Pravara Institute of Medical Sciences

(Deemed University)

Loni Bk - 413 736, Tal. Rahata, Dist. Ahmednagar (MS)

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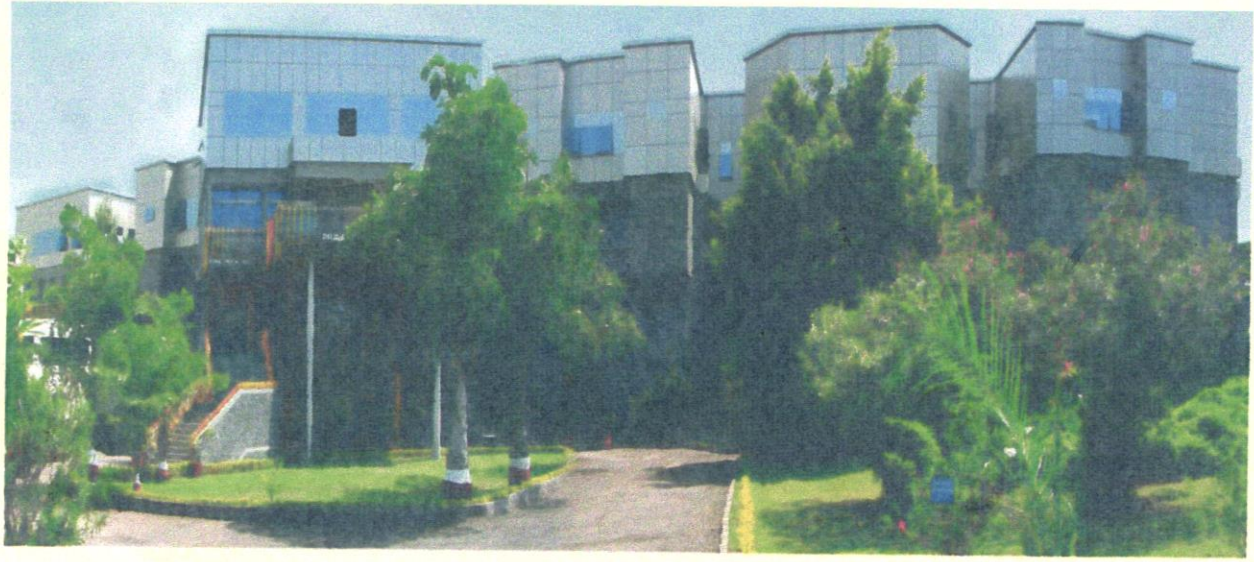
Syllabus

D.M.L.T



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Pravara Institute of Medical Sciences

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Loni Bk. 413 736, Tal. Rahata, Dist. Ahmednagar, (MS)

SYLLABUS FOR DMLT COURSE

CLINICAL PATHOLOGY

(For theory and practical together)

a) Laboratory management and planning. The reception and recording specimen, cataloguing and indexing. Maintains of Laboratory records.

b) The use and care of the following Haemocytometer, haemoglobinometer, haematocrit tubes, wester gren tubs pipettes, urinometer, centrifuge, haematocrite centrifuge, simple glass manipulation

c) Methods of counting red cells, Leucocytes, reticulocytes and platelets.

d) Haemoglobin estimation. The use of haematocrite. Calculation of absolute values. Detection of abnormal haemoglobin by paper electrophoresis. The detection of sickling. The detection foetal haemoglobin.

e) Preparation and staining of peripheral smears and bone marrow smear. Techniques for demostrating L.E. cells, Survival staining etc. Study of pathogenic blood parasites, their morphology and dentification.

f) Use of spectorscope and recognition of absorption spectra of haemoglobin derivatives.

g) Method of investgating bleeding disorder-i.e. bleeding and clotting time, Thromboplastin generation test.

h) Method of investigating haemolytic anemia e.g. osmotic fragility test, Coomb's test, Ham's acid serum test.

i) Estimation of E.S.R.

j) Routine physical, chemical and microscopic examination of Urine.

k) Routine naked eye and microscopic examination of stool. Study of common parasitic cysts and ova in stool

l) Other body fluids

m) Semen analysis

n) Cytology

o) Pregnancy test

Blood Transfusion Techniques :

a) Blood bank managements and planning. the reception and recording of specimen, Cataloguing and indexing. Maintenance of blood bank records.

b) Knowledge of maintenance and working of Refrigerators, and Blood Storage cabinets. Incubators, Ovens, Autoclave stills preparation and Sterilization of Transfusions set etc.

c) Theory including inheritance and nomenclature of the ABO and Rh blood Group systém, other blood groups, Techniques for the determination of the various blood group, Selection and preparation of the grouping sera. Sources of the error in grouping and their elimmation group sera titration Coomb's test

d) A through knowledge of compatility test is essential Recognition and investigation of transfusion. Transmission of disese by transfusion, The V.D.R.L. test. Various techniques for HIV/ detection. Preparation and sterilization of transfusion sets.

e) Collection and storage of blood. Techniques of collection, Storage of blood, Criteria for fitness for use of stored blood, Selection of blood donars. Complication and cenesection.

f) Method of Preparation of common stains, solutions and their standardization.

HISTOPATHOLOGY :

a) Laboratary management and planning. The receving and recording specimen, cataloguing and indexing. Maintains of Laboratory records.

b) A knowledge of maintenance and use of the following.
Microtome, knives, Paraffin embedding bath, Tissues floatation bath, Referigerators, Thermostat, automatic Tissue processor, Vacuum embedding baths, hot plates Freezing microtome, simple glass manipulations

c) Fixation – Action of common fixing agent, Use of common fixative

d) Decalcification- Methods in common use for decalcification

e) Processing- Common methods of processing the tissues for paraffin section

f) Cutting of paraffin section and staining with Haematoxylene and Eosin.

g) Frozen section techniques and preparation of celloiding-cellodin sections.

h) Special staining techniques – as Masson's Trichrome, Reticulin Amyloid, PAS, Glygogen, Iron, Fat stain etc.

i) Histochemical techniques

j) Museum methods- the preparation and presentation of specimen intended for display in a medical meseum. The sealing of glass jars.

k) Techniques of medio legal, clinical autopsies and preservation dispatch of viscera.

l) **RELEVANT THE ORETICAL BACKGROUND WHEREVER NECESSARY**

DMLT

THEORY

FULL QUESTION (Q 1 to Q.4) 4x15	60
SHORT NOTES Q. 5 - 4 out of 5	20
& Q.6 4 out of 5	20
Total	100

PRACTICALS

1.	HAEMATOLOGY	25
	A) MAJOR	
	B) MINOR	
2.	HISTOTECHNIQUES	15
3.	CLINICAL PATHOLOGY	20
4.	BLOOD BANKING	15
5.	VIVA	20
6.	JOURNAL	05
	Total	100

SYLLABUS FOR DMLT COURSE

MEDICAL MICROBILOGY

A)Theory :

a) Information Scope of Microbiology, Morphology, and Physiology of bactcria

b) Classification of microbes – Bacteria, Fungi, Virus, parasites, Different types of classification types of classification. Normal flora of Human body

c) Common Lab, media for bacteria, Fungi, Mycobacteria and anaerobic bacteria

d) Collection and Transport of specimen (including for anaerobic culture) containers , media for different specimen eg. Blood CSF, Urine, Pus, Stool, Sputum Aspirated fluids, throat swab and Misc, swab Etc.

e) Processing of specimen for Bacteriological diagnosis Reception, lableing of specimen steps in processing and identification of common bacterial pathogens in specimen of Blood, CSF, throat swab, Urine, Stool, Pus. etc.

f) Antigen, Antibody, Antigen antibody reactions (basic principles) and Common serological tests.

g) Pyogentic cocci - Staph, styepto, Pneumo, Neisseria. (Diseases produced diagnostic critreia and diagnostic methods used for each of them)

h) Gram Negative Bacilli-E coli Klebsiella Proteus, Pseudomonas. Salmonella, Shigella, Vibrio etc.

i) Gram positive bacilli Anaerobic organisms, Corynebacterium , Bacillus, Clostridia, Non clostridial anaerobes. (Disease produce and diagnostic methods)

j) Mycobacteria- M. tuberculosis, Atypical mycobacteria M. leprae, (Methods for diagnostic techniques)

k) Common Lab. animals – use and care of animals. Different routes and

sites of inoculation Germ free animals.

l. Introduction to Mycology – common pathogenic fungi. Diseases produced and specimen collected for Lab. diagnosis, methods for diagnosis

m) Introduction to Virology- General properties of viruses (including Rickettsia). Common viral infections. (Common disease produced and techniques in diagnosis)

n) Introduction to parasitology- common diseases productd by Protozoa and Helminthes and Methods for their diagnosis.

o) Material management- Record keeping purchase, indent and Maintence of stock registers.

p) Preservation of cultures

q) Biosafety Guide line, and prevention of laboratory acquired infections.

r) Laboratory control in Microbiology and Quality Programme.

B. Practical Cum Demonstrations :

a) Glassware :
Type and uses for microbiological use
Cleaning and sterilization (Procedures)
Preparation of sterile swabs for culture

b) Sterilization and disinfection :
Physical methods of sterilization, heat, filtration, radiations
chemical disinfections
Indicators of sterilization
Disinfection of specimen, laboratory and equipments

c) Microscopy :
Different types, their principles and use. Different parts their function and care of light microscope.

d) Staining :
Different types of staining, Monochrome staining, Negative staining different staining special for spores, Flagella, Capsule, Metachromatic granules, Spirochates, etc. Preparation of stain and technique of staining gram's stain Z.N.stain, albert's stain.

e) Methods of cultivation of bacteria :
Methods of isolation and identification of common pathogen from clinical specimen blood, urine faces (stool) pus, sputum , CSF, throa swab Vaginal swab and body thuids etc.

f) Antimicrobial suscepibility testing.

g) Inter pretation Report

h) Antitubecular drug sensitivity testing

i) Stool exam :

- Routine exam for ova cysts and others.
- Conncentration methods for Ova Cycts.
- Preservation of stool.

C) Technical skill proficiency programme

a) Professional ethics, Role of Laboratory Technician in Laboratory Diagnosis.

b) Basic principles of laboratory work. Personal safety against various accidents and hazards knowledge of first Aid care in handing dangerous materials.

c) Organisation and management in the Laboratory. Methods of receiving labeling collection of specimen Special containers for collecting and transport of specimen. Maintenance if laboratory records- reports indexing and cataloguing.

d) Principle of working of various laboratory instruments and their uses, care maintenance

e) Other laboratory requirements chemical and general items. Specification of all laboratoray requirements and purchase procedures. stock maintenance and inventory control

f) Glassware – Type and uses for microbiological use.
- Cleaning and sterlization (Procedures)
- Preparation of sterile swab for culture. Media Laboratory- Preparation of distilled water

g) Cleaning and Sterilisation of glass ware for media. Preparation and sterilization of common Lab. media, PH adjustment preparation of special media. Making of pasterur pipettes and swabs, Disposal of used media.

h) Routine Bacteriology- Reception Labelling Recording of clinical specimen. Morphologic study inoculation of media, incubation. Reading of culture growth. Biotechmicals Special tests serology antibiotic sensitivity testing. Techniques in anaeriobic bacteriology.

i) Antimicrobial susceptibility testing Methods. Standardization media preparation, preparation of Antibiotic solution, making of dises, interpretation report. Antitubercular drug sensitivity testing.

j) Serology common setological tests, widal, VDRL etc.
Immunology Lab, ELISA, ASO, Gel diffusion techniques etc.

k) Mycology and Mycobacteriology Lab.
Skin scraping preparation of wet mount and culture fungi sputum for AFB, concentration of sputum culture for AFB.

l) Stool exam Routine exam. For ova cysts and other Concentration methods for ova cysts, preservation of stool.

EXAM PATTERN

THEORY : Max Marks 100 **Time 3 hours**

Que.1 LAQ	15 Marks
Que 2 LAQ	15 Marks
Que.3 LAQ	15 Marks
Que.4 LAQ	15 Marks
Que.5 SAQ (Attempt any 4/6)	20 Marks
Que.6 SAQ (Attempt any 4/5)	20 Marks

Total 100 Marks

PRACTICAL Max Marks – 100 (No. of days of practical- 3 days)

1. Logy Exercise (Bacteriology)	30 Marks
2. Short Exercise (Bacteriology)	30 Marks
3. Serology	10 Marks
4. Store Examination	10 Marks
5. Media Pousity	10 Marks
6. VIVA	20 Marks
7. Jounral	5 Marks

Total 100 Marks

SYLLABUS FOR DMLT COURSE

CLINICAL BIOCHEMISTRY
(For theory and practical together)

a) **Professional ethics :** Role of laboratory technician in diagnosis.

b) **Basic principal of laboratory work :** Personal safety against various accident and hazards in biochemistry laboratory. knowledge of first aid Care in handling dangerous material.

c) **Organization and management in the biochemistry laboratory :** Methods of receiving, labeling, collection of specimen. Special container for collecting and transporting of specimen. Maintenance of laboratory records, reports index and cataloguing. Use of computer in data analysis, data storage & data reports.

d) **Laboratory glassware :** Different types, use and care in handing, cleaning and disposal. Use and calibration of auto pipettes and dispenser. Calibration of volumetric apparatus.

e) **Principle of working of various instrument and their uses.**
Care and maintains/ repair/ condemnation
Balances- mono pan, two pan
Incubators, Oven, Water baths, Sterilizers
Magnetic stirrer, Vortex mixers
Deionizer/ Distillation plants,
Centrifuges- table top, high speed- room temp and cold, ultra centrifuge; pH meter Colorimeter, Spectrophotometer, fluorometer, flame photometer, ion selective electrodes;
Semi/ Auto analyzer
Urinometer Spectroscope :- Identification of Hemoglobin derivatives

f) **Other laboratory requirements :** Chemical and reagent solid and liquid Diagnostic kits for detection of metabolites, criteria for selection of kits and specifications
Purchasing and indenting procedure
Inventory control and maintains of stock
Periodic stock verifications and audit.

g) **Basic principles of biochemistry :**
Solvent and solution- Normality, Molarity, Molality Preparation of standard

Solutions e.g. Normal solution, molar solution, percent solution
Use of buffer, buffer preparation; pH indicator and pH maintenance

h) **Analytic techniques and their application- Principle and practice :**
Qualitative and Quantitative methods
Chromatography paper
Colorimetry & Spectrophotometry, Lamberts Beers Law
Electrophoresis paper and agar gel Immunoelectrophoresis; immunoblotting methods Densitometry
ELISA

i) **Principles, procedures and application of detection of biomolecular in clinical specimen ;** (Blood, Urine, CSF, other body fluids etc.)
Blood/ Serum :
Metabolites : Glucose, Oral GTT, Glycated Hb : BUN- Urea, Creatinine
Protein- Total, albumin Globulin, A/G ratio: Total and Direct bilirubin
Uric acid : Lipid profile- Trigyceerides, Cholesterol, LDL, HDL
Mineral / Electrolytes Na, K, Ca, P, Cl
Enzymes ALT, AST, Alk. Phosphates, Acid Phosphates, Amylase,
Iso enzymes LDH, G6PDH

Urine :
Detection of normal abnormal constituent – sugar, protein, ketone bodies, blood. Bile salt and bile pigment etc.
Dipstick examination
C.S.F.
Physical exam, Test for sugar, protein, chlorides, bicarbonates
Other body fluids
Physical test, Test detection of Metabolites, enzymes

j) **Organ function test :** Metabolic role of liver, kidney, pancreas, thyroids, heart, stomach etc.
General principle of organ function tests.
Liver function tests: Kidney function tests Pancreas Function tests
Thyroid function tests : Cardiac Function tests

k) **Acid base balance** : Blood pH, Acidosis
Alkalosis (Metabolic & respiratory)

l) **Quality Control and Quality Assurance :**
Definition of terms : Quality Control and quality Assurance
Internal External Quality control – control chart
Peranalytical and post analytical quality Control, Analytical error,
Specificity, Sensitivity- Importance of accuracy and precision.

m) **Investigation audits :** Pricing and cost effectiveness to tests.

n) **Biomedical Waste Management :** Classification of Bio-medical waste, Hazardous effects of Bio-Medical waste, Guidelines for its disposal, Methods for handling, Packaging, Transportation and storage of bio-medical waste.

o) **Information systems:** Use of computer networking.

p) RELEVANT THEORETICAL BACKGROUND WHEREVER NECESSARY

BIOCHEMISTRY

PATTERN OF THEORY QUESTION PAPER

(Duration : 3 hours)

Sr.No.	Type of question	Marks Allotted
Question 1	Long question	15
Question 2	Long question	15
Question 3	Long question	15
Question 4	Long question	15
Question 5	Short notes (Any four out of Five)	20
Question 6	Short notes (Any four out of Five)	20
	Total	100

PATTERN OF PRACTICAL EXAMINATION

Sr.No.	Exercise	Marks
1	Experiment 1 with standardization	25-15
2	Experiment 2	20
3	VIVA	30
4	Record Book	10
	Total	100

DURATION OF EXAM : 1 DAY

EXAMINERS : 1. Internal (Chairman)
2. External