2.1 COMMUNICATING EFFECTIVELY IN ENGLISH
II SEMESTER SYLLABUS

L T P
3 - 2

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 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.

II SEMESTER 48 hrs

1. LISTENING COMPREHENSION 4hrs

1.1 Locating Main Ideas in a Listening Excerpt
1.2 Note-taking

2. ORAL COMMUNICATION SKILLS 14 hrs

2.1 Offering-Responding to Offers
2.2 Requesting-Responding to Requests
2.3 Congratulating
2.4 Expressing Sympathy and Condolences
2.5 Expressing Disappointments
2.6 Asking Questions-Polite Responses
2.7 Apologizing,
Forgiving
2.8 Complaining
2.9 Persuading
2.10 Warning
2.11 Asking for and Giving Information
2.12 Giving Instructions
2.13 Getting and Giving Permission
2.14 Asking For and Giving Opinions

3. GRAMMAR AND USAGE 10hrs

3.1 Prepositions
3.2 Pronouns
3.3 Determiners
3.4 Conjunctions
3.5 Question and Question Tag
3.6 Tenses (Simple Present, Simple Past)

*One chapter revising the topics discussed during the first semester.
(Punctuation, Articles, Framing questions, Verbs, Word formation)

4. WRITING SKILLS **10hrs**

4.1 Writing Notice
4.2 Writing Circular
4.3 Writing a Memo
4.4 Agenda for a Meeting
4.5 Minutes of the Meeting
4.6 Telephonic Messages

* Writing a paragraph will be a continuous exercise through out the session.
(Writing will be based on verbal stimuli, tables and graphs.)

5. READING SKILLS **10hrs**

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.

CONTENTS

Reading Skills

Writing Skills

Grammar and Usage

2.2 ANATOMY AND PHYSIOLOGY - II

L	T	P
3	-	2

RATIONALE

The students are supposed to have basic knowledge of structure of body, their anatomical parts, physiological functions. After studying this subject, the students shall be able to understand various parts of body and their anatomical positions along with functions.

DETAILED CONTENTS

Theory

1. Circulatory system (10 hrs)
   - 1.1 Composition and functions of blood
   - 1.2 Heart anatomy and physiology
   - 1.3 The chambers of heart, various vessels and valves present in heart
   - 1.4 Circulation of blood
   - 1.5 The blood pressure
   - 1.6 Arteries and viens
   - 1.7 Lymph and lymphatic system

2. Nervous system (10 hrs)
   - 2.1 Central nervous system (brain and spinal cord)
   - 2.2 Peripheral nervous system (cranial and spinal nerves)
   - 2.3 The sense organs (eye, ear, tongue and nose); structure and functions

3. Muscular system (6 hrs)
   - 3.1 Brief description of skeletal, smooth and cardiac muscles
   - 3.2 Some important muscles of body

4. Skeletal system (6 hrs)
   - 4.1 The skeleton, important bones and their brief description
   - 4.2 Articulation of bones - joints

5. Endocrine system (8 hrs)
   Short description of each endocrine gland its secretions and their effect on the body

6. Reproductive System (8 hrs)
   - 6.1 Male and female reproductive system
   - 6.2 Histology of Gonads
   - 6.3 The ovarian cycle and ovulation
   - 6.4 Fertilization

LIST OF EXPERIMENTS

1. Demonstration of various parts of circulatory system (Demonstration from models)

2. Examination of blood film for various blood cells from stained slides

3. Estimation of blood pressure with the help of BP apparatus

4. Demonstration of various parts of nervous system (brain and spinal card) (Model)

5. Structure of eye and ear (demonstration from models)

6. Demonstration of structural differences between skeletal, smooth and cardiac muscles (permanent mounts)

7. Demonstration of various bones and joints

8. Demonstration of various parts of reproductive system (male and female from models and charts)

RECOMMENDED BOOKS

1. Anatomy and Physiology by Pears; JP Brothers, New Delhi

2. Anatomy and Physiology by Sears; ELBS, London

3. Basic Anatomy and Physiology by N Murugesh; Sathya Publishers, Madurai

4. Ross and Wilson Anatomy and Physiology by Anne Waugh and Kathleen JW Wilson; Curchill Living Stone; London

2.3 CLINICAL MICROBIOLOGY - II

L	T	P
3	-	4

RATIONALE

The students undergoing training of medical laboratory technology learn the knowledge of basic morphology, staining, culture, biochemical characteristics and lab-diagnosis of pathogenic bacteria. In addition to this, they are also made aware about the examination of bacteria present in milk, food, water and air.

DETAILED CONTENTS

Theory

1. Morphology, staining, culture, biochemical characteristics and lab diagnosis of: (25 hrs)
   - 1.1 Staphylococci and micrococci
   - 1.2 Streptococci and pneumococci
   - 1.3 Corynebacterium diphtheriae
   - 1.4 Enterobacteriaceal - I (E coli, Klebsiella, Enterobacter)
   - 1.5 Enterobacteriaceal – II (Salmonella, Shigella, Proteus)
   - 1.6 Pseudomonas
   - 1.7 Vibrio Cholerae
   - 1.8 Neisseria and Haemophilus
   - 1.9 Clostridium
   - 1.10 Treponema pallidium
   - 1.11 Mycobacterium tuberculosis

2. Bacteriological examination of water, milk, food and air (5 hrs)

3. Bacterial Pathogenicity (3 hrs)
   - 3.1 Definitions of pathogenicity, pathogenises and virulence
   - 3.2 Sources of infection
   - 3.3 Mode of spread of infection
   - 3.4 Types of infection

4. Nosocomial Infection (5 hrs)
   - 4.1 Introduction
   - 4.2 Common types and source of nosocomial infection
   - 4.3 Surveilence and control of nosocomial infections

5. Laboratory diagnosis of infectious diseases (10 hrs)
   - 5.1 Septicaemia and bacteraemia
   - 5.2 Respiratory tract infections
   - 5.2 Wound and skin infection

5.3 Urinary tract infection
5.4 Genital tract infections
5.5 Meningitis
5.6 Gastro intestinal infections
5.7 PUO

LIST OF PRACTICALS

1. Collection, transpsortation of clinical samples, processing including culture of following clinical samples for identification of pathogens – Urine, Stool, Sputum, Throat swabs, Pus and Pus swabs, Blood, Skin, Eye and Ear swabs, CSF and other body fluids
2. Identification of pure bacterial cultures of common pathogens such as Staphylococi and micrococci, Streptococci and pneumococci, Corynebacterium dipththeriae. Enterobacteriaceal-I (E coli, Klebsiella, Enterobacter), Enterobacteriaceal–II (Salmonella, Shigella, Proteus), Pseudomonas, Vibrio Cholerae, Neisseria and Haemophilus, Clostridium, Treponema pallidium, Microbacterium tuberculosis

3. Bacteriological examination of water, milk, food and air samples

RECOMMENDED BOOKS

1. Medical Laboratory Technology by Kanai Lal Mukherjee; Tata McGraw Hill, New Delhi

2. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworth – Heinemann; Oxford

3. An Introduction to Parasitology by KD Chatterjee; Chatterjee Medical Publishers, Kolkatta

4. Text Book of Microbiology by Ananthanarayan and Paniker; Orient Longman, Hyderabad

5. Textbook of Medical Microbiology by Satish Gupta; JP Brothers, New Delhi

6. Practical Book of Medical Microbiology by Satish Gupta; JP Brothers, New Delhi

7. Medical Laboratory Manual for Tropical Countries Vol. I and II by Monica Cheesbrough; Cambridge University Press; UK

8. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai

9. Text book of Medical Microbilogy by Cruckshiank Vol. I and II

2.4 CLINICAL HAEMATOLOGY - II

L	T	P
3	-	4

RATIONALE

The training in haematology is imparted to enable the students to know the principle of tests, methodology of routine as well as advanced procedures being carried out in the laboratory by using routine sample as well as sophisticated instruments. Stress is also given in use of safety measures in the laboratory

DETAILED CONTENTS

Theory

1. Haemoglobinometry (11 hrs)

   1.1 Formation of haemoglobin, function and its degradation
   1.2 Types of haemoglobin
   1.3 Various methods of estimation with specific reference to cyanmethaemoglobin method

2. Haemocytometery (14 hrs)

   2.1 Various counting chambers
   2.2 Methods of counting of RBC, WBC and platelets
   2.3 Errors involved in haemocytometery and means to minimize them

3. Quality Control in haematology (10 hrs)

4. Automation in hematology (5 hrs)

LIST OF PRACTICALS

1. Preparation of peripheral blood film and recognition of different cellular components

2. Preparation and standardization of stains (leishman and giemsa)

3. Preparation of thick and thin blood smear

4. Counting of RBC in a clinical sample

5. Counting of WBC in a clinical sample

6. Platelet counting of a clinical sample

7. Absolute eosinophil counting of a clinical sample

8. Study of morphology of normal RBC and WBC with the help of stained slide

9. To study abnormal morphology of RBC with the help of stained slide

10. To study abnormal morphology of WBC with the help of stained slide

11. To study abnormal morphology of platelet with the help of stained slide

RECOMMENDED BOOKS

1. Medical Laboratory Technology Vol. 1 by KL Mukherjee; Tata McGraw Hill Publishers, New Delhi

2. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworth Heinmann, Oxford

3. Medical Laboratory Manual for Tropical Countries by Monica Cheesbrough; Cambridge University Press, UK

4. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai

5. Practical Haematology by JV Decei; ELBS with Curchill Living Stone; UK

6. Medical Laboratory Science Theory and Practical by J Ochei and A Kolhatkar, Tata McGraw Hill Publishing Company Ltd., New Delhi 2000 Ed.

2.5 CLINICAL BIOCHEMISTRY - II

L	T	P
3	-	4

RATIONALE

The students are imparted basic training of theoretical and practical aspects in the field of clinical biochemistry. The students are made to learn the technique of collection of clinical samples and their processing along with recording of data. The student will also obtain the basic knowledge of chemistry and metabolism of various metabolites which are routinely estimated in different diseases so that a clear understanding of the different tests is obtained. The students are also given basic training in safety measures, quality control and automation

DETAILED CONTENTS

Theory

1. Blood Glucose estimation and Glucose tolerance Test (GTT) (10 hrs)

    1.1 Principle and methods of estimation
    1.2 Reference values
    1.3 True and apparent sugar
    1.4 Precautionary measures
    1.5 Metabolism of glucose
    1.6 Renal threshold
    1.7 Clinical importance of blood glucose and GTT

2. Serum Calcium (7 hrs)

    2.1 Principle and procedure of estimation
    2.2 Reference values
    9.3 Clinical importance

3. Plasma and Serum proteins (7 hrs)

    3.1 Definition
    3.2 Formation of plasma proteins
    3.3 Different methods of estimation including principles and procedures
    3.4 Reference values
    3.5 Clinical importance

4. Serum cholesterol (7 hrs)

    4.1 Formation of cholesterol
    4.2 Various methods of estimation including principles and procedures
    4.3 Reference values
    4.4 Clinical importance

5. Electrolytes and trace elements (7 hrs)

   5.1 Functions of electrolytes (Na^+, K^+, Cl^-. Ca^{2+}, PO_4^{3-}, and metabolism of these ions
   5.2 Principles and procedures of estimation
   5.3 Reference values, clinical importance

6. Clinical importance of radioisotopes, their brief description and use (5 hrs)

7. Quality control in clinical biochemistry (5 hrs)

LIST OF PRACTICALS

1. Estimation of blood glucose using O-toluidine method and enzyme method

2. Performance of GTT of a clinical sample

3. Serum urea estimation of a clinical sample

4. Plasma and serum protein estimation of a clinical sample

5. Serum cholesterol estimation of a clinical sample

6. Estimation of electrolyte levels of Na^+ and K^+ by flame photometer, kit method and Cl^- estimation

7. Preparation of reagents (standard solutions and common laboratory reagents)

RECOMMENDED BOOKS

1. A Procedure Manual for Routine Diagnostic Tests Vol. I and II by KL Mukherjee; Tata McGra Hill Publishers, New Delhi

2. A Textbook of Medical Laboratory Technology by P Godkar; Bhalani Publishing House, Mumbai

2.6 HISTOPATHOLOGY - I

L	T	P
3	-	2

RATIONALE

This subject is aimed at preparing the student to prepare stained tissue section of various types (paraffin, frozen). One should be able to provide special stain, prepare exfoliative cytology smears and carry out routine and special staining procedure on cytological smears, and should be able to display specimens for museum. He/she should also be able to organize the histopathology laboratory of the above services and provide basic equipment maintenance.

DETAILED CONTENTS

Theory

1. Basic Terminology (2 hrs)

    1.1 Structure of cell and its function
    1.2 Definition of Histology
    1.3 Definition of Histopathology
    1.4 Definition of Biopsy
    1.5 Definition of Autopsy
    1.6 Definition of Autolysis
    1.7 Definition of Putrefaction

2. Different Methods of Preparation of Tissues (5 hrs)

    2.1 Unfixed methods

        2.1.1 Smears and crushed smears
        2.1.2 Imprint methods
        2.1.3 Teased preparation
        2.1.4 Squashed preparation
        2.1.5 Frozen section

    2.2 Fixed Methods

        2.2.1 Paraffin embedding (Detailed)
        2.2.2 Introduction to celloidin embedding
        2.2.3 Introduction to gelatin embedding

3. Reception, recording, labeling and preservation of histological specimen (2 hrs)

4. Fixation (8 hrs)

4.1 Various types of fixatives
4.2 Their classification
4.3 Their composition
4.4 Their advantages and disadvantages

5. Processing of histological Tissue for Paraffin Embedding (10 hrs)

5.1 Dehydration
5.2 Clearing
5.3 Impregnation
5.4 Blocking
5.5 Automation: Histokinete (automatic tissue processor), embedding stations – their care and maintenance

6. Microtomy (10 hrs)

6.1 Microtome

6.1.1 Various types of microtomes
6.1.2 Advantages and disadvantages
6.1.3 Working principle, care and maintenance

6.2 Microtome Knives

6.2.1 Various types of microtome knives
6.2.2 Preparation of microtome knives (Sharpening/honing techniques/ polishing/stropping techniques

6.3 Section Cutting

6.3.1 Rough cutting and trimming
6.3.2 Fine cutting
6.3.3 Use of tissue floatation bath
6.3.4 Mounting the section to the slide after cutting
6.3.5 Cutting faults in sections and their remedies

7. Staining (Routine) – Haematonylin and Eosin (12 hrs)

7.1 Principle of stain and their importance

7.2 Various steps of staining

7.2.1 Deparaffinization
7.2.2 Hydration

7.2.3 Staining
7.2.4 Differentiation
7.2.5 Blueing
7.2.6 Counterstaining
7.2.7 Dehydration
7.2.8 Creasing
7.2.9 Mounting

7.3 Mountants

7.3.1 Types (aqueous, resinous)
7.3.2 Applications

7.4 Introduction of terms

7.4.1 Solvents
7.4.2 Mordants
7.4.3 Metachromasia
7.4.4 Accelerators

7.5 Use of controls (known +ve slides) for different staining procedures

LIST OF PRACTICALS

1. Preparation of smears, imprints, teased and squashed preparation

2. Preparation of various types of fixatives

3. Preparation of block from selected tissue piece with special emphasis on orientation and labeling

4. Demonstration of preparation of microtome knife (including honing and stropping)

5. Demonstration of Microtome parts, their function and maintenance

6. Demonstration of rough cutting and trimming of paraffin blocks

7. Demonstration of staining apparatus

8. Demonstration of routine H and E staining

RECOMMENDED BOOKS

1. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworths Heinemann Publishers, Oxford

2. Theory and Practice of Histological Techniques by Bancroft and Stenens; Butterworth,London

3. Cellular Pathology Techniques by CFA Culling, Butterworths, London

4. Medical Lab Technology by Lynch; WB Saundersla, London

5. Handbook of diagnostic Cytoloy by Dodd; WB Saundersla, London

ENTREPRENEURIAL AWARENESS CAMP

This is to be organized at a stretch for two to three days during second year. Lectures will be delivered on the following broad topics. There will be no examination for this subject

1. Who is an entrepreneur?
2. Need for entrepreneurship, entrepreneurial career and wage employment
3. Scenario of development of small scale industries in India
4. Entrepreneurial history in India, Indian values and entrepreneurship
5. Assistance from District Industries Centres, Commercial Banks. State Financial Corporations, Small industries Service Institutes, Research and Development Laboratories and other financial and development corporations
6. Considerations for product selection
7. Opportunities for business, service and industrial ventures
8. Learning from Indian experiences in entrepreneurship (Interaction with successful entrepreneurs)
9. Legal aspects of small business
10. Managerial aspects of small business

2.7 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, planning

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 mm^2 from MS flat

Job: Angular cutting practice of 45^0 (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 trey 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.