (15 hrs |
| | 4.1 Man Power planning - Meaning and importance | |
| | 4.2 Recruitment and Selection Process | |
| | 4.3 Concept Need and importance of staff training | |
| | 4.4 Introduction to 'on the job' 'off the job' and 'continuing training' | |
| 5. | Directing | (15 hrs |
| | 5.1 Concept and Importance | |

- 5.2 Leadership- Concept, Importance, Types of Leaders, Qualities of good leader
 - 5.3 Motivation – Meaning, Types and Importance
 - 5.4 Communication – Concepts, Importance, process and types of Communication.
6. Controlling (14 hrs)
- 6.1 Meaning Importance and process of Control
 - 6.2 Monitoring and Evaluation – Concepts only
7. Time Management and Total Quality Management (7 hrs)
- 7.1 Time Management- Concepts, Importance and technique of time management
 - 7.2 Total Quality Management – Meaning and importance

ASSIGNMENTS

1. Preparation of Organization Charts for Commercial and industrial organizations
2. Visit to industrial Organization and preparation of report
3. Role of playing exercises on Motivation
4. Discuss Case studies
5. Discuss the leadership styles and determine an appropriate style for a given situation

NOTE:Teacher may invite experienced Managers from industries and other organizations to deliver extension lectures. The teacher should plan and prepare appropriate tutorial assignments for the students. Students may be encouraged to prepare and present the case studies.

RECOMMENDED BOOKS

1. Principles and practices of Management- Prasad L.M.; Sultan Chand & Sons, New Delhi.
2. Management – Theory and Practice by Gupta, C.B
3. Fundamentals of Business Organization and Management by Bhushan Y.K; Sultan Chand & Sons, New Delhi.
4. Principles of Management by R.K. Sharma
5. Business Organization and Management by M.C. Shukla.
6. Business Organization and Management by Gupta C.B.; Sultan Chand & Sons, New Delhi.

7. Principles of Business Organization and Management by Reddy, P.N. and Gulshan, S.S.; Sultan Chand and Sons, New Delhi.
8. A text book of Business Organization by Vinayakam, N., Radhaswami, M. and Vasudevan.
9. Business Organization Principles and Practices by Katyal, J.C by Gupta C.B; Sultan Chand & Sons, New Delhi.
10. Principles of Management – An Analysis of Managerial Functions by Koontz, O Donnel: McGraw Hill Book Company.
11. Principles of Management by Terry, G.R.; Donnel; Sultan Chand & Sons, New Delhi.
12. Principles of Management by R.K. Sharma.
13. Management- Text and Case Studies by Satyaraju Parthsarthy; published by Prentice Hall of India Ltd., New Delhi
14. Management by Robbins and Coulter published by Prentice Hall of India Ltd., New Delhi.
15. Basic Managerial Skills for All by McGrath; published by Prentice Hall of India Ltd., New Delhi
16. Entrepreneurship by Robbins and Coulter published by Prentice Hall of India Ltd., New Delhi
17. Engineering Management by Fraidoon Mazda; Published by Addison – wlsdey, Longmen Delhi.

1.7 GENERAL WORKSHOP PRACTICE – I & II

RATIONAL

Manual abilities to handle engineering materials with hand tools need to be developed in the students. They will be using different types of tools/equipment in different shops for fabrication purposes. Besides developing the necessary skills, the students will appreciate the importance of quality and safety measures.

DETAILED CONTENTS

- Note:**
1. The students are supposed to come in proper workshop dress prescribed by the institute. Wearing shoes in the workshop(s) is compulsory. Importance of safety and cleanliness, safety measures and upkeep of tools, equipment and environment in each of the following shops should be explained and practiced. The students should prepare sketches of various tools/jobs in their practical Notebook.
 2. The shops to be offered in I and II semester may be decided at polytechnic level
 3. The students should be taken to various shops (not included in the curriculum) in the polytechnic in batches and should be given knowledge of the various machines/equipment. Such as machine shop, foundry shop, sheet metal shop, etc.
 4. Students of Diploma in Chemical Engineering will undergo Shops 1 to 6 only

Following seven shops are being proposed:

1. **Carpentry shop**
2. **Fitting and plumbing shop**
3. **Welding shop**
4. **Paint shop**
5. **Forging and sheet metal shop**
6. **Electric shop**
7. **Electronics Shop**

1. Carpentry Shop

- 1.1 Introduction to various types of wood, carpentry tools - their identification with sketches. Different types of wood joints.
- 1.2 Simple operations viz. hand sawing, marking, planing
- 1.3 Introduction and sharpening of wood working tools and practice of proper adjustment of tools
- 1.4 Demonstration and use of wood working machines i.e. band saw, circular saw, rip saw, bow saw and trammels. Universal wood working machine and wood turning lathe
- 1.5 Making of various joints (Also draw the sketches of various wooden joints in the Practical Note Book)
 - a) Cross lap joint
 - b) T-lap joint
 - c) Corner lap joint
 - d) Mortise and tenon joint
 - e) Dovetail joint
 - f) Prepare a file handle or any utility items by wood turning lathe

2. Fitting and Plumbing Shop

- 2.1. Introduction to fitting shop, common materials used in fitting shop, description and demonstration of various types of work-holding devices and surface plate, V-block
- 2.2 Demonstration and use of simple operation of hack-sawing, demonstration of various types of blades and their uses
- 2.3 Demonstrate and use of all important fitting shop tools with the help of neat sketches (files, punch, hammer, scraper, taps and dyes etc.)
- 2.4 Introduction of chipping, demonstration on chipping and its applications.
 Demonstration and function of chipping tools.
- 2.5 Description, demonstration and practice of simple operation of hack saw, straight and angular cutting.

- 2.6 Demonstrations, description and use of various types of blades - their uses and method of fitting the blade.
- 2.7 Introduction and use of measuring tools used in fitting shop like: Try square, Steel rule, Measuring Tape, Outside micrometer, Vernier Caliper and Vernier Height Gauge
- 2.8 Description, demonstration and practice of thread cutting using taps and dies
- 2.9 Plumbing: Descriptions and drawing of various plumbing shop tools, Safety precautions. Introduction and demonstration of pipe dies, Pipe holding devices, Demonstration and practice of Pipe Fittings such as Sockets, Elbow, Tee, Reducer, Nipple, Union coupling, plug, Bend, Float valves and Taps

Job: Cutting and filing practice on a square of 45 X 45 mm² from MS flat

Job: Angular cutting practice of 45° (on the above job)

Job: Preparation of stud (to cut external threads) with the help of dies (mm or BSW)

Job: Drilling, counter drilling and internal thread cutting with Taps

Job: H-Fitting in Mild steel (ms) square

Job: Pipe cutting practice and thread cutting on GI Pipe with pipe dies

3. Welding Shop

- 3.1 Introduction to welding, type of welding, common materials that can be welded, introduction to gas welding equipment, types of flame, adjustment of flame, applications of gas welding. Welding tools and safety precautions
- 3.2 Introduction to electric arc welding (AC and DC), practice in setting current and voltage for striking proper arc, precautions while using electric arc welding. Applications of arc welding. Introduction to polarity and their use
- 3.3 Introduction to brazing process, filler material and fluxes; applications of brazing. Use of solder. Introduction of soldering materials
- 3.4 Demonstrate and use of the different tools used in the welding shop with sketches. Hand shield, helmet, clipping hammer, gloves, welding lead, connectors, apron, goggles etc.

3.5 Demonstration of welding defects and Various types of joints and end preparation

Job: Preparation of cap joint by arc welding

Job: Preparation of Tee joint by arc welding

Job: Preparation of single V or double V butt joint by using Electric arc welding

Job: Brazing Practice. Use of Speltor (on MS sheet pieces) Job: Gas welding practice on worn-out and broken parts

4. Paint Shop

Introduction of painting shop and necessity. Different types of paints. Introduction of powder coating plant and their uses.

Job: Preparation of surface before painting such as cleaning, sanding, putty, procedure and application of primer coat, and painting steel item.

Job: Painting practice by brush on MS sheet

Job: Practice of dip painting

Job: Practice of lettering: Name plates / Sign board

Job: Polishing and painting on wooden and metallic surfaces

Job: Practical demonstration of powder coating

5. Forging and sheet metal shop

Introduction to forging, forging tools, tongs, blowers/pressure blowers, hammers, chisels, punch, anvil, swag-block etc. Forging operations.

5.1 Forge a L hook or Ring from MS rod 6 mm ϕ

5.2 Forge a chisel and give an idea of hardening and tempering

5.3 Lap joint with forge welding

5.4 High Strength Steel (HSS) tools – forging of Lathe shaper tools like side-tools and V-shape tools

5.5 Making sheet metal joints

5.6 Making sheet metal tray or a funnel or a computer chassis

5.7 Preparation of sheet metal jobs involving rolling, shearing, creasing, bending and cornering

5.8 Prepare a lap riveting joint of sheet metal pieces

6. Electric Shop

6.1 Demonstration of tools commonly used in Electric Shop

6.2 Safety precautions , electric shock treatment

6.3 Demonstration of Common Electric material like: wires, fuses, ceiling roses, battens, cleats and allied items

6.4 Demonstration of Voltmeter, Ammeter, Multimeter and Energy meter

Job: Wiring practice in batten wiring, plastic casing-capping and conduit

Job: Control of one lamp by one switch

Job: Control of one lamp by two switches Job: Control of one bell by one switch Job: Assemble a Tube light

Job: Dismantle, study, find out fault, repair the fault, assemble and test domestic appliances like electric iron, electric mixer, ceiling and table fan, tube-light, water heater (geyser) and desert cooler

Job: Laying out of complete wiring of a house (Single-phase and Three- phase)

7. Electronics Shop

7.1 Identification, familiarization, demonstration and use of the following electronic instruments:

a) Multi-meter digital

b) Single beam simple CRO , function of every knob on the front panel

c) Power supply , fixed voltage and variable voltage, single output as well as dual output.

7.2 Identification , familiarization and uses of commonly used tools; active and passive components; colour code and types of resistor and potentiometers

7.3 Cut, strip, join and insulate two lengths of wires/cables (repeat with different types of cables/ wires)

7.4 Demonstrate and practice the skill to remove components/wires by unsoldering

7.5 Cut, bend, tin component, leads, inserts. Solder components e.g. resistor, capacitor, diodes, transistors on a PCB

7.6 Wiring of a small circuit on a PCB/tag strip involving laying, sleeving and

use of identifier tags

- 7.7 Demonstrate the joining (or connecting) methods/mounting and dismantling method, as well as uses of the items mentioned below:
- a) Various types of plugs, sockets, connectors suitable for general-purpose audio video use. Some of such connectors e.g. 2 and 3 pin mains plug and sockets, Banana plugs, sockets and similar male and female connectors and terminal strips.
 - b) Various types of switches such as: normal/miniature toggle, slide, push button piano key, rotary, SPST, SPDT, DPST, DPDT, band selector, multi-way Master Mains Switch.
- 7.8 Exposure to modern soldering and de-soldering processes (Field visits)
- 7.9 De-solder pump, remove and clean all the components and wires from a given equipment, a PCB or a tag strip.