Shri Govind Guru University

(Established by Government of Gujarat Vide Gujarat Act no 24/2015)

Rules/Regulations & Syllabus

DIPLOMA IN MEDICAL LAB TECHNICIAN

With Effective from 2020-21

Website :www.sggu.ac.in

R. DMLT. 1: **Eligibility for the admission:**

Candidates who have passed 10+2 examination in any stream conducted by any recognized School Certification Board or Equivalent Examination;

R. DMLT. 2: **Duration of the course:**

Duration shall be for a period of **TWO years**

R. DMLT. 3: **Medium of instruction:**

The medium of instruction and examination shall be in English.

R. DMLT. 4: **Attendance**

Candidate shall be required to attend at least 75% of the Lectures and Practical separately in each year.

R. DMLT. 5: **Subjects, Credits and Scheme of examination**

Main and Subsidiary subjects are common in first year for all the courses of Medical Technology. The subject-wise details of examination for the first year have been given in Table 1.

There shall be three examinations one each at the end of 1st & 2nd year.

R. DMLT. 6: Eligible candidate desirous for appearing in the University examination of any/all theory papers must forward his/her application in the prescribed form from the respective college to the University on or before the date prescribed for the purpose under the relevant ordinance.

R. DMLT. 7: **INTERNAL ASSESSMENT:**

The internal assessment will be done based on continuous evaluation method. Every year, there will be two internal examinations for both the theory and the practical. For the award of internal marks in theory and practical, the better of the two internal examinations will be considered along with other components like attendance, seminar presentations, workshops & conferences attended and journal submission.

Internal marks calculation - 20% of total marks of a subject (Separately for theory and practical):

The better of two internal examinations: 10% of total marks

Attendance: 5% of total marks

Seminar presentations, workshops &
Conferences attended and journal submission: 5% of total marks

A candidate must obtain minimum of 35% marks of internal evaluation in each paper for both theory and practical separately. Failing which he/she would not be eligible in that paper(s)/ head of passing.

The subsidiary subjects in whom only the internal exam will be conducted, a candidate must obtain minimum of 35% of the total marks before appearing for University examination.

UNIVERSITY (EXTERNAL) EXAMINATION:
PASSING CRITERIA:

Every student has to have an aggregate score of minimum 35% marks of both the internal and University (external) Examination of 100 % marks in theory and practical examination combined together to pass in the University Examination. It is not compulsory to pass in section – I and section – II separately.

But, the student has to score minimum 35 % of marks separately in theory and practical in the University Examination of 80 marks in theory and practical examination and internal examination.

R. DMLT. 8: Promotion and A.T.K.T.

a. Candidates, who have passed separately in theory and practical of all subject heads (course) in F.Y.D.M.L.T. and S.Y D.M.L.T. Shall be promoted to degree certificate.

b. Candidates, who fail in **any three** of the subject heads (courses) in F.Y. D.M.L.T. Shall be granted A.T.K.T. And shall be allowed to attend S.Y.D.M.L.T.as the case may be. Candidate can re-appear in the following subject-heads in the subsequent exam.

c. Candidate would however not be allowed for certificate from. Unless and until s/he passes all subjects of F.Y. D.M.L.T.

DISTRIBUTION OF TEACHING HOURS FOR
FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Human Anatomy	DMLT-101	60
	Practical – Anatomy	DMLT-101(P)	30
2	Human Physiology	DMLT-102	60
	Practical – Physiology	DMLT-102(P)	30
3	Pathology	DMLT-103	60
	Practical-Pathology	DMLT-103(P)	30
4	Microbiology	DMLT-104	60
	Practical- Microbiology	DMLT-104(P)	30
5	Biochemistry	DMLT-105	60
	Practical- Biochemistry	DMLT-105(P)	30
Main Subjects- Teaching hours			450
Subsidiary subjects			
6	English	DMLT-E-106	60
7	Computer Organization & PC Software	DMLT-E107	30
	Computer Organization & PC Software-practical	DMLT-E-107(P)	30
Subsidiary subjects- Teaching hours			120
Teaching hours-Theory/Practical's			570
Hospital Posting			360
Total Teaching hours			930

DISTRIBUTION OF SUBJECTS, CREDITS AND SCHEME OF EXAMINATION FOR FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

Table 1. Subjects, Credits and Scheme of Examination

Sr. No.	Subject	Course No.	No. Credits per week	Duration of Uni. Exam	External Marks	Internal Marks	Total	Grand Total
1	Human Anatomy	DMLT-101	2	3	80	20	100	100
	Practical – Anatomy	DMLT-101(P)	1	-	-	-	-	
2	Human Physiology	DMLT-102	2	3	80	20	100	100
	Practical – Physiology	DMLT-102(P)	1	-	-	-	-	
3	Pathology	DMLT-103	2	3	80	20	100	100
	Practical-Pathology	DMLT-103(P)	1	-	-	-	-	
4	Microbiology	DMLT-104	2	3	80	20	100	100
	Practical- Microbiology	DMLT-104(P)	1	-	-	-	-	
5	Biochemistry	DMLT-105	2	3	80	20	100	100
	Practical- Biochemistry	DMLT-105(P)	1	-	-	-	-	
	Subsidiary subjects							
6	English	DMLT-E-106	2	2	40	10	50	50
7	Computer Organization & PC Software	DMLT-E-107	1	2	40	10	50	50
	Practical- Computer Organization & PC Software	DMLT-E--107(P)	1	2	25	25	50	50
							Total	**650**

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: HUMAN ANATOMY
Course code: DMLT 101

Theory classes: 60 hours
Practical classes : 30 hours

Unit 1. Introduction: human body as a whole
Theory:

- Definition of anatomy and its divisions
- Terms of location, positions and planes
- Cell and its organelles
- Epithelium-definition, classification, describe with examples, function
- Glands- classification, describe serous & mucous glands with examples
- Basic tissues – classification with examples

Practical:

- Histology of types of epithelium
- Histology of serous, mucous & mixed salivary gland

Unit 2. Locomotion and support
Theory:

- Cartilage – types with example & histology
- Bone – Classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, intervertebral disc, fontanelles of fetal skull
- Joints – Classification of joints with examples, synovial joint (in detail for radiology)
- Muscular system: Classification of muscular tissue & histology
- Names of muscles of the body

Practical:

- Histology of the 3 types of cartilage
- Demo of all bones showing parts, radiographs of normal bones & joints
- Histology of compact bone (TS & LS)
- Demonstration of muscles of the body (as functional groups)
- Histology of skeletal (TS & LS), smooth & cardiac muscle

Unit 3. Cardiovascular system
Theory:

- Heart-size, location, chambers, exterior & interior
- Blood supply of heart
- Systemic & pulmonary circulation
- Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery
- Peripheral pulse
- Inferior venacava, portal vein, portosystemic anastomosis
- Great saphenous vein
- Dural venous sinuses
- Lymphatic system- cisterna chyli & thoracic duct
- Histology of lymphatic tissues
- Names of regional lymphatics, axillary and inguinal lymph nodes in brief

Practical:

- Demonstration of heart and vessels in the body
- Histology of large artery, medium sized artery & vein, large vein
- Microscopic appearance of large artery, medium sized artery & vein, large vein
- pericardium
- Histology of lymph node, spleen, tonsil & thymus
- Normal chest radiograph showing heart shadows
- Normal angiograms

Unit 4. Gastro-intestinal system

Theory:

- Parts of GIT, Oral cavity (lip, tongue (with histology), tonsil, dentition, pharynx, salivary glands, Waldeyer's ring)
- Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas
- Radiographs of abdomen

Unit 5. Respiratory system

Theory:

- Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
- Histology of trachea, lung and pleura
- Names of paranasal air sinuses

Practical:

- Demonstration of parts of respiratory system.
- Normal radiographs of chest
- Histology of lung and trachea

Unit 6. Urinary system

Theory:

- Kidney, ureter, urinary bladder, male and female urethra
- Histology of kidney, ureter and urinary bladder

Practical:

- Demonstration of parts of urinary system
- Histology of kidney, ureter, urinary bladder
- Radiographs of abdomen-IVP, retrograde cystogram

Unit 7. Reproductive system

Theory:

- Parts of male reproductive system, testis, vas deferens, epididymis, prostate (gross &
- histology)
- Parts of female reproductive system, uterus, fallopian tubes, ovary (gross & histology)
- Mammary gland – gross

Practical:

- Demonstration of section of male and female pelves with organs *in situ*
- Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes, ovary
- Radiographs of pelvis – hysterosalpingogram

Unit 8. Endocrine glands

Theory:

- Names of all endocrine glands in detail on pituitary gland, thyroid gland, parathyroid gland, suprarenal glad – (gross & histology)

Practical:

- Demonstration of the glands
- Histology of pituitary, thyroid, parathyroid, suprarenal glands

Unit 9. Nervous system
Theory:

- Neuron
- Classification of NS
- Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (Gross Anatomy)
- Histology of Cerebrum, cerebellum and spinal cord
- Meninges, Ventricles & cerebrospinal fluid
- Blood supply of brain (In Brief)
- Cranial nerves (Only Names)

Practical:

- ☐ Histology of peripheral nerve & optic nerve
- ☐ Demonstration of all plexuses and nerves in the body
- ☐ Demonstration of all part of brain
- ☐ Histology of cerebrum, cerebellum, spinal cord

Unit 10.Sensory organs:
Theory:

- Skin: Skin-histology
- Appendages of skin
- Eye: Parts of eye & lacrimal apparatus
- Extra-ocular muscles & nerve supply
- Ear:parts of ear- external, middle and inner ear and contents

Practical:

- Histology of thin and thick skin
- Demonstration and histology of eyeball
- Histology of cornea & retina

Unit 11.Embryology:
Theory:

- Spermatogenesis & oogenesis
- Ovulation, fertilization
- Fetal circulation
- Placenta

There shall be no University Practical Examination.

REFERENCE BOOKS

1 William Davis (P) understanding Human
Anatomy and Physiology MC Graw Hill

2. Human Anatomy for Nursing & Allied Sciences - 1st edition
Dr. M.K.Anand, Dr. Meena Verma, The Arora Medical Publishers Pvt.Ltd

3. Fattana, Human anatomy
(Description and applied)
Saunder's & C P Prism Publishers, Bangalore – 1991

4. ESTER . M. Grishcimer,
Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: **HUMAN PHYSIOLOGY**
Course code: DMLT 102

Theory classes: 60 hours
Practical classes : 30 hours
Theory:

Unit 1. Blood and Muscle Physiology:

- Compositin & Fucnction of Blood
- Erythropoesis and Leucopoesis
- Hemostasis
- Action potential and mechanism of Muscle contraction
- Neuromuscular junction

Unit 2. Digeestive System and Excretary System

- Movement and Alimentary tract
- Deglutition and Mechanism of Vomiting
- Digestive juices
- Micturition
- Mechanism of Urine formation
- Regulation of scid-base balance

Unit 3. Cardiovascular and Respiratory Sustem

- Heart rate and sound
- Blood pressure
- Cardiac cycle and output
- Mechanism of breathing
- Oxygen and Carbon dioxide Transport
- Pulmonary volume and capacity

Unit 4. Endocrinology and Reproductive System

- Spermatogenesis and Menstrual cycle
- Puberty
- Pregnancy and Lactation
- Hormones of Pituitary, Thyroid & Parathyroid Glands
- Hormones of Adrenal Gland and Pancreas

Unit 5. Nervous System and Special Senses

- Neuron and Neuroglia
- Properties of nerve fibre
- Reflex mechanism and Receptors
- Mechanism of vision and hearing
- Taste and smell

Practical:

- Estimation of Haemoglobin
- Bleeding time
- Clotting time
- Blood Grouping
- Erythrocyte Sedimentation rate
- Packed Cell Volume
- Arterial Blood Pressure
- Pulse
- Heart rate
- Breathing rate

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Guyton (Arthur) Text Book of Physiology.
Latest Ed. Prism publishers
2. Ganong (William F) Review of Medical Physiology.
Latest Ed . Appleton
3. Jain AK, Concise Physiology, Latest Ed.

SUBJECT NAME: PATHOLOGY
Course code: DMLT 103

Theory classes: 60 hours
Practical classes : 30 hours

Theory

Unit 1. Histo Pathology

- Introduction to Histo Pathology
- Receiving of Specimen in the laboratory
- Grossing Techniques
- Mounting Techniques – various Mountants
- Maintenance of records and filing of the slides.
- Use & care of Microscope
- Various Fixatives, Mode of action, Preparation and Indication. Section Cutting
- Tissue processing for routine paraffin sections
- Decalcification of Tissues.
- Staining of tissues - H& E Staining
- Bio-Medical waste management

Unit 2. Clinical Pathology

- Introduction to Clinical Pathology
- Collection, Transport, Preservation, and Processing of various clinical Specimens
- Urine Examination – Collection and Preservation of urine. Physical, chemical, Microscopic Examination
- Examination of CSF and other body fluids.
- Sputum Examination.
- Examination of feces

Unit 3. Haematology

- Introduction to Haematology
- Normal constituents of Blood, their structure and function.
- Collection of Blood samples
- Various Anticoagulants used in Haematology
- Various instruments and glassware used in Haematology, Preparation and use of glassware
- Laboratory safety guidelines
- SI units and conventional units in Hospital Laboratory
- Hb, PCV
- ESR
- Normal Haemostasis
- Bleeding Time, Clotting Time, Prothrombin Time, Activated Partial Thromboplastin Time.

Unit 4. Blood Bank

- Introduction
- Blood grouping and Rh Types
- Cross matching

Practical:

- Urine Examination.
- Physical
- Chemical
- Microscopic
- Blood Grouping Rh typing.
- Hb Estimation,Packed Cell Volume[PCV], Erythrocyte Sedimentation rate{ESR]
- Bleeding Time, Clotting Time.
- Histopathlogy – Section cutting and H &E Staining.[For BSc MLT only]

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Silvertone : Introduction to Medical Lab. Technology
2. Bancroft : Theory and Practical of Histology techniques
3. Textbook of Clinical Blood Banking Science by Zmijewski.

4. Manual for Clinical Pathology by Sabitry Sanyal
5. Practical Pathology by Dr.P.Chakraborty & Gargi Chakraborty
6. Haematology for students and practitioners by Ramnik Sood
7. Histological techniques by K.Laxminarayan 8.Practical Pathology by Dr.K.Uma Chaturvedi & Tejsindersingh

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: MICROBIOLOGY
Course code: DMLT 104

Theory classes: 60 hours
Practical classes : 30 hours

Theory

Unit 1. Morphology

- Classification of microorgaisms,
- Size, shape and structure of bacteria.
- Use of microscope in the study of bacteria.

Unit 2. Sterilisation and Disinfection

- Principles and use of equipments of sterlization namely Hot Air oven, Autoclave and serum inspissrator. Pasteurization,
- Anti septic and disinfectants

Unit 3. Growth and nutrition

- Nutrition, growth and multiplications of bacteria,
- Use of culture media in diagnostic bacteriology.
- Antimicrobial sensitivity test

Unit 4. Immunology

- Infection & Immunity
- Antigen, Immunoglobuline (in brief)
- Principles and interpretation of commonly done serological tests namely Widal, VDRL, ASO, CRP, RF & ELISA. Rapid tests for HIV and HBsAg (Technical details to be avoided)
- Types of Vaccine and immunization schedule

Unit 5. Systematic Bacteriology

- Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (the classification, antigenic structure and pathogenicity to be avoided)
    - *Staphyloccci, Streptococci, Pneumococci,*
    - *Gonococci, Menigococci,*
    - *C. diphtheriae, Clostridia, Bacillus,*
    - *Shigella, Salmonella, Esch coli,*
    - *Klebsiella, Proteus, Pseudomonas*
    - *Mycobacteria*
    - *Vibrio cholerae, &*
    - *Spirochetes-Treponema pallidum & Leptospira*

Unit 6. Parasitology

- Morphology, life cycle, laboratory diagnosis of following parasites
    - Protozoa - *E. histolytica, Plasmodium*,
    - Tape worms –*Taenia*
    - Intestinal nematodes – Round worm, Hookworm,

Unit 7. Mycology

- Morphology, diseases caused and lab diagnosis of following fungi.
    - Candida, Cryptococcus,
    - Dermatophytes ,
    - opportunistic fungi.

Unit 8. Virology

- General properties of viruses, diseases caused, lab diagnosis and prevention of following viruses,
    - Herpes,
    - Hepatitis,
    - HIV
    - Rabies and
    - Poliomyelitis.

Unit 9. Hospital infection

- ☐ Causative agents, transmission methods,
- ☐ Prevention and control Hospital infection.

Unit 10. Principles and practice Biomedical waste management

Practical

- Compound Microscope.
- Grams stain
- Acid Fast staining
- Demonstration and sterlization of equipments – Hot Air oven, Autoclave, Bacterial filters.
- Demonstration of commonly used culture media, culture methods
  Nutrient broth, Nutrient agar, Blood agar, Chacolate agar, Mac conkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, NA with staph
- Demonstration of commonly used Biochemical Reactions for identification of bacteria
    - Coagulase test
    - Catalase test
    - IMViC
    - TSI
    - Urease, Oxidase
- Antibiotic susceptibility test
- Anaerobic culture methods.
- Demonstration of common serological tests – Widal, VRDL, ELISA.
- Stool exam for Helminthic ova
- Visit to hospital for demonstration of Biomedical waste management.

There shall be no University Practical Examination.

REFERENCE BOOKS

1. Anathanarayana & Panikar Medical Microbioloty
2. Roberty Cruckshank – Medical Microbiology – The Practice of Medical Mircrobiology
3. Chatterjee – Parasitology – Interpretation to Clinical medicine.
4. Rippon – Medical Mycology
5. Monica Cheesebrough,

SUBJECT NAME: BIOCHEMISTRY
Course code: DMLT 105

Theory classes: 60 hours
Practical classes : 30 hours

Theory

Unit.1 Introduction, specimen collection and Handling

- ☐ Introduction to Bio-chemistry including code of ethics for Medical Lab technicians and Medical Lab Organization.
- ☐ Reception, Registration and Bio-chemical parameters investigated.
- ☐ Types of vials used in blood /specimen collection
- ☐ Anticoagulants
- ☐ Preservatives
- ☐ Blood collection
- ☐ Precautions
- ☐ Safety, first aid, Biological and chemical hazards
- ☐ Processing of samples
- ☐ Preservation
- ☐ Disposal of samples
- ☐ Introduction to laboratory apparatus :
  - Pipettes - different types (Graduated, volumetric, Pasteur, Automatic etc.,), Calibration of glass pipettes
  - Burettes, Beakers,Flasks,Funnels, Cuvettes,

Unit 2. Units of measurements and Basics of Instrumentation

- ☐ Conventional and SI units
  - Molecular weight, equivalent weight of elements and compounds, normality, molarity,
  - Preparation of molar solutions,normal solutions,Percent solutions

I. Colorimetry : Photoelectric methods, instrumentation, principles and laws involved, Operation, maintenance, applications.
II. Spectrophotometry : Principle ,types and applications.
III. Weighing : Different types of balances used, care and maintenance.
IV. pH meter-Principle, Use, care and maintenance of pH meter and electrodes

- ☐ Basic lab operations like -Separation of Solids from liquids,
  a) Centrifugation : Principle, Different types of Centrifuges, care and maintenance, applications
  b) Filtration using funnel

Unit.3 Carbohydrates :
Definition, biological importance, classification, qualitative tests, Metabolism(brief), Blood glucose.

Unit.4 Lipids :
Definition, biological importance, classification, Acid value, Iodine value, saponification value, Metabolism(brief).

Unit.5 Aminoacids and Proteins :
Definition, biological importance, classification, qualitative tests.

Unit.6 Vitamins and Minerals :
Vitamins : Classification of Vitamins, Sources, Daily requirements, Deficiency diseases. (In Brief)
Minerals (Iron, calcium, Iodine): Sources, Daily requirements, Deficiency diseases .

Unit.7 Enzymes
Nature, Classification and Clinical enzymes.

Unit.8 Nucleic acids- Chemistry and functional aspects

Purine bases, Pyrimidine bases, nucleosides, Nucleotides, DNA & RNA, Their functions

Brief outline of Replication, Transcription, translation.

Unit.9

- ☐PH, buffers, acid-base balance, disorders.
- ☐Digestion and absorption of Biomolecules
- ☐Water, Chemicals and related substances
  - ★ Purity of chemicals
  - ★ Corrosives

Practical:

- ☐Reception and registration
- ☐Collection of Capillary blood
- ☐Collection of Venous blood
- ☐Separation of Serum from clotted blood
- ☐Separation of plasma from blood
- ☐Lab glass ware
  - a) Identification
  - b) Handling
  - c) Care and Maintenance
  - d) Uses
- ☐Lab instruments
  - a) Centrifuges
  - b) Balances
  - c) Photo Electric colorimeter
  - d) Spectrophotometer
- ☐Preparation of
  - a) Percentage solutions
  - b) Normal solutions
  - c) Molar solutions
- ☐Qualitative identification of tests of sugars
- ☐Qualitative identification of tests of proteins
- ☐Qualitative identification of tests for amino acids
- ☐Estimation of Blood glucose
- ☐Estimation of Blood urea
- ☐Normal and pathological urine.

There shall be no University Practical Examination.

REFERENCE BOOKS

1. TEITZ – Clinical chemistry
   Vasudevan (DM) Sreekumari(S) Text book of Biochemistry for Medical students ,Latest Ed
2. Varley – Clinical chemistry
3. 3. Kaplan – Clinical chemistry

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: ENGLISH
Course code: DMLT E 106
Theory classes: 60 hours

Aim
These two course will aim at helping the course participants develop their communication skills in English by training them in handling all the four language skills effectively. The learners will be able to listen, speak, read and write in English adequately so that they could participate in various activities and perform satisfactory the different tasks listed below.

Overall Objectives
The objectives are to develop abilities

- To process information using a variety of media
- To use appropriate phrases for performing language functions
- To edit, select and present information in a format / perspective
- To listen and reduce information to a point form
- To read and to expand from points to paragraph
- To predict, comprehend, infer and synthesize information
- To question, probe and arrive at information through discussions, dialogues and interviews
- To answer questions, choose and provide data etc.

A. Reading

The objectives are to enable the students to

- Read for information news features, articles, newspaper and text
- Read intensively a collection of short stories given in a complied text (See for the text and the lessons selected from it below)

Book prescribed

- L.A.Hill (1970), **Contemporary Short Stories.** Chennai: Oxford University Press. The following stories have been selected for use on the course.

- The happy Prince
- A Horseman in the sky
- The Wolves of Cernogratz
- The half Mile
- The Mark of Vishnu
- The Halfyard Ham
- Locomation 38
- The Ghost Ship
- Uneasy Homecoming
- The Trust Property

B. Writing

The objectives are to enable the students to

- Form words properly using prefixes / suffixes (See list 4 in the Appendix)

- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Writing resume, job applications, letters of invitations (inviting / accepting/ declining), letters of complaint to civil authorities
- ☐ Answering questions based on the prescribed text: **Contemporary Short Stories**

Books Recommended

- Champa Tickoo and Jaya Sasikumar (2000). **Writing with a Purpose**, Chennai, OUP
- David Jolly (1988). **Writing Tasks**: An authentic task approach to individual writing needs.

C. Listening

The objectives are to enable the students to listen and understand

- Short lecture, descriptions, and narrations, rapid talks, passages read aloud and/or dictated and identify Language functions (See list 2 in the Appendix)
- Conversions based on familiar situations, and
- Note Making

Books Recommended

- Spoken English-D Sasikumar and PV Dhamija (with Audio Cassette) Tata Mcgraw Hill

D. Speaking

The objectives are to enable the students to

- Use greeting and formula in everyday conversations.
- Use various notions and function of everyday usage (See list 2 in the Appendix)
- Use grammatically correct and appropriately structures to organize thought (See list 1 Containing Syntactic items in the Appendix)
- Give short formal and informal talks, speeches

Books Recommended

- Grant Taylor. English Conversation Practice. New Delhi: Tata McGraw Hill
- R.P.Bhatnagar and R.T.Bell (1999) **Communication in English**, Hyderabad: Orient Longman

SYLLABUS OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: COMPUTER ORGANIZATION & PC SOFTWARE
Course code: DMLT E 107

Objective:

At the end of this course, a student would be able to :

- Identify various components of computer hardware and
- Use some software in order to manage data related to the profession.

Teaching hours: Theory: 30 hours
Practicals: 30 hours

Curriculum:

SECTION A

Unit 1. Computer Organization -I

Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes.
Introduction to number systems

Unit 2. Computer Organization -II

Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDROMs, DVDs, input/output devices: keyboards, monitors, mice, printers, modems
The concept of character codes

SECTION B

Unit 1: PC Software- I

Introduction to spreadsheets, the concept of cells and cell addresses, formulas, some important functions, introduction to charts
Introduction, features and applications of a DBMS Database objects
Tables – creation, modification, deletion
Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data

Unit 2. PC Software- II

Forms – creation of forms; modification, viewing and validating data using forms, subforms Reports – creation, modification, opening, viewing
Creating mailing labels

REFERENCE BOOKS:

- Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt. Ltd., 2002.
- Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2006.
- Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.
- Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
- Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
- Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

..... **COMPLITION OF FIRST YEAR DIPLOMA IN MEDICAL LAB TECNICIAN**.....

DISTRIBUTION OF TEACHING HOURS FOR SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

Sr. No.	Subject	Course No.	Teaching Hours
Main Subjects			
1	Pathology	DMLT-201	60
	Pathology-Practical	DMLT-201(P)	45
2	Microbiology	DMLT-202	60
	Microbiology-Practical	DMLT-202- (P)	25
3	Biochemistry	DMLT-203	60
	Biochemistry-Practical	DMLT-203- (P)	25
4	Bio-ethics	DMLT-204	40
5	Health Care	DMLT-205	60
		Main Subjects- Teaching hours	345
Subsidiary subjects			
6	English	DMLT-E-206	25
	English practical	DMLT-S-206-(P)	25
7	Computer skills	DMLT-S-202	20
		Subsidiary subjects- Teaching hours	70
		Teaching hours-Theory/Practicals	415
		Laboratory Posting	330
		Total Teaching hours	745

DISTRIBUTION OF SUBJECTS, CREDITS AND SCHEME OF EXAMINATION FOR SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

Sr. No.	Subject	Course No.	No. Credits per week	Duration of Uni. Exam	External Marks	Internal Marks	Total	Grand Total
1	Pathology	DMLT- -201	2	3	80	20	100	150
	Practical – Pathology	DMLT- 201(P)	1	1 day	40	10	50	
2	Microbiology	DMLT--202	2	3	80	20	100	100
	No practical Exam		1					
3	Biochemistry	DMLT- 203	2	3	80	20	100	100
	No practical Exam		1					
4	Bioethics	DMLT- 204	1	2	40	10	50	50
5	Health Care	DMLT-205	2	2	80	20	50	100
	Subsidiary subjects							
6	English	DMLT-E-206	2	2	40	10	50	50
		DMLT-E-206(P)	1	1	25	25	50	50
7	Computer skills	DMLT-E-206	1	2	40	10	50	50
							Total	**650**

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: PATHOLOGY
Course code: DMLT 201

Teaching Hours: **Theory: 60 hours**
Practical: 45 hours

Theory:

Unit 1. Hematology

- Hemopoiesis, Stem cells, formed elements and their functions
- Anticoagulants used in various hematological studies
- Routine hematological tests and normal values
- Determination of Hemoglobin and Hematocrit
- Enumeration of RBC, WBC & Platelets
- Absolute Eosinophil count
- Reticulocyte count
- Calculation of Red cell Indices
- Preparation of staining of blood film for morphology of red cells and differential count.
- Automated Hematology cell counter

- **Special Hematological tests:**
- Sickling tests
- Osmotic fragility test
- Determination HbF and HbA2
- Hemoglobin Electrophoresis
- Investigation of G6PD deficiency
- Plasma haptoglobin and demonstration of hemosiderin in urine
- Tests for Autoimmune hemolytic anemia
- Measurement of abnormal Hb pigments

☐ **Hemostasis and Coagulation**
- Normal hemostasis, mechanism of blood coagulation and normal fibrinolytic system
- Collection of blood and anticoagulants used in coagulation studies
- Investigation of hemostatic mechanism-BT, CT, whole blood coagulation time test, PT, PTT.
- Thrombin Time, Plasma Firinogen, FDP, D-Dimer
- Demonstration of LE cells.

Unit 2. Immunohematology

- ABO Blood group and Rh system
- Subgroups of A and B , Other blood groups and Bombay group
- HLA antigens and their significance

Unit 3. Histopathology

- **Instrumentation** :(a) Automated Tissue Processor
  (b) Microtome, Microtome-knives, Knife sharpener
  (c)Freezing microtome and Cryostat

- **Techniques** :

  (a) Routine paraffin section cutting
  (b) Frozen section and Cryostat section studies

- **Mounting techniques: Various mountants and mounting techniques**

Unit 4. Cytology

1. Normal cell structure, functions, cytologic criteria of malignancy
2. Instruments in Cytology
3. Types of specimens, methods of collection & preparation of cell block
4. Different fixatives and methods of fixation
5. Staining : (a) Papanicoloau's stain- principle , preparation and staining techniques
   (b) May Grunwald Giemsa stain
   (c) H & E stain

(c) Female Genital tract

1. Normal cytology
2. Techniques of collection of specimen for cervical cytology study
3. Hormonal cytology and cytological indices

- **Respiratory tract, Gastrointestinal tract and Urinary tract**
  1. Normal cytology
  2. Collection of sample, preparation of smears and staining

PRACTICALS

1. Determination of Hemaglobin and Hematocrit
2. Red blood cell count
3. Total white blood cell count
4. Platelet count
5. Differential count of white blood cells
6. Absolute Eosinophil count
7. Reticulocyte count
8. Paraffin section cutting
9. Staining by Hematoxylin & Eosin and other special stains

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: MICROBIOLOGY
Course code: DMLT 202

Teaching Hours: Theory: 60 hours
Practicals: 25 hours

Theory:

Unit 1. General Microbiology

- History and Pioneers in Microbiology: Contributions of Antony Van Leeuwenhoek, Louis Pasteur, Joseph Lister, Robert Koch (Koch's Postulates),
- Bacterial Taxonomy: Nomenclature and classification of microbes (in brief)
- Microscopy, Stained preparation, Size & Shape
- Morphology of bacteria: Structures of a bacterial cell and their functions
- Physiology of Bacteria: Nutrition, Gaseous requirement, temperature requirement and other growth requirements
- Culture media in diagnostic bacteriology.
- Culture methods
- Identification of bacteria
- Antimicrobial sensitivity test

Unit 2. Immunology:

- Antigens
- Immunoglobulins
- Immunity
- Complement system
- Infection: Sources of infection, Modes of transmission, Factors predisposing to microbial Pathogenicity, Types of infectious diseases

Antigen and antibody reactions

- General Features of antigen-antibody reaction
- Precipitation, Agglutination
- Complement Fixation Test
- Neutralisation, Opsonisation
- Immunofluorescence, RIA, EIA
- Western Blot
- Immunochromatograghy

Unit 3. Mycology.

- The morphology and reproduction in fungi
- Classification of fungi
- Morphology, diseases caused and lab diagnosis of:-
- Opportunistic fungi- Cryptococcus, Candidiasis, Aspergillus, Zygomycetes.
- Fungi causing superficial mycoses- Dermatophytes,
- Subcutaneous mycoses- Mycetoma.

- Fungi causing superficial mycoses- Ptyriasis versicolor, Tinea Nigra, Piedra
- Subcutaneous mycoses- Rhinosporidium, Sporothrix, Dematiaceous fungi
- Anti-mycotic agents
- systemic infections-Blastomyces,Coccidioides, Paracoccidioides, Histoplasma

4. Parasitology

Protozology-

1. *Entamoeba histolytica*
2. *Balantidium coli*
3. *Giardia*
4. *Toxoplasma*
5. Malaria
6. *Leishmania*

Helminthology

- Cestodes - *Taenia, E. granulosus, D.latum, H.nana*
- Trematodes - *Schistosoma, Fasciola*
- Nematodes – *Ascaris, Ancylostoma deudenale, Strongyloides,Trichuris, Trichinella, Dracunculus*, Filarial worms

PRACTICALS: Microbiology

General Microbiology:

- Staining: Gram's , Acid fast
- Sterilization methods
- Media preparation
- Culture methods

Parasitology:

1. Stool examination for parasitic eggs/cysts
   a. Saline mount
   b. Iodine mount
   c Concentration methods

Mycology:

1. Slide culture technique
2. KOH mount
3. Identification of fungal cultures
   a. Colony characteristics and Microscopic examination of Candida, *Cryptococcus, Trichophyton, Microsporum, Aspergillus niger, Asp fumigatus,*

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: BIOCHEMISTRY
Course code: DMLT 203

Teaching Hours: **Theory: 60 hours**
Practicals: 25 hours

UNIT 1. Instrumentation

- Colorimetry , Spectrophotometery , Chromatography, Flame photometry, Fluorimetry
- Autoanalysers, electrolyte analyzer, Gas analyzer
- RIA , ELISA , Chemiluminance, Electrophoresis

UNIT 2. General Biochemistry of Carbohydrates

- Digestion & absorption of carbohydrates
- Classification of carbohydrate
- Biomedical importance
- Chemical & Physical properties of carbohydrate
- Carbohydrate Metabolism: Glycolysis, TCA

UNIT 3. General Biochemistry of Proteins

- Digestion & absorption of Proteins
- Classification of proteins & amino acid
- Structure & function of proteins & amino acid
- Classification & Properties of Plasma proteins
- Protein metabolism : Transamination, Deamination, Decarboxylation of amino acid

UNIT 4. General Biochemistry of Lipids

- Digestion & absorption of lipid.
- Definition, Classification, Types & Function
- TAG, Phospholipids & other compound lipids
- Metabolism of lipids: Beta-oxidation

UNIT 5. Nucleic acids

- Nucleobases, Nucleosides, Nucleotides
- Nucleic acids: Structure & Types
- Replication, Transcription, Translation

UNIT 6. Enzymes

- Definition & Classification
- Factors affecting enzyme activity
- Enzyme Inhibition

UNIT 7. Vitamins & Minerals

- Minerals : Calcium, Iron, Phosphorus, Iodine, Sodium & Potasium.
- Vitamins : Water soluble and Fat soluble (Including Deficiency Disease)

UNIT 8. Biophysics

- Viscosity, Surface tension, colloids, Osmotic pressure
- Donnan membrane equilibrium

PRACTICALS: Biochemistry

- Qualitative analysis of carbohydrates, proteins, amino acids.
- Estimation blood sugar and Blood Urea
- CSF Analysis
- Bile Analysis
- Acid hydrolysis of starch
- Enzyme hydrolysis of starch
- Qualitative screening test for normal and abnormal urine sample.
- Protein precipitation, separation of proteins, electrophoresis of serum
- Colour reaction of protein.

SUGGESTED BOOKS :

- Dr. Praful B. Godkar,Text Books of Medical Laboratory Technology
- Anathanarayana & Panikar – A Text Book of Medical Microbiology
- Monica Cheesbrough, District Laboratory Practice in Tropical countries – PartI & Part II
- P. Chakraborthy- A Text Book of Microbiology
- Chatterjee , KD – Parasitology
- Vasudevan & Shreekumar : Biochemistry for Medical students
- Dacie, Practical Haematology
- K.Laxminarayan : Histological techniques
- Dr. Mukherjee, Medical Laboratory Technology, Volume I , II & II
- Silvertone : Introduction to Medical Lab. Technology
- Manual for Clinical Pathology by Sabitry Sanyal
- Harper's Biochemistry

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: BIO-ETHICS
Course code: DMLT 204

Goals

1. Provide a sense of responsibility and professionalism when interacting with patients, peers, fellow employees, and other health care providers.
2. Communicate effectively and professionally.
3. Instill the importance of honesty and professionalism in the workplace.

By the end of this module, the student should be able to:

1. Exhibit behavior consistent with the ethical practice of Medical Technologist.
2. Maintain confidentiality of all patients and test results.
3. Demonstrate an appreciation for the special knowledge and talent of other members of the health care team.
4. Explain the transmission of the AIDS/HIV and state how the virus affects the Immune system.

Methods of Presentation

Lecture, Discussion, Audio-Visual materials

Duration : 40 hours

COURSE CONTENT

1. Values of life (Philosophy)/in clinical practice & Definition of medical ethics. **2 hour**

2. History of Medical Ethics: **4 hour**

- Indian perspectives : Charaka,Susruta
- The Hippocratic Oath
- Declaration of Helsinki
- WHO Declaration of Geneva
- International code of Medical Ethics

3. Ethical problems of life **4 hour**

- Right to life, prenatal screening / sex selection Abortion, feticide
- Assisted reproductive technologies
- Genetic testing
- Genetic engineering, cloning
- Care of terminally ill
- Death and dying
- Euthanasia

4. Family and society in medical ethics : **4 hour**

- Children : Age to consent for treatment parent- Child – clinician conflict
- Mental Disorders and disabilities
- HIV / AIDs

5. Etiquette and mannerism **4 hour**

6. Good communication skill **4 hour**

- Truthfulness, Building trust, Honesty with patients
- Communication with colleagues, seniors and subordinates

7. Confidentiality **2 hour**

- Malpractice, negligence
- Medical ethics and law

8. Code of ethics: (Please refer Annexure for elaborations)

- Duties to Patients **2 hour**
- Duties to Colleagues and other Professionals: **2 hour**
- Duties to Yourself: **2 hour**
- Duties to Society: **2 hour**
- Duties to your Profession: **2 hour**
- Specific issues: **2 hour**

Internal Evaluation:
(Problem based questions, Short notes, MCQ, Viva) **2 hour**

EVALUATION : TOTAL: 50 marks

Internal evaluation: **10 marks**
External Exam (One paper of 2 hours): **40 marks**

- Problem oriented question
- Short notes
- Short answer questions

There will no Practical Exam for this course.

SUGGESTED BOOKS/LITERATURE:

1. MEDICAL ETHICS, by C.M.Francis, Jaypee Brothers
2. Current Problems in Medical ethics, by George V. Lobo, St. Paul's Society, Allahabad.
3. Ethics for Doctors, Nurses & Patients by H.P. Dunn, St. Pauls Bandar, Mumbai.

CODE OF ETHICS: DMLT

Code of Ethics, under different categories, has been elaborated hereunder as applied to the profession of Medical Technician/Technologist. It is however suggested that these elaborations are only indicative and not exclusive. There could be many more situations/events, depending on the nature of work involved in different types of specialization of Medical Technology; which would also be deemed to be a part of the curriculum as and when identified.

1. Code of Ethics: Duties to Patients:
    - accountability for the quality and integrity of the services they provide.
    - respect patients' privacy and dignity
    - treat patients politely and with consideration
    - apply the principle of informed consent as an on-going process
    - recognize the rights of patients to maintain confidentiality of information in the course of professional duties, unless they agree to disclosure or the law demands
    - patients' permission before sharing information with their spouses, partners or relatives.
    - always seek to give priority to the service to be provided to patients solely on the basis of clinical need.

- Code of Ethics: Duties to Colleagues and other Professionals:
    - Should not make a patient doubt a colleagues' knowledge or skills by making comments about them that cannot be fully justified.
    - ☐ Work with and respect other health care professionals in pursuit of the best health care possible for all patients.
    - ☐ Should not discriminate against colleagues, including professionals applying for posts, because of views of their race, culture, ethnicity, social status, lifestyle, perceived economic worth, age, gender, disability, communicable disease status, sexual orientation, religious or spiritual beliefs, or any condition of vulnerability.
    - ☐ Refrain from speaking ill of colleagues or other health care professionals.
    - ☐ Actively strive to establish cooperative and respectful working relationships with other health care professionals with the primary objective of ensuring a high standard of care for the patients they serve.
    - ☐ Share their knowledge with colleagues and promote learning.

- Code of Ethics: Duties to Yourself :
    - Maintain and improve the standard of your performance by keeping your professional knowledge and skills up to date throughout your working life. In particular, regularly take part in educational activities that relate to medical laboratory science.
    - Acknowledge the limits of your professional knowledge and competence. Do not pretend to know everything.
    - Use equipment and laboratory ware correctly and with care.
    - Refrain from engaging in activities that may affect your health and lead to impairment.
    - Aware laws and regulations governing medical laboratory technology and shall apply them in the practice of your profession.
    - Not wasting reagents and other laboratory supplies unnecessarily.
    - Never taking anything from place of work that does not belong to you

- Code of Ethics: Duties to Society
  - Refrain from providing a service that is not needed, whether it provides financial gain or not.
  - Refrain from unnecessary wastage, and from participating in improper financial arrangements, especially those that escalate costs and disadvantage individuals or institutions unfairly.
  - Dedicate to serve the healthcare needs of the public

- Code of Ethics: Duties to your Profession
  - Uphold and maintain the dignity and respect of medical laboratory profession and strive to maintain a reputation of honesty, integrity and reliability.
  - Contribute to the advancement of the profession by improving the body of knowledge, adopting scientific advances that benefit the patient, maintaining high standards of practice and education, and seeking fair socioeconomic working conditions for members of the profession.

- Specific issues: Any other issues specific to a particular specialization of Medical Technology profession not categorized in any of the above.

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: HEALTH CARE
Course Code: DMLT-205

Theory classes: 60 hours

Unit 1. Introduction to Health
□Definition of Health
□Determinants of Health
□Health Indicators of India
□Health Team

Unit 2. Health Policy and Programmes
- Concept.
- National Health Policy
- National Health Programmes (Briefly Objectives and scope)
- Population of India and Family welfare programme in India

Unit 3. Introduction to Nursing
- What is Nursing ? Nursing principles.
- Inter-Personnel relationships.

Bandaging : Basic turns; Bandaging extremities; Triangular Bandages and their application.
- Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to stretcher.

Unit 4. Bed Side Management:
- Giving and taking Bed pan, Urinal :
- Observation of stools, urine.Observation of sputum,
- Understand use and care of catheters, enema giving.
- **Methods Of Giving Nourishment**: Feeding, Tube feeding, drips, transfusion
- Recording of body temperature, respiration and pulse,
- **Simple aseptic technique**: Sterlization and disinfection.
- Surgical Dressing: Observation of dressing procedures

Unit 5. First Aid :
- Syllabus as for Certificate Course of Red Cross Society

SUGGESTED BOOKS/LITERATURE:

- MEDICAL HEALTH CARE, by C.M.Francis, Jaypee Brothers
- Current Problems in HEALTH CARE, by George V. Lobo, St. Paul's Society, Allahabad.
- Hospital management Nurses & Patients by H.P. Dunn, St. Pauls Bandar, Mumbai.

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: ENGLISH
Course Code: DMLT-E-206

Teaching hours: Theory: 25 hours
Practicals: 25 hours

Curriculum:

The objectives are to develop writing and short hand skills

- ☐ To process information using a variety of media
- ☐ To use appropriate phrases for performing language functions
- ☐ To edit, select and present information in a format / perspective
- ☐ To listen and reduce information to a point form
- ☐ To read and to expand from points to paragraph
- ☐ To predict, comprehend, infer and synthesize information
- ☐ To question, probe and arrive at information through discussions, dialogues and interviews
- ☐ To answer questions, choose and provide data etc.
  Communication with patients and management.

(Theory) : 2 Credits : 2 hours week

E. Reading
The objectives are to enable the students to

- ☐ Read for information news features, articles, newspaper and text
- ☐ Read intensively a collection of short stories given in a complied text (See for the text and the lessons selected from it below)

Practical exam:

Writing
The objectives are to enable the students to

- ☐ Form words properly using prefixes / suffixes (See list 4 in the Appendix)
- ☐ Use phrasal verbs (See list 3 in the Appendix)
- ☐ Use appropriate and related registers (See list 5 in the Appendix)
- ☐ Writing paragraphs, developing points / ideas
- ☐ Short hand note in detail.
- ☐ Communication with patients and management.

Book prescribed
L.A.Hill (1970), **Contemporary Short Stories.** Chennai: Oxford University Press. The following stories have been selected for use on the course.

- ☐ The happy Prince
- ☐ A Horseman in the sky
- ☐ The Wolves of Cernogratz
- ☐ The half Mile
- ☐ The Mark of Vishnu
- ☐ The Halfyard Ham
- ☐ Locomation 38
- ☐ The Ghost Ship
- ☐ Uneasy Homecoming
- ☐ The Trust Property
- ☐

SYLLABUS OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

SUBJECT NAME: COMPUTER SKILLS
Course Code: DMLT-E-207

Theory classes: 20 hours

Objective:
At the end of this course, a student would be able to :

- ☐ identify various components of computer hardware and
- ☐ use some software in order to manage data related to the profession.

Unit 1. Computer Organization -I
Generations of a computer, types of a computer, some important terms: hardware, software, program, operating system, interpreter, compiler, assembler, high level languages, bits and bytes.
Introduction to number systems
Processors, CPU organization, primary memory, memory addresses, secondary memory, memory hierarchies, magnetic disks, CDROMs, DVDs, input/output devices: keyboards, monitors, mice, printers, modems
The concept of character codes

Unit 2. Computer Organization –II
MICROSOFT OFFICE

Introduction to spreadsheets, the concept of cells and cell addresses,
formulas, some important functions, introduction to charts
Tables – creation, modification, deletion
Working with data – insertion, modification, finding, sorting, grouping, viewing and sharing data
Forms – creation of forms; modification, viewing and validating data using forms, subforms Reports – creation, modification, opening, viewing
Creating mailing labels

REFERENCE BOOKS:

1. Tanenbaum A. S., Structured Computer Organization, 4th Edition, Prentice-Hall of India Pvt. Ltd., 2002.
2. Elmasri, Navathe, Somyajulu, Gupta, Fundamentals of Database Systems, Pearson Education, 2006.
3. Progue, Irwin, Roardon, Microsoft Office Access 2007 Bible, Wiley Publishing Inc., 2007.
4. Taxali R. K., P C Software for Windows 98 Made Simple, Tata McGraw-Hill, 2001.
5. Hall D. V., Microprocessors and Interfacing, McGraw-Hill Book Company, 1986.
6. Desai Bipin C., An introduction to Database Systems, 7th Edition, Pearson Education Asia, 2001.

COMPLITION OF SECOND YEAR DIPLOMA IN MEDICAL LAB TECHNICIAN

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