PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA)

OUTLINES OF TESTS SYLLABI AND COURSES OF READING

FOR

Bachelor of Vocation (Medical Lab Technology)

Session 2018-19

(1st to 6th Semester)

SCHEME of B.Voc. (MLT)

(SEMESTER SYSTEM)

***Refer to Generic Components Common to all B.Voc. Courses**

**** Summer Industrial Training of 4-6 weeks in a relevant Industry after 2nd Semester Examinations during summer break. Training report by the student to be submitted with**

B.Voc. (Medical Lab Technology) SEMESTER V

Semester V								
Paper Code	**Title**	**Generic/ Skill Component**	**Theory/ Practical**	**Internal (Theory)**	**External (Theory)**	**Internal (Practical)**	**External (Practical)**	**Credit**
***GEN - 501**	**Critical Thinking and Elementary Statistics**	**Generic**	**Theory**	**20**	**80**	**--**	**--**	**6**
502	**Introduction to Biochemical Techniques**	**Generic**	**Theory**	**20**	**80**	**--**	**--**	**6**
503	**Introduction to Immunology**	**Skill**	**Theory & Practical**	**10**	**40**	**10**	**40**	**6**
504	**Serology : Introduction & Serological Lab Procedures**	**Skill**	**Theory & Practical**	**10**	**40**	**10**	**40**	**6**
505	**Clinical Biochemistry-I**	**Skill**	**Theory& Practical**	**10**	**40**	**10**	**40**	**6**
Note: Winter Industrial/ In-house Training of 2-3 weeks in a relevant area after 5th Semester Examinations in winter break.								
SEMESTER VI								
***GEN 601**	**Entrepreneurship Development Programme**	**Generic**	**Theory**	**20**	**80**	**--**	**--**	**6**
602	**Sensitization to Blood Banking and Infection Control**	**Generic**	**Theory**	**20**	**80**	**--**	**--**	**6**
603	**Microbiology -II**	**Skill**	**Theory & Practical**	**10**	**40**	**10**	**40**	**6**
604	**Clinical Biochemistry-II**	**Skill**	**Theory & Practical**	**10**	**40**	**10**	**40**	**6**
605	**Haematology**	**Skill**	**Theory& Practical**	**10**	**40**	**10**	**40**	**6**
****SIT-601**	**Summer Industrial/ In-house Training and Comprehensive Viva**	**Skill**	**Practical**	**10**	**40**	**10**	**40**	**6**

***Refer to Generic Components Common to all B.Voc. Courses**

****Winter Industrial/ In-house Training of 2-3 weeks done after 5th Semester Examinations and before start of 6th semester. Training report by the student to be submitted within in one week of start of 6th Semester. Viva-Voce examination to be held within 3-weeks of the start of 6th semester.**

Job Role:Medical Lab Technician

B.Voc MLT SEMESTER I
BMLT Skill 103
BASICS OF HUMAN ANATOMY
Credits 6

Objectives: Basic understanding of organization of body cells, tissues, organs, organ systems, and glands in human body

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

Section I

- **Basic unit of body - Cell**
- **The anatomical organization of body cells, tissues, organs, organ systems, membranes and glands in human body.**
- **Introduction to different types of tissues: Anatomy, epithelial tissue, muscular tissue, nervous tissue**

Different types of organ systems.
Brief Intoduction of different types of body fluids ,secretions and excretions

- **Skeletal system: bones, joints and muscles.**

Section II

Digestive Organs:

- **Tongue**
- **Teeth**
- **Oral cavity**
- **Pharynx**
- **Oesophagus**
- **Stomach**
- **Small intestine**
- **Large intestine**
- **Liver, Pancreas and Spleen**

Section III

Respiratory Organs:

- **NasopharynxTh5.514(:)-13.0644( )-6.2..48259(566(o)0.1282)-6.34447(O)-3.85127(r)-4.60306(a)0.128297(p)-7.95835(h)4.85887(a)r-4.60306**

Reference Books:

Anatomy & Physiology:	**Ross and Wilson**
Anatomy and Physiology:	**N Murgesh**
Anatomy and Physiology for nurses:	**Evelyn Pearce**
Anatomy and Physiology for nurses :	**Sears**
Anatomy and Physiology for nurses :	**Pearson**
Human Anatomy:	**Harie R. Berasari**

B.Voc MLT SEMESTER I
BMLT Skill 105
INTRODUCTION TO HEMATOLOGY
Credits 6

Objectives:
To gain understanding of blood and components of blood To gain knowledge of hematological Diseases and hematological Investigations.

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

Section I

- **Introduction to hematology and laboratory organization Composition and functions of blood. and lymph.**
- **Detailed study of Haemoglobin and its functions of hemoglobin**
- **Blood groups including Rh. Factor**
- **Detailed study of Reticulocytes**
- **Formation of blood. Morphology of normal blood cells and their identifications**
- **Heamostasis , Mechanism of blood coagulation. Fibrinolysis.**

Section II

- **Various anticoagulants, their uses, mode of action and their merits and demerits. Normal and absolute in haematology. Quality assurance in hematology**

Section III

-

Reference Books

A Manual of Laboratory & Diagnostic Tests (6/ e) Frances Fischbach
Hand book of Medical Laboratory Technology (2/e) V.H. Talib
Clinical Diagnosis & Management by Laboratory method0 (20/e) John Bernard Henary
Textbook of Medical Laboratory Technology Godkar and Godkar

Biochemical Techniques K. Choudhary
Text book of Medical Biochemistry Chaterjee & Shinde
Principles of Biochemistry David L. Nelson
Principles of Biochemistry Lehninger

SEMESTER II

B.Voc MLT

Practicals- All Biochemical tests mentioned in Theory
Reference Books

Textbook of Medical Laboratory Technology Godkar and Godkar
Research Methodology in Medical Sciences Chandorkar
Practical Clinical Biochemistry Harold Varley
Medical Laboratory Sciences, Theory & Practical A. Kolhatkar
Medical Laboratory Technology – Volume I Kanai Mukherjee
Medical Laboratory Technology – Volume II Kanai Mukherjee
Medical Laboratory Technology – Volume II Kanai Mukherjee
Medical Laboratory Technology Methods & Interpretation (5/e) Ramnik Sood

Section IV

Best Practices in Lab

- **Sensitization on current best practices in laboratory**
- **Elementary knowledge on Good Clinical Laboratory Practices (GCLP) of WHO**
- **Elementary Knowledge of laboratory safety guidanco**

PRACTICALS:

1. **Introduction to operation of laboratory instruments and safety precautions.**
2. **Macroscopic examination of adult worms, cysts, tissues and processing of stool sample for routine examination.**
3. **Saline preparation for protozoan cysts and trophozoites.**
4. **Concentration procedures for helminthic ova and cyst. Examination and identification of ova and cyst of parasites of medical importance.**
5. **Study of malarial parasite.**
6. **Laboratory diagnosis of kalaazar.**
7. **Detection of trypanosomes(the causal agent of sleeping sickness)**
8. **Laboratory diagnosis of microfilaria(Wuchereria bancroftii)**
9. **Quantitative determination of serum (or plasma) igG class antibodies to toxoplasma gondii by ELISA**
10. **Determination of IgM class antibodies to toxoplasma gondii by ELISA**

Reference Books

Human Parasitilogy: By (author) Burton J. Bogitsh , By (author) Clint E. Carter , By (author) Thomas Oeltmann 4th Revised edition Publication City/Country San Diego, United States Publisher Elsevier Science Publishing Co Inc.

Clinical Parasitology : A Practical Approach 2nd editionElizabeth A. Zeibig Publisher Elsevier - Health Sciences Division

Veterinary Parasitology M. A. Taylor , By (author) R. L. Coop , By (author) R. L. Wall John Wiley and Sons Ltd**,3rd revised edition**

Medical Entomology: A Textbook on Public Health and Veterinary Problems Caused by Arthropods 2nd Edition by B.F. Eldridge (Editor), John Edman (Editor)

Medical and Veterinary Entomology, Second Edition 2nd Editionby Gary R. Mullen (Editor), Lance A. Durden (Editor)

Medical Entomology for Students 3rd Editionby Mike Service (Author)

Text book of Medical Lab Technology,Praful B. Godkar and Darshan P Godkar,PublisherBhalani Publisher,Third edition Vol 1-3

Reference Books

Mims' Medical Microbiology Richard Goering , Hazel Dockrell , Mark Zuckerman , Ivan M. Roitt , Professor Peter L. Chiodini Publisher Elsev79(c)8.21417(r)-Kssor

Section IV

- **Principles of biosafety hoods use of pipettes, syringes and other virus contaminated**
- **Instruments in the laboratory. Mode of transmission of viral agents. Prevention of viral diseases. Immunity in viral infection**
- **Demonstration of preservation of viruses, viral antigens, infects biological materials and viruses.**
- **Different staining techniques used in virology.**
- **Use of Embronated eggs in clinical Virology.**
- **Principles of animal cell culture and their use in virology.**

B.Voc. (Medical Lab Technology) **SEMESTER IV**

PAPER GENERAL BMLT 402 Clinical Laboratory Management **Credits: 6**

Objectives:

To Understand the importance and method of Observing and reporting while dealing with patients

B.Voc. (Medical Lab Technology) **SEMESTER IV**

PAPER Skill BMLT 403- Introduction to Histopathology **Credits:6**

Objectives:

Elementary knowledge of specimen collection
Elementary knowledge of tissue fixatives
Elementary knowledge of tissue processing :
Logging of specimen, preparation of tissues , processing of tissues , Frozen section technique , Handling and embedding of small tissue fragments.

- **Understand about section cutting**
- **Understand about Staining**

Staining Procedures
Autoanalyzer, Tissue Processor, Microtome

Elementary knowledge of Decalcification

Instructions: Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

SECTION I

- **Introduction to histopathology and laboratory organization.**
- **Elementary knoledge of sample collection**
- **Reception, recording and labeling of histology specimens.**

SECTION II

- **Fixation and various tissue fixatives.**
- **Processing of histological tissues for paraffin-embedding.**
- **Embedding and embedding media.**

SECTION III

- **Microtome-various types, their working principle and maintenance.**
- **Microtome knives and knife sharpening.**
- **Practical section cutting, cutting faults and remedies.**
- **Routine staining procedures, mounting and mounting media.**

SECTION IV

- **Dye chemistry, theory and practice of staining.**
- **Solvents mordents, accelerators and accentutators.**
- **Uses of controls in various staining procedures.**
- **Metachromasia and metachromatic dyes.**
- **Haematoxylin stain. Its importance in histology.**
- **Carbohydrates and amyloid – special stains and procedures.**
- **Connective tissues trichrome staining and other special stains for muselefibres, elastic, reticulinfibres and collagen fibres.**
- **Principles of metal impregnation techniques.**
- **Demonstration and identification of minerals and pigments**
- **Elementary knowledge of Decalcification**

Practicals

1. **Tissue processing by using tissue processor**
2. **Sharpening of the microtome knife**
3. **Gross examination and fixation of the specimen**
4. **Decalcification of calcified tissue**
5. **Processing of the tissue by manual method**
6. **Section cutting of paraffin wax embedded tissue**
7. **To fix the section on the slide**
8. **Staining of the tissue section by using hematoxylin and eosin staining method**

Reference Books

Robbins Ba

B.Voc. (Medical Lab Technology) **SEMESTER IV**

PAPER Skill BMLT 404 INTRODUCTION TO CYTOPATHOLOGY **Credits: 6**

Objectives:

To collect exfoliative cytology smears, contact smears and perform applications for cytological examination (under supervision) and carry out routine and special trai

Reference Books:

Practical Principles of Cytopathology Revised 1st Edition by Richard M. DeMay (Author)
Diagnostic Cytopathology: Expert Consult: Online and Print, 3e 3rd Edition by Winifred Gray MB BS FRCPath (Author), Gabrijela Kocjan MD MB BS Spec Clin Cyt (Zagreb) FRCPath(London) (Author)
Diagnostic Cytopathology Essentials1st Edition Authors: Gabrijela Kocjan Winifred Gray Tanya Levine Ika Kardum-Skelin Philippe Vielh: Churchill Livingstone
Diagnostic Cytopathology,3rd Edition,Authors: **Winifred Gray Gabrijela Kocjan Churchill Livingstone**
Diagnostic Cytopathology Essentials: Expert Consult: Online and Print Hardcover – 24 Jun 2013 by Kocjan (Author)

B.Voc. (Medical Lab Technology) **SEMESTER IV**

PAPER Skill BMLT 405- Microbiology -I **Credits: 6**

Objectives:

To learn the techniques of collection of samples, t

Practicals .

1. **Preparation of Smear**
2. **Bacteriophage and Bacteriocine typing methods**
3. **Lab diagnosis of common Bacterial infections viz:- pyogenic infections, Respiratory tract infections, Meningitis, Diphtheria,**
4. **Whooping Cough, Gas gangrene, food poisoning, Enteric fever, Acute diarrhea diseases, cholera, Urinary tract infection,**
5. **Tuberculosis, Leprosy, Plague, Anthrax, Typhus fever, syphilis, Gonorrhea and other STD's**
6. **Monochrome staining (simple staining),**
7. **Gram's staining**
8. **Study of motility of capsule**
9. **Study of bacterial capsule**
10. **Study of acid fast bacilli**
11. **Isolation of bacteria by streak plate techniques**
12. **To perform qualitative widal test**

Reference Books

Mims' Medical Microbiology Richard Goering , Hazel Dockrell , Mark Zuckerman , Ivan M. Roitt , Professor Peter L. Chiodini Publisher Elsevier Health Sciences

Roitt's Essential immunology Delves, Peter J.,Martin, seamus J.Burton,Dennis R.Roitt, Ivan M Ananthanarayan and Paniker's Textbookof microbiology Kapil , arti ed

Microbiology: an Introduction,12th edition Gerard J. Tortora Berdell R. Funke and Christine L. Case

Parasitology Chatterjee K.d.

Microbiology Pelczar, Michal J and Others

Medical microbiology Greenwood David and Other

Ananthanarayan and Panikar's text book of Microbiology Arti kapil

Immunology Male David and Other

Mackie and Mc Cartney practical Medical Microbiolog

B.Voc. (Medical Lab Technology) **SEMESTER V**

PAPER Skill BMLT 502 : Introduction to Biochemical Techniques **Credits: 6**

B.Voc. (Medical Lab Technology) **SEMESTER V**

PAPER Skill BMLT 504 : Serology : Introduction & Serological Lab Procedures **Credits: 6**

Objectives:

To provide basic kwoledge of serology, serlogical techniques and serological tests.

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

SECTION I

- **Introduction to serology**
- **Antigens, antibodies, structure and classes of antibodies, monoclonal antibodies and its uses.**
- **Collection and preparation of specimen, Epidemiological markers of microorganism serotyping,**
- **Principles of immunologic reactions, serodiagnosis.**
- **Collection and preparation of specimen,Serological test for syphilis (STS),Agglutination tests ,C-reactive protein test (CRP) ,Rheumatoid arthritis test (RA) ,Serodiagnosis of streptococcal infection ,Serodiagnostic tests for miscellaneous disorders, Immunologic test for pregnancy RIA, ELISA**

SECTION II

- **Epidemiological markers of microorganism serotyping,**
- **Serological Tests-Widal, ASO, LFT, CRP, Rosewaller, brucella agglutination, cold agglutiration, VDRL, TPHA, PTA-ABS**
- **Lab diagnosis of fungal infections Superficial dermatophyte fungal infections, Candidiases, creptococosis, Pulmonary infections, Mycetoma, other deep mycotic infections, subcutaneous fungal infections subcutaneous fungal infections spozotrichosis, chromoblastomycosis, Eye and Ear fungi infections**

SECTION III

- **Serological tests for fungal infections and skin tests**
- **Advanced techniques in microbiology ELISA, RIA, CCIEA, Co-agglutination GLC, HPLC etc.**
- **Rapid diagnostic methods and Automation in Microbiology.**
- **Principles of Serological techniques used in virology- ELISA, RIA, IF, Immuno peroxidase test**

SECTION IV

- **Principles of serological techniques used in Virology-Part 1:HA, HAI, Had, SRH,RPHA, IHA, CFT, CIEP**
- **Principles of Serological techniques used in Virology-Part-11 Nt, ELISA, RIA,IF, Immuno-peroxidase test**

PRACTICALS

1. **Serological tests Serological test for syphilis (STS),Agglutination- 4 tests ,C-reactiveprotein test (CRP) ,Rheumatoid arthritis test (RA) ,Serodignosis of streptococcal infection .HBsAg, HIV-1(Rapid TriDot test) Widal test, Tuberculine test**
2. **SEROLOGICAL TESTS: Widal, ASO, LFT, CRP, Rosewaller, Brucella agglutination, cold agglutination, VDRL, TPHA, FTA-ABS.**
3. **Principles of Serological techniques used in virology- ELISA, RIA, IF, Immuno peroxidase test **
4. **Serological tests for fungal infections and skin tests**
5. **Advanced techniques in microbiology ELISA, RIA, CCIEA, Co-agglutination GLC, HPLC etc.**
6. **Rapid diagnostic methods and Automation in Microbiology.**

Reference books

Clinical Immunology and Serology: A Laboratory Perspective (Clinical Immunology and Serology (Stevens)) Paperback – Import, 1 Dec 2009by Christine Dorresteyn Stevens

Immunology & Serology in Laboratory Medicine, 5th Edition By Mary Louise Turgeon, EdD, MLS(ASCP)CM

Kuby Immunology By Judy Owen , Jenni Punt , Sharon Stranford Publisher W.H.Freeman & Co Ltd

SEMESTER V
B.Voc. (Medical Lab Technology)

Skill BMLT 505 Paper - Clinical Biochemistry -I **Credits 6**

Objectives: Clinical enzymology. Elementary knowledge of Hormones Elementary knowledge of Minerals and Electrolytes To Understand about Therapeutic Drug Monitoring
Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.

Reference Books

A guidebook to Biochemistry Michael Yudkin
A Manual of Laboratory & Diagnostic Tests (6/ e) Frances Fischbach
Biochemistry Voet and Voet
Biochemistry Stryer
Biochemistry U. Satyanarayan. & U. Chakrapani
Clinical Biochemistry Richard Luxton
Clinical Diagnosis & Management by Laboratory method0 (20/e) John Bernard Henary
Clinical Biochemistry G. Guru
Handbook of Biochemistry M.A. Siddique
Textbook of Medical Biochemistry S. Ramkrishnan
Biochemical Techniques K. Choudhary
Text book of Medical Biochemistry Chaterjee & Shinde
Principles of Biochemistry David L. Nelson
Principles of Biochemistry Lehninger
Textbook of Biochemistry and Human Biology G.P. Talwar
Textbook of Medical Laboratory Technology Godkar and Godkar
Outline of Biochemistry Conn Stumpf
Principles of Internal Medicine Isselbacher
Proteins and Proteomics : Laboratory Manual Richard J. Simpson
Purifying Proteins for Proteomics: Laboratory Manual Richard J. Simpson
Enzymes: Biochemistry, Biotechnology & Clinical chemistry, (2001) Palmer Trevor, Publisher: Horwood Pub. Co., England.
Outlines of Biochemistry: 5th Edition, Erice Conn & Paul Stumpf ; John Wiley and Sons, USA
Fundamentals of Biochemistry. 3rd Edition (2008), Donald Voet & Judith Voet , John Wiley and Sons, Inc. USA
Lehninger, Principles of Biochemistry. 5th Edition (2008), David Nelson & Michael Cox, W.H. Freeman and company, NY.
Biochemistry: 7th Edition, (2012), Jeremy Berg, Lubert Stryer, W.H.Freeman and company, NY
Biochemical Methods for Agricultural Sciences – Sadasivam and Manikam. Wiley Eastern Limited, 1992..
Practical Clinical Biochemistry Harold Varley, CBS; 6 edition (1 December 2006)
An Introduction to Practical Biochemistry (3rd Edition) – David T Plummer. Tata McGraw-Hill Publishing Company Limited, 1992.

SEMESTER VI

B.Voc. (Medical Lab Technology)

PAPER Skill BMLT 602 : Sensitization to Blood Banking and Infection Control **Credits 6**

Objectives:

To understand blood transfusion reactions
To understand the importance and methodology of cleanliness, and hygiene environment
To understand the practices to curb infection

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question N.3624 TN128297(n)4.(s)]T

Reference Books

Atlas of haematology (5/e) G.A. McDonald
Clinical Haematology Christopher A. Ludlam
Practical Haematology J.B. Dacie
Practical Haematology (8/e) S ir John
Haematology (International edition) Emmanuel C.Besa
Haematology (Pathophysiological basis for clinical practice (3/e) Stephen M. Robinson
Haematology for students Practitioners Ramnik Sood
Hand book of Medical Laboratory Technology (2/e) V.H. Talib
Handbook of Blood Banking and Transfusion Medicineby Rao Gundu HR, Jagannathan Latha, Eastlund Ted
Modern Blood Banking & Transfusion Practices Hardcover – 2012by Denise M Harmening
Textbook of Blood Banking and Transfusion Medicine - Elsevier eBook on VitalSource, 2nd Edition By Sally V. Rudmann, PhD, MT(ASCP)SBB, CLS
Textbook of Blood Banking and Transfusion Medicine by Sally V. Rudmann
Hospital Epidemiology and Infection Control by C. Glen Mayhall
Hospital Acquired Infections: Prevention and Control Paperback – Import, 2010 by Purva Mathur

SEMESTER VI

B.Voc. (Medical Lab Technology)

PAPER Skill BMLT 603 : Microbiology -II **Credits 6**

Objectives:

To learn the techniques of collection of samples, their processing and the identifications of the various pathogens, like bacteria, parasites, viruses, using different techniques.

To provide vigorous training in the use of standard safety measures while handing highly infected material.

To provide basic knowledge of the different diseases caused by various microorganisms is also imparted.

Instructions:

The syllabus of this paper has been divided into four units.

Examiner will set a total of nine questions comprising two questions from each unit,

Question number one is compulsory of short answer type questions covering the whole syllabus.

The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.

All questions carry equal marks

Section I

- **Preservation of microbes and Iyophilisation methods.**
- **Total and viable counts of bacteria.**
- **Testing of disinfeetants-Rideal-Walker, Chick-Martin and In-use tests.**
- **Preparation and standardization of vaccines and immunization schedule.**
- **Bacteriological examination of water, milk, food and air.**
- **Nosocomial infections and sterii satc aoof wateva exaln****matio y Queueueuy s c707(i)-16.7976(o)dmate**

SEMESTER VI

B.Voc. (Medical Lab Technology)

PAPER Skill BMLT 604 : Clinical Biochemistry -II **Credits 6**

Objectives:

To understand varius tests of Clinical Biochemistry and advanced techniques and future trends in field of biochemistry .

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

SECTION I

- **Glucose tolerance test, insulin tolerance test, gastric analysis, Xylose absorption test**
- **Clearance test for renal function**
- **Analysis of calculi and CSF**
- **Automation in clinical biochemistry laboratory**

SECTION II

- **Mechanism and testing in detail**
- **Bone marrow in detail**
- **Detailed Examination of Stool**
- **Detailed Examination of Semen**
- **Detailed Examination of Sputum**
- **Detailed Examination of CSF, and other body fluids like pleural fluid, pericardial,peritoneal,synovial,ascitic fluid.**

SECTION III

- **Advanced techniques and future trends in field of biochemistry**
- **Advanced techniques and future trends in field of clinical pathology**

SECTION IV

- **Describe archiving protocol emphasizing on storage and retrieval of samples,**
- **specimens data and records,**
- **Describe source of error/ interference/ quality of work and initiate corrective action as applicable**
- **Describe assessment of results to initiate follow-up testing, Understanding of chemicals/reagents useful in sample analysis**
- **Understanding of maintaining record of inventory , test results, etc.**
- **Inspect the availability of medical supplies or diagnostic kits**
- **Differentiation between clinically significant and insignificant findings ,**
- **Able to establish and monitor quality assurance programs or activities to ensure the accuracy of insignificant findings ,**
- **Quality control of clinical investigations, Able to establish and monitor quality assurance programs or activities to ensure the accuracy of laboratory results**

Practicals

Glucose tolerance test
insulin tolerance test
gastric analysis
Xylose absorption test
Clearance test for renal function
Analysis of calculi and CSF
Automation in clinical biochemistry laboratory
Detailed Examination of Stool
Detailed Examination of Semen
Detailed Examination of Sputum
Detailed demonstrations of examinations of bone marrow, CSF, and other body fluids like pleural fluid, pericardial,peritoneal,synovial,ascitic fluid.

Reference Books

A guidebook to Biochemistry Michael Yudkin

SEMESTER VI

B.Voc. (Medical Lab Technology)

PAPER Skill BMLT 605 : Haematology **Credits 6**

Objectives:

To enable the students to perform varioutests for haematological disorders
To study the techniques for cytogenetics techniques
To understand the use of radioisotopes in Haematology

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

SECTION I

- **Laboratory tests for assessing bleeding disorders**
- **Laboratory investigation for disseminated intravascular coagulation(DIC)**

SECTION II

- **Mechnaism of fibrinolysis test for fibrinolysis**
- **Platelet function tests and their interpretation**

SECTION III

- **Techniques available for cytogenetic studies**
- **Use of Radioisotopes in hematology**
- **Safety measures for handling Radioisotopes**

SECTION IV

- **Advanced techniques and future trends in field of haematology & blood banking**
- **Avanced techniques and future trends in field of clinical pathology**
- **Advanced techniques and future trends in field of histopathology & cytopathology**

Practicals

1. **Tests for assessing bleeding disorders**
2. **Laboratory investigation for disseminated intravascular coagulation(DIC)**
3. **Mechnaism of fibrinolysis test for fibrinolysis**
4. **Platelet function tests and their interpretation**

Reference Books

Clinical Haematology Christopher A. Ludlam
Practical Haematology J.B. Dacie
Practical Haematology (8/e) S ir John
Haematology (International edition) Emmanuel C.Besa
Haematology (Pathophysiological basis for clinical practice (3/e) Stephen M. Robinson
Haematology for students Practitioners Ramnik Sood
Hand book of Medical Laboratory Technology (2/e) V.H. Talib
Atlas of haematology (5/e) G.A. McDonald