

INSTITUTE OF ADVANCED STUDIES IN
EDUCATION (DEEMED UNIVERSITY)
GANDHI VIDYA MANDIR
SARDARSHAHR

DETAILED SYLLABUS

FOR

DISTANCE EDUCATION

Under Graduate Degree Program

**BACHELOR OF SCIENCE –
MEDICAL LABORATORY TECHNOLOGY
(BMLT)**

(SEMESTER SYSTEM)

COURSE TITLE : **BMLT**
DURATION : **3 YEARS**
TOTAL DEGREE MARKS : **4900**

FIRST SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		Theory	Practical	Total
ANATOMY	BMLT –110	100	50	150
PATHOLOGY	BMLT – 120	100	100	200
BIOCEMISTRY	BMLT – 130	100	100	200
MICROBIOLOGY	BMLT –140	100	100	200
COMMUNICATION SKILLS	BMLT – 150	50	0	50
			TOTAL	800

SECOND SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		Theory	Practical	Total
PHYSIOLOGY	BMLT – 210	100	50	150
PATHOLOGY	BMLT – 220	100	100	200
BIOCHEMISTRY	BMLT – 230	100	100	200
MICROBIOLOGY	BMLT – 240	100	100	200
COMPUTER SKILLS	BMLT – 250	50	0	50
			TOTAL	800

THIRD SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		Theory	Practical	Total
ANATOMY	BMLT – 310	100	50	150
PATHOLOGY	BMLT – 320	100	100	200
BIOCHEMISTRY	BMLT – 330	100	100	200
MICROBIOLOGY	BMLT – 340	100	100	200
COMMUNICATION SKILLS	BMLT – 350	50	0	50
			TOTAL	800

FOURTH SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		Theory	Practical	Total
PHYSIOLOGY	BMTL – 410	100	50	150
PATHOLOGY	BMTL – 420	100	100	200
BIOCHEMISTRY	BMTL – 430	100	100	200
MICROBIOLOGY	BMTL – 440	100	100	200
COMPUTER SKILLS	BMTL – 450	50	0	50
			TOTAL	800

FIFTH SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		Theory	Practical	Total
P.S.M.		BMLT – 510	100	50 150
PATHOLOGY	BMLT- 520	100	100	200
BIOCHEMISTRY	BMLT- 530	100	100	200
MICROBIOLOGY	BMLT – 540	100	100	200
COMMUNICATION SKILLS	BMLT – 550	100	0	100
			TOTAL	850

SIXTH SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		Theory	Practical	Total
LAB MANAGEMENT	BMLT – 610	100	50	150
PATHOLOGY	BMLT – 620	100	100	200
BIOCHEMISTRY	BMLT- 630	100	100	200
MICROBIOLOGY	BMLT – 640	100	100	200
COMPUTER SKILL	BMLT – 650	100	50	150
			TOTAL	900

6 month internship in any Hospital or Nursing Home

Note :

Theory Paper :30% Continuous Internal Assessment and 70% University examination.

Practical Paper : 30% Continuous Internal Assessment and 70% University examination

Continuous Internal assessment :

1) Two or three tests out of which two Internal Assessment will be considered for Assessment 60% of Continuous

2) Seminars/Assignment/Quizzes Internal Assessment 30% of Continuous

3) Attendance class participation and behavior Internal Assessment 0% of Continuous

FIRST SEMESTER

BMLT – 110

ANATOMY

**Maximum Time : 3hrs
Total marks :100**

**University Assessment – 80%
Internal Assessment – 20%**

Minimum Pass Mark – 40%

COURSE CONTENTS – THEORY

1) Introduction of Bones of the Human Body of :

- Upper Limb : clavicle, scapula, humerus, radius, ulna, carpus, metacarpus & phalanges
- Lower Limb : hipbone, femur, tibia, fibula, tarsus, metatarsus & phalanges
- Skull : name the bone of skull and sutures between them.
- Thorax : ribs and their articulations
- Vertebral Column : cervical, thoracic, lumber, sacral and cocasial vertebrae

2) Surface Markings of the Body :

- Nine regions of the abdomen
- Four quadrants of the Hip

3) Introduction of different Vital Organs :

A) Respiratory Organs :

- Nasopharynx
- Oropharynx
- Larynx
- Trachea
- Bronchi
- Lungs (and their lobular segments)
- Thoracic cavity
- Pleura and Pleural cavity

B) Circulatory Organs

- Anatomical position of the heart
- Pericardium of the heart
- Chambers of the heart
- Great vessels of the heart
- Valves of the heart

C) Digestive Organs :

- Tongue
- Teeth
- Oral cavity
- Pharynx

- Oesophagus
- Stomach
- Small intestine
- Stomach
- Small intestine
- Large intestine and its colons

PRACTICAL :

Labeled Diagrams of different organs and bones

Vivo

BMLT – 120

PATHOLOGY

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS –

1. The Cell in health and disease
 - a. Introduction of pathology
 - b. Cellular structure and metabolism
 - c. Inflammation – Acute and Chronic
 - d. Derangement of Body Fluids and Electrolytes
 - Types of shocks
 - Ischaemia
 - Infection
 - e. Neoplasia – Etiology and Pathogenesis
2. Introduction of hematology
 - a. Formation of Blood
 - b. Erythropoiesis
 - c. Leucopoiesis
 - d. Thrombopoiesis
 - e. Collection of Blood
 - f. Anticoagulants
 - g. Red cell count – Haemocytometer, Methods and Calculation
 - h. WBC Count – Methods
 - i. Differential Leucocytes Count (DLC) –
 Morphology of White Cells, Normal Values
 Romanowsky Stains : Staining procedures
 Counting Methods, Principle of staining
 - j. Hb estimation - Method
 Colorimetric Method

Chemical Method
Gasometric Method
S. G. Method
Clinical Importance

Practical :

I.

- Collection of Sample
- Hb estimation
- TLC and DLC
- RBC Count
- Peripheral blood film – staining and study of Malarial Parasite

II. Laboratory management – Sample Collection, Labeling, Transport, Screening, Reporting and Dispatch of Reports.

BMLT – 130

BIOCHEMISTRY

Maximum Time : 3hrs

University Assessment – 80%

Total marks :100

Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

1. Introduction of Biochemistry
2. Elementary knowledge of inorganic chemistry : - Atomic weight, molecular weight, equivalent weight, acid, bases.
3. Definition and preparation of solutions : - Percent solution, Molar solution, Normal solution and Buffer Solution etc.
4. Definition and preparation of Regent.
5. Unit of measurement
6. Elementary knowledge of organic chemistry
 - Organic compounds
 - Aliphatic and Aromatic
 - Alcohols, Aldehydes, Ketones, Amines, Esters, Phenol etc
7. pH indicators : pH paper, universal and other indicators, pH measurement : different methods.

Practical

Introduction and usage of Glassware and Instruments

Glassware :

- Composition of Glass
- General glass wares

Instruments :

- Balance
- Hot plate and Magnetic stirrer

- Centrifuges
- Incubators
- Constant temperature bath
- Colorimeter : Principal, Function
- Photometer
- Flame Photometry

BMLT – 140

MICROBIOLOGY

Maximum Time : 3hrs

University Assessment – 80%

Total marks :100

Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

I. Introduction and brief history of Microbiology

- Historical Aspect
- Relationship of Micro-organism to men
- Micro-organism in Disease and Health

II. Requirement and uses of common Laboratory Equipments

- Incubator, Hot Air Oven, Water Bath
- Anaerobic Jar, Centrifuge, Autoclave
- Microscope
- Glassware – Description of Glassware, its use, handling and care

III. Sterilization :

- Definition
- Classification and General Principle of Sterilization
- Autoclave – its structure, functioning, control and indicator

IV. Antiseptics & Disinfectants

- Definition
- Types
- Mode of Action
- Uses

V. Collection, Transportation and processing of clinical samples for Microbiological investigations

Practical :

Demonstration of washing of instruments

Maximum Time : 3 Hrs.
Total Marks : 100
Minimum Pass Marks : 40%

University Examination : 70 Marks
Continuous Internal Assessment : 30 Marks

(A) Instructions for the Paper setter:

The question paper will consist of five sections: A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% of the total marks (12 marks) each. Section E will consist of 10 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% of the total marks (32 marks) in all.

(B) Instructions for the Candidates:

1. Candidates are required to attempt one question each from the section A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Basic Skills :- Listening, Speaking, Reading & Writing.

A Practical study of Grammatical Rules (Noun, Pronoun, Adjectives, Verb, Adverb)

Tenses :- Types of Tenses

SECTION B

Idioms & Phrases,

Confused words :- Paronyms, Homonyms

Synonyms, General Abbreviations,

One word Substitution

SECTION C

Simple present, progressive & present perfect, Simple past, progressive & Past perfect, Indication of Futurity, the passive (Present & Past, Present & Past Perfect).

Reported Speech :-

- | | |
|--------------------------------|----------------------|
| (I) Declarative Sentences | (II) Imperative |
| (III) Interrogative (Question) | (IV) Active, Passive |
| (V) Preposition | (VI) Articles |

SECTION D

Writing Skills :-

Paragraph Writing, Composition Writing, Report Writing, Application & Letter Writing, Essay Writing.

Reference:

1. Tandon, R.C. Seth, R.R. Agarwal
2. V.K. Maheshwari - "English Grammar and Composition" Ratan Prakashan Mandir.
3. Sidhu, Prem & Kapoor "Collegiate English Grammar Composition & Translation" Khosla Publishing House.

SECOND SEMESTER

BMLT – 210

PHYSIOLOGY

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS

1. Cell :
 - Definition
 - Structure and functions the cytoplasmic Organelles
 - Reproduction : Miosis, Mitosis
2. The important physico-chemical laws applied to physiology
 - Diffusion
 - Osmosis
 - Bonding
 - Filtration
 - Dialysis
 - Surface Tension
 - Adsorption
 - Colloid
3. Fundamentals of different Organ Systems
 - Cardiovascular System
 - Respiratory System
 - Digestive System
 - Excretory System
 - Reproduction System
 - Endocrine System
 - Lymphatic System
 - Practical
 - Viva and diagrams of different Vital Organs

PRACTICAL

Viva and diagrams of different Vital Organs

**Maximum Time : 3hrs
Total marks :100**

**University Assessment – 80%
Internal Assessment – 20%**

Minimum Pass Mark – 40%

COURSE CONTENTS

I. Hematology :

- ESR
- Methods
- Factors – Affecting ESR
- Normal Values
- Importance
- RBC – Indices
- Platelets

II. Body Fluids :

- a) Urine :
 - Method of Collection
 - Normal Constituents
 - Physical Examination
 - Chemical Examination

- b) Stool Examination :
 - Method of Collection
 - Normal Constituents and appearance
 - Abnormal Constituents (Ova, Cyst)

- c) C.S.F. Examination
 - Physical Examination
 - Chemical Examination
 - Microscopy
 - Cell Count
 - Staining

- d) Semen Analysis
 - Collection
 - Examination
 - Special Tests

PRACTICAL :

- a) Urine, Stool, Semen and C.S.F. – Collection, Handling, Examinations
- b) Absolute Eosinophil Count, PCV, RBC indices, ESR Estimation, Platelet Count

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS

1. Aim and Scope of Biochemistry
2. Collection and Recording of Biochemical Specimen, separation of serum/plasma preservation and disposal of Biological material.
3. Chemical examination of urine : Qualitative, Sugar, Protein, Bile Salt, Bile Pigment, Ketones Bodies
4. chemical examination of Stool : Occult Blood.
5. Chemical examination of other Body Fluids : CSR, Plural Fluid, Ascitic Fluid etc.
6. Laboratory management and Maintenance of Records.

PRACTICAL :

- Urine Examination Physical, Chemical, Microscopic, Biochemistry
- Stool Examination
- Body Fluids : Physical and chemical examination CSF, Pleural Fluid, and Ascitic fluid

COURSE CONTENTS

Bacteriology

- Definition
- Bacteria – General characteristics of Bacteria
- Classification and morphology of Bacteria
- Structure of Cell, Capsule, Flagella, and Spore
- Growth of Bacteria
- Nutrition of Bacteria

Virology :

- Definition
- General Introduction of Virus
- Physiochemical characteristic of Viruses
- Diseases caused by different Virus and mode of infection

Parasitology :

- Definition
- General characteristics of Parasite
- Classification of Parasite
- Mode of transmission

Fungus

- Definition
- Structure
- Classification

PRACTICAL :

Staining – Type of Staining, Principle, Procedure and Interpretation

Maximum Time : 3 Hrs.**University Examination : 70 Marks****Total Marks : 100****Continuous Internal Assessment : 30 Marks****Minimum Pass Marks : 40%****A) Instructions for paper-setter**

The question paper will consist of five sections A, B, C and D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Definition of Information Technology, Use of IT, Definition of information system, need of information system, definition of knowledge, Range of application : Scientific, business, educational, whether forecasting, and remote sensing, planning, e-commerce, web publishing, Management Information System, Decision Support System, inventory control, medical, industrial control, banks, railways, etc.

SECTION B

Computer Fundamentals: Block structure of computer, Characteristics of computers, Problem solving with computers, Generation of computers, Classification of computers.

SECTION C

Number System: Bit, Byte, Binary, Decimal, Hexadecimal, and Octal system, Conversion from one system to the other, Error detecting codes, Representation of characters, Integers and fractions.

Binary Arithmetic: Addition, Subtraction and Multiplication.

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Reference:-

1. D.H.Sanders, "Computers Today", McGraw Hill, 1988.
2. T.N. Trainer, "Computers" (4th Edition) McGraw Hill, 1994.
3. Kenneth C.Laudon, Jane P. Laudon "Management Information System"(7th Edition),
4. V. Rajaraman, "Fundamentals of Computers" (2nd Edition), Prentice Hall of India, New Delhi, 1996.
5. B. Ram, "Computer Fundamentals", Wiley, 1997.

THIRD SEMESTER

BMLT –310

ANATOMY

**Maximum Time : 3hrs
Total marks :100**

**University Assessment – 80%
Internal Assessment – 20%**

Minimum Pass Mark – 40%

COURSE CONTENTS

A) Reproductive Organs :

- Male and Female Gonads : Testes, Epididymis, Ovary, Fallopian Tube, Uterus, Vagina etc.
- Introduction of male Genital Organs
- Introduction of female Genital Organs

B) Liver and Spleen :

- Introduction
- Anatomical position
- Gall bladder

C) Excretory Organs ;

- Cortex and medulla of Kidney
- Ureter
- Urinary Bladder
- Urethra (male and female)

D) Muscles :

- Introduction, Origin and Insertion, Function

PRACTICAL

Labeled Diagrams of different organs and bones

Vivo

Minimum Pass Mark – 40%

COURSE CONTENTS

- a) Human blood group antigens and antibodies

- b) ABO Blood group systems
 - Sub. – group
 - Source of antigens and types of antibodies

- c) Rh Blood group System
 - Types of Antigen
 - Mode of Inheritance
 - Types of Antibodies

- d) Other Blood grup Antigens

- e) Blood Collection
 - Selection and screening of donor
 - Collection of blood
 - Various anticoagulants
 - Sotrage of Blood.
 - Changes in Blood on Sotrage

PRACTICAL :

Blood gruping
Tube Method
Slide Method

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS

1. Carbohydrates : -

- Introduction
- Importance
- Classification
- Properties
- Estimation of Glucose
- Clinical Significance

2. Protein : -

- Introduction and Physiological importance
- Amino acids
- Essential amino acids
- Classification
- Denaturation of Proteins
- Estimation of Total protein, Albumin, Globulin, A/G Ratio

3. Introduction, Properties and function of important hormones

4. Enzymes and Co-enzymes

- Introduction and difference
- Functions
- Estimation of important enzymes
 - i) SGOT (AST)
 - ii) SGPT (ALT)
 - iii) Alkaline Phosphatase
 - iv) Acid Phosphatase
 - v) Amylase, lactate dehydrogenase.
 - vi) CPK, CPK-MB

PRACTICAL :

Method of estimation of glucose : Benedicts Reaction, Glucose oxidase Method
Method of estimation of Protein, Albumin.

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS

Staining of Bacteria :

1. Composition and preparation of Staining
2. Principle and Procedure of Bacteriological stain
 - Gram's Stain
 - Ziehl-Neelsen Stain
 - Albert Stain
 - Spore and Negative Stain

Cultivation of Micro-organism :

- Introduction and uses of culture
- Classification of culture media
- Composition of common of Laboratory culture media
- Special media and preparations
- Techniques of inoculation and isolation
- Antimicrobial sensitivity
- Anaerobic cultivation techniques

Isolation of Viruses in Laboratory by tissue culture

- Cell and tissue culture technology
- Embryonated Egg
- Principles of animal cell culture and their use in Virology

Different staining techniques used in Virology

Principle of different serological test used in Virology

Mode of Transmission of Viral agents

Prevention of Viral disease

Immunity in Viral infection

PRACTICAL

1. Staining : ZN Staining of M. T. B. and M. Lepra, Albert Staining
2. Culture
 - Type of Media
 - Preparation
 - Inoculation
 - Colony Characteristic
 - Staining and Antibiotic Sensitivity

Maximum Time : 3 Hrs.**University Examination : 35 Marks****Total Marks : 50****Continuous Internal Assessment : 15 Marks****Minimum Pass Marks :40%****A) Instructions for paper-setter**

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 10-15 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed

SECTION A**1. Corresponding : (Official, Business And Personal)**

One Letter from each category (Official, Business and Personal) may be set in the examination paper and the students be asked to write one of them.

SECTION B**2. Grammar**

A brief review of easy form of tenses. Conversion of direct narration into indirect form of narration and vice versa (only simple sentences). Punctuation.

SECTION C**3. Essay**

Preferably on scientific topic from the given outlines. The paper setter may be instructed to give a choice of attempting one out of three topics. The question paper may provide the outlines. The essay will be of 250 to 300 words. The examiner may select three topics one from each of the following.

- (i) Science
- (ii) Technology
- (iii) General.

SECTION D**Written Communication**

report, notices, agenda notes, business correspondence preparation of summery & prices.

FOURTH SEMESTER

BMLT –410

PHYSIOLOGY

**Maximum Time : 3hrs
Total marks :100**

**University Assessment – 80%
Internal Assessment – 20%**

Minimum Pass Mark – 40%

COURSE CONTENTS

1. Blood
 - Definition
 - Composition
 - Function

2. Formation of different type of blood Cells
 - Erythrocytes
 - Leucocytes
 - Thrombocytes

3. Mechanism of Blood Cltting

4. Cerebrospinal Fluid
 - Formation
 - Composition
 - Function

5. Special Senses
 - Hearing
 - Taste
 - Smell
 - Touch
 - Sight

PRACTICAL :

Viva and diagrams of Corpuscles

**Maximum Time : 3hrs
Total marks :100**

**University Assessment – 80%
Internal Assessment – 20%**

Minimum Pass Mark – 40%

COURSE CONTENTS :

IMMUNOLOGY AND SEROLOGY

Hormones -

- Thyroid Hormones
- Growth Mhormone
- Isulin

Glycosylated Hemoglobin

COOMB’S Test

- Direct and Indirect Test
- Titration of Antibody

HISTOPATHOLOGY (Theory and Practical)

a) Fixation of tissues

- Classification of Fixatives

b) Tissue Processing

- Collection
- Steps of fixation

c) Section Cutting

- Microtome and Knives
- Techniques of Section Cutting
- Mounting of Sections
- Frozen Sections

d) Decalcification

- Fixation
- Declacification
- End Point

e) Staining Dyes and their properties, H & E Stain, Special Stains

PRACTICAL :

- COOMB’S Test
- Anti D Titre

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

1. Lipids : -

- Introduction and functions
- Classification
- Steroids
- Metabolism
- Estimation : Total lipids, HDL, LDL, VLDL, Total cholesterol, Triglyceride
- Clinical significance

2. Principal of Assay procedures for biological material and estimation of kidney function tests.

- Urea
- Uric acid
- Creatinine

3. Electrolytes :

- Function
- Properties
- Estimation of Essential electrolytes : Sodium, potassium, calcium, chloride and phosphorus etc.
- Clinical Importance

4. Genetics

- DNA, RNA Structure
- Gene coding
- Transcription & Translation
- Genetic Disorders

PRACTICAL :

Method of estimation of urea

Method of estimation of Creatinine

Method of estimation of Cholesterol

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

- I) Immunology
 - Definition
 - Immunity : Definition and Classification
 - Antigen
 - Antibodies – Immunoglobulin
 - Antigen and antibody reaction and clinical importance
 - Structure and function of immune system
 - Immune response
 - Hypersensitivity

- 2) i. Principle & procedure of Serological Tests.
 - BIDAL, CRP, Brucella, Agglutination, ASO
 - Cold agglutination, VDRL, TPHA
 - i) Advanced techniques in Microbiology ELISA, RIA etc
 - ii) Epidemiological Markers of Micro-organism serotyping
 - iii) Preparation & Standardization of Antigen and Antisera
 - iv) Preparation & Standardization of vaccine and immunization

- 3) i) General introduction, life cycle, mode of transmission, pathogenicity, and lab diagnosis of various Protozoa.
 - ii) Entamoeba Histolytica
 - iii) Entamoeba coli
 - iv) Giardia lamblia
 - v) Trichomonas Vaginalis
 - vi) Leishmania donovani

- 4) i) Sprozoa
 - Malaria Parasite
 - Toxoplasma Gondii
 - ii) Balatidium Coli
- 5) General introduction life cycle, mode of transmission, pathogenicity and lab diagnosis of various Helminths :
 - i) Cestodes or Tapeworms :
 - Taenia solium

- *Taenia sagnata*
- *Hymenolepis nana*
- *Echinococcus granulosus*

ii) Trematodes of Flukes :

- *Fasciola hepatica*
- *Fasciola gigantica*
- *Gestrodiscoides hominis*

iii) Nematodes :

- *Trichinella spiralis*
- *Trichuris trichiura*
- *Ancylostoma duodenale*
- *Enterobjus vermicularis*
- *Ascaris lumbricoides*

PRACTICAL :

Demonstration :

Slide Agglutination

- VDRL
- VIDAL
- ASO
- CRP
- Stool Examination
- Physical
- Microscopic Demonstration of Ova, Cyst, Pus Cells
 - Hanging Drop Examination

Maximum Time : 3 Hrs.
Total Marks : 100
Minimum Pass Marks : 40%

University Examination : 70 Marks
Continuous Internal Assessment : 30 Marks

A) Instructions for paper-setter

The question paper will consist of five sections A, B, C and D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Internet - Evolution, Protocols, Interface Concepts, Internet Vs Intranet, Growth of Internet, ISP.

Connectivity- Dial-up, Leased line, VSAT etc., URLs, Domain names, Portals.

E-MAIL - Concepts, POP and WEB Based E-mail ,merits, address, Basics of Sending & Receiving, E-mail Protocols, Mailing List, Free Email services.

SECTION B

E-Commerce- An introductions, Concepts, Advantages and disadvantages, Technology in E- Commerce, Internet & E-business, Applications, Feasibility & various constraints. E-transition, challenges for Indian corporate.

SECTION C

Electronic Payment Systems: Introduction, Types of Electronic Payment Systems, Digital Token-Based, Electronic Payment Systems, Smart Cards and Electronic Payment Systems, Credit Card-Based Electronic Payment Systems, Risk and Electronic Payment Systems.

Internet Protocols- Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Terminal Emulation, Massage Board.

Reference:

1. A. Mansoor, "Internet and Web Design Made Easier", Pragma Publications.
2. V.K.Jain, "level Module - M 1.2 - Internet & web page designing" BPB Publications.
3. P.T. Joseph, S.J., "E-Commerce An Indian Perspective (Second Edition)", Prentice Hall of India
4. Alexis Leon and Mathews Leon, "Internet for Everyone", Vikas Publishing House Pvt. Ltd., New Delhi.
5. "Internet for Dummies", Pustak Mahal, New Delhi.

FIFTH SEMESTER

BMLT – 510 PREVENTIVE & SOCIAL MEDICINE

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

1. Concept of Health and Disease
 - Definition of Health
 - Positive Health
 - Concept of Well – being
 - Concep of Disease
 - Natural Hisotry of Disease
 - Concept of Prevention
2. Health Programs in India
 - National Vector Born Disease Program
 - National Anti Malaria Program
 - National Eradication Program
 - Revised National T. B. control Program
3. Brief information of national Rural Health Mission
4. Nutrition and Health
 - Carbohydrate
 - Vitamins
 - Protein
 - Minerals
 - Other trace elements
5. Environmental Health
6. Hospital Waste Mangement
 - Definition
 - Sources of healthcare waste
 - Healthcare waste generation
 - Health hazards of Healthcare Wastes
 - Treatment of Disposal Technologies for Healthcare Waste
7. Communication for Health Education
 - Definition
 - The communicate rocess
 - Type of Communication
 - Health Communication
 - Health Education

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

- I. Anaemias :
 - a) Definition and classification of Anemia
 - c) Laboratory Diagnosis of
 - Iron Deficiency Anemia
 - Megaloblastic Anemia
 - Post Hemorrhagic Anemia
 - Thalessemia Syndrome
- II. Hemorrhagic Disorders – Definition and Classification
 - Haemostasis and Coagulation Factors
 - Investigations and Lab Diagnosis
- III. Leukemia Disorders -
 - Definition and Classification
 - Lab Diagnosis
- IV. Hormones - Techniques
 - ELISA
 - RIA
- V. Cytology
 - Fine Needle Aspiration Technique
 - Staining
 - Papanicaloav Staining Technique

PRACTICAL :

1. Bleeding Time, Clotting Time, PT, APTT, TT, Platelet Count & Platelet Function Test
2. Sickle Cell preparation
3. Reticulocyte Count
4. Osmotic Fragility Test
5. Brie Marrow Smears Preparation
6. ELISA Demonstration
7. LE Cell Preparation

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

1. Liver Function Test

- Introduction
- Type of Jaundice
- Detection of Bilirubin

2. heamoglobin Metabolism

3. Water and Minerals Metabolism :

- Deydration
- Calcium
- Phosphorus
- Sodium
- Potassium
- Cloride
- Iron
- Iodine
- And their physiological function and diseased state.

4. Gastric juice.

- Importance
- Constitutents
- Collection

PRACTICAL :

- Method of estimation of Bilirubin
- Method of estimation of SGOT, GPT, Alk Po4 Acid Po4

BMLT – 540

MICROBIOLOGY

**Maximum Time : 3hrs
Total marks :100**

**University Assessment – 80%
Internal Assessment – 20%**

Minimum Pass Mark – 40%

COURSE CONTENTS :

1) Study of systematic Bacteriology :

- Streptococci
- Staphylogocci
- Pneumococci
- Corynebacteria
- Escherichia
- Klebsiella
- Enterobacter
- Proteus
- Salmonella
- Shigella
- Pseudomonas
- Vibro
- Haemophilus
- Mycobacterium
- Brucella
- Clostridia
- Treponema
- Niesseria
- Leptospira
- Microlasma
- Ricketessia
- Clamydia

PRACTICAL :

Staining characters of different type of Bacteria Identification of type colony growth
Biochemical character of Organism

Maximum Time: 3 Hrs.
Total Marks: 50
Minimum Pass Marks: 40%

University Examination: 35 Marks
Continuous Internal Assessment: 15 Marks

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 10-15 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed

SECTION A

1. Precis and Comprehension

Precis writing of simple passages from the prescribes text book. The passage selected should be from the textbook. The passage selected should be such as easily lends to surrounding. The passage should be of 100 to 150 words. In order to test comprehension a few questions on the passage may be set

SECTION B

2. Communication Techniques

Importance of communication

One way and two way communication

Essentials of good communication

Methods of communication, oral, written and non-verbal

Barriers to communication

Techniques of overcoming barriers

Concept of effective communication

All forms of written communications including drafting reports, notices, agenda notes, business correspondences, preparation of summaries and précis, telegrams, circulars, representations. Press release and advertisements

Telephonic communications

SECTION C

4. Technical Report Writing

Technical report writing from the given outlines, a choice to attempt one out three to be given in the examination. The question paper shall provide the required outlines

SECTION D

5. Equivalent Terminology

150 popular administrative and technical terms in English with their equivalent words in regional language or in Hindi.. These terms shall be officially prescribed and sent to the paper as well.

Practice of writing personal resume and writing application for job/ employment

SIXTH SEMESTER

BMLT – 610

LABORATORY MANAGEMENT

Maximum Time : 3hrs
Total marks :100

University Assessment – 80%
Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

8. Laboratory Planning
 - General Principles
 - Planning at different levels
 - Planning for Hospital Lab Services
 - Section fo a Hospital Laboratory
 - Space requirement
2. Laboratory management Technique
 - General Principle
 - Component and function of Laboratory
 - Staffing theLaboratory
 - Job Specification
 - Work Schedule
3. Care of Laboratory Glassware, Equipments, Instruments and Chemical etc
 - General Principle
 - Care and Cleaning of Glassware
 - Care of equipments and instruments
 - Lab chemicals, their proper use and care
 - Labeling
4. Laboratory Safety
 - General principle
 - Laboratory hazards
 - Safety programs
 - First Aid
5. Quality Control of Laboratory
6. Stores Organisation
 - Introduction
 - Function
 - Organisation and Structure
 - Duteis
 - Type of store
 - Goods inwards Store
 - Main Store
 - Store Records
7. Relationship with other function values analysis
8. Store/Offie usestationary
 - Material Receipts Advice Form

- Goods inwards Note Form
- Material requisition Form
- Bin Card

BMLT – 620

PATHOLOGY

Maximum Time : 3hrs

University Assessment – 80%

Total marks :100

Internal Assessment – 20%

Minimum Pass Mark – 40%

COURSE CONTENTS :

Blood Banking

1. Component Preparations
 - Packed Cells
 - Fresh Frozen Plasma
 - Platelets
2. Blood Storage
 - Anticoagulant Preparation
 - Recording the details and storage of blood
 - Maintenance and changing of various equipments
3. Transfusion Reaction and Mismatch Transfusion – Lab Diagnosis

Autopsy technique :

1. Assisting in Autopsy
2. Preservation of Organs and Tissue Processing

Laboratory management & Quality Control :

1. Laboratory Goals
2. Market Potential
3. Care of Laboratory equipments
 - Sterilization and Autoclave Technique
 - Maintenance of Equipments log books
4. Internal and external Quality Check
5. Disinfection Techniques and Waste disposal

AIDS Updates :

1. Brief Pathophysiology
2. Diagnostic Technique – Screening
3. Safety in Laboratory
4. Sterilization of AIDS sample and disposal

Automation in pathology :

1. Semi – Automatic and Fully Automatic Analyzer – working and methodology
2. Maintenance of Instruments
3. Handling and Quality Check

PRACTICAL :

- Electrophoresis Technique – Protein & Hemoglobin
- High performance liquid Chromatography
- Micro column technique

BMLT – 630

BIOCHEMISTRY

**Maximum Time : 3hrs
Total marks :100**

**University Assessment – 80%
Internal Assessment – 20%**

Minimum Pass Mark – 40%

COURSE CONTENTS :

Special Profiles :

- Glucose Tolerance Test
 - Insulin Tolerance Test
 - Gastric analysis
 - Xylose absorption Test
 - Clearance Test for Renal Function
2. Analysis of Calculat
 3. Introduction of
 - Chromatography
 - Electrophoresis
 - Radio immunoassay (RIA)
 - ELISA
 4. Electrometric determination of sodium (Na⁺) and potassium (K⁺)
 5. Quality control of clinical investigation and Automation in clinical biochemistry.
 6. Cardiac enzymes CPK, CPK MB, LDH, Troponin

PRACTICAL :

- Revision of all Biochemical Tests
- Demonstratioan of Chromatography and Electrophoresis
- ELISA and RIA

**Maximum Time : 3hrs
Total marks :100**

**University Assessment – 80%
Internal Assessment – 20%**

Minimum Pass Mark – 40%

COURSE CONTENTS :

- 1) Interdiction of Anaerobic culture media name of
- 2) Identification of Fungi
 - Growth
 - Characteristics
 - Diseases causedby Fungi
- 3) Laboratorial Management and Stock Maintenance of Microbiology Laboratory

PRACTICAL :

- Biochemical Test used for identification of bacteria
 - Lab diagnosis of Fungi
 - Smear preparations
 - KOH Solution
 - Fungus Culture :-
- a. Media
 - b. B. Colony Characters of arious fungi

Maximum Time : 3 Hrs.
Total Marks : 100
Minimum Pass Marks: 40%

University Examination : 70 Marks
Continuous Internal Assessment: 30 Marks

A) Instructions for paper-setter

The question paper will consist of five sections A, B, C and D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Input and Output units: Their functional characteristics, main memory, cache memory read only memory, overview of storage devices – floppy disk, hard disk, compact disk, tape.
Computer Networks and Communication: Network types, Network topologies, Network communication devices, Physical communication media, TCP/IP.
Internet and its Applications: E-mail, Telnet, FTP, WWW, Internet chatting

SECTION B

Word Wide Web (www) - History, Working, Web Browsers, Its functions, Concept of Search Engines, Searching the Web, HTTP, URLs, Web Servers, Web Protocols.
Web Publishing - Concepts, Domain name Registration, Space on Host Server for Web site, HTML, Design tools, HTML editors, and Image editors, Issues in Web site creations & Maintenance

SECTION C

Html - Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Inserting texts, Images, Hyperlinks, Backgrounds and Color controls, Different HTML tags, Table layout and presentation, Use of font size & Attributes, List types and its tags, Use of Frames and Forms in web pages. Overview of MS FrontPage, Macromedia Dream weaver, and other popular HTML editors, designing web sites using MS FrontPage (using at least FrontPage 2000)

Reference:-

1. D.H.Sanders, "Computers Today", McGraw Hill, 1988.
2. T.N. Trainer, "Computers" (4th Edition) McGraw Hill, 1994.
3. P.T. Joseph, S.J., "E-Commerce An Indian Perspective (Second Edition)", Prentice Hall of India