DPU

Dr. D. Y. PATIL VIDYAPEETH, PUNE
(Deemed to be University)

Syllabus for
II – MBBS
(Para - Clinical Subjects)

2014 - 15
(Amended / Revised upto July 2019)

DPU

Dr. D.Y. PATIL VIDYAPEETH, PUNE
(Deemed to be University)
(Re-accredited by NAAC with a CGPA of 3.62 on a four point scale at 'A' Grade)
(An ISO 9001 : 2015 Certified University)

Dr. A. N. Suryakar
Registrar

Ref. No. : DPU/875-VII/2019
Date : 11/09/2019

NOTIFICATION

Whereas in pursuance of the following decisions taken by the Board of Management, it is hereby notified to all concerned that the **"Syllabus for II-M.B.B.S. (Para-Clinical Subjects) – 2014-15"** is **revised upto July 2019** and hereby published.

- Updation in UG syllabus of Microbiology vide **Resolution No. BM-04(i)-15, dated 31st March, 2015.**
- Adoption of **"Double Evaluation System"** for UG Answer Papers **vide Resolution No. BM-07-15 dated 31st March, 2015.**
- Structure of Integrated Teaching for II MBBS **vide Resolution No. BM-26(iii)-15, dated 29th December, 2015.**
- Introduction of Bioethical aspects in various chapters of all subjects **vide Resolution No. BM-26(xi)-15, dated 29th December, 2015.**
- Inclusion of certain topics in the Microbiology syllabus of IInd MBBS **vide Resolution No. BM-17(iv)-16, dated 22nd September, 2016.**
- Inclusion of practical classes in Pharmacology Syllabus of IInd MBBS **vide Resolution No. BM-17(v)-16, dated 22nd September, 2016.**
- Change in existing Internship Training Programme in Community Medicine Posting **vide Resolution No. BM-05(i)-17, dated 7th April, 2017.**
- Graduate Attributes, Programme Outcomes (POs), Course Outcomes (Cos) and gap analysis for all courses of UG and PG Programmes for Para-Clinical and Surgical Subjects **vide Resolution No. BM-10(vii)-19 dated, 12th April, 2019.**
- Interdisciplinary subjects of M.B.B.S, M.D./M.S. and Super-specialty (D.M./M.Ch.) Programs under the Faculty of Medicine **vide Resolution No. BM-10(viii) dated 12th April, 2019.**

The **Syllabus for II-M.B.B.S. (Para-Clinical Subjects) – 2014-15"** is **revised upto July 2019** will be useful to all the concerned. This will come into force with immediate effect.

Dr. D.Y. PATIL VIDYAPEETH PIMPRI, PUNE-18. Deemed to be University

(Dr. A. N. Suryakar)
Registrar

Copy to:
1. PS to Chancellor for kind information of Hon'ble Chancellor, Dr. D. Y. Patil Vidyapeeth, Pune.
2. PS to Vice Chancellor for kind information of Hon'ble Vice Chancellor, Dr. D. Y. Patil Vidyapeeth, Pune.
3. The Dean, Dr. D. Y. Patil Medical College Hospital & Research Centre, Pimpri, Pune
4. The Controller of Examinations, Dr. D. Y. Patil Vidyapeeth, Pune.
5. Director (IQAC), Dr. D. Y. Patil Vidyapeeth, Pune.
6. Web Master for uploading on Website.

REGULATIONS AND SYLLABUS FOR M.B.B.S. DEGREE COURSE

1. SHORT TITLE AND COMMENCEMENT

These regulations may be called "The Regulations for the Bachelor of Medicine and Bachelor of Surgery Degree Course of Dr. D. Y. Patil Vidyapeeth, Pune (Deemed to be University)

These regulations shall come into force from the academic year 1997 - 1998 and amendments notified by MCI from time to time.

2. ELIGIBILITY FOR ADMISSION TO M.B.B.S

DEGREE COURSE QUALIFICATION FOR ADMISSION:

No candidate shall be allowed to be admitted to the first year Bachelor of Medicine and Bachelor of Surgery (MBBS) Course until:

He/She has completed the age of 17 years on or before 31st December of the year of admission to the MBBS course.

He / She has passed qualifying examination as under :-

(a) The higher secondary examination or the Indian School Certificate Examination which is equivalent to 10+2 Higher Secondary Examination after a period of 12 years study, the last two years of study comprising of **Physics, Chemistry, Biology / Bio-technology** and Mathematics or any other elective subjects with English at a level not less than core course of English as prescribed by the National Council of Educational Research and Training after the introduction of the 10+2+3 years educational structure as recommended by the National Committee of education;

Note: Where the course content is not as prescribed for 10+2 education structure of the National Committee, the candidates will have to undergo a period of one year pre-professional training before admission to the Medical colleges;
Or

(b) The intermediate examination in science of an Indian University / Board or other recognised examining body with **Physics, Chemistry and Biology / Bio-technology** which shall include a practical test in these subjects and also English as a compulsory subject;

Or

(c) The pre-professional/pre-medical examination with Physics, Chemistry and Biology/Bio-technology, after passing either the higher secondary school examination, or the pre-university or an equivalent Examination. The pre-professional/pre-medical examination shall include a practical test in **Physics, Chemistry and Biology / Bio-technology** and also English as a compulsory subject;
Or

(d) The first year of the three years degree course of a recognized university, with Physics, Chemistry and Biology including a practical test in these subjects provided the examination is a "University Examination" and candidate has passed 10+2 with English at a level not less than a core course;
Or

(e) B.Sc examination of an Indian University, provided that he/she has passed the B.Sc examination with not less than two of the following subjects Physics, Chemistry, Biology (Botany, Zoology) and further that he/she has passed the earlier qualifying examination with the following subjects - Physics, Chemistry, Biology and English.
Or

(f) Any other examination which, in scope and standard is found to be equivalent to the intermediate science examination of an Indian University/Board, taking **Physics, Chemistry and Biology/Bio-technology** including practical test in each of these subjects and English.

3. PROCEDURE FOR SELECTION TO MBBS COURSE

1] There shall be a uniform entrance examination to all medical educational institutions at the undergraduate level namely 'National Eligibility-cum-Entrance Test for admission to MBBS course in each academic year and shall be conducted under overall supervision of the Ministry of Health & Family Welfare, Government of India.

2] The "designated authority" to conduct the 'National Eligibility-Cum-Entrance Test' shall be the Central Board of Secondary Education or any other body/organization so designated by the Ministry of Health & Family Welfare, Government of India, in consultation with the Medical Council of India.

3] The language and manner of conducting the 'National Eligibility-Cum-Entrance Test' shall be determined by the "designated authority" in consultation with the Medical Council of India and the Ministry of Health and Family Welfare, Government of India.

4] In order to be eligible for admission to MBBS Course for a academic year, it shall be necessary for a candidate to obtain minimum of marks at 50th percentile in 'National Eligibility-cum-Entrance Test to MBBS course' held for the said academic year. However, in respect of candidates belonging to Scheduled Castes, Scheduled Tribes, Other Backward Classes, the minimum marks shall be at 40th percentile. In respect of candidates with benchmark disabilities specified under the Rights of Persons with Disabilities Act, 2016, in terms of Clause 4(3) above, the minimum marks shall be at 45th percentile. The percentile shall be determined on the basis of highest marks secured in the All-India common merit list for admission in 'National Eligibility-cum-Entrance Test for admission to MBBS course.

Provided when sufficient number of candidates in the respective categories fail to secure minimum marks as prescribed in National Eligibility-cum-Entrance Test held for any academic year for admission to MBBS Course, the Central Government in consultation with Medical Council of India may at its discretion lower the minimum marks required for admission to MBBS Course for candidates belonging to respective categories and marks so lowered by the Central Government shall be applicable for the said academic year only.

4. REGISTRATION/ Eligibility Certificate

A candidate admitted to the course shall register with this University by remitting the prescribed fees along with the prescribed application form for registration duly filled in, within the stipulated date.

5. DURATION OF THECOURSE

The period of certified study and training for the course of Degree of Bachelor of Medicine and Bachelor of Surgery shall extend over a period of four and half academic years and one year of Compulsory Rotatory Resident Internship before the award of the Degree.

6. CURRICULUM

The curriculum and the syllabus for the course shall be as prescribed from time to time by the appropriate bodies.

COMMENCEMENT OF THECOURSE

The first year MBBS Course shall begin on or before 1st August of every academic year.

7. TRAINING PERIOD AND TIME DISTRIBUTION

(a) Every student shall undergo a period of certified study extending over four and half academic years divided into 9 semesters, (i.e. of 6 months each) from the date of commencement of study for the subjects comprising the medical curriculum to the date of completion of examination and followed by one year Compulsory Rotatory Residential Internship. Each semester will consist of approximately 120 teaching days of 8 hours duration including one hour for lunch.

(b) The period of four and half years is divided into three phases as follows:

- Phase - I (two semesters) consisting of pre-clinical subjects (Anatomy, Physiology, Biochemistry and introduction to Community Medicine including Humanities). Sixty hours are allocated for introduction to Community Medicine including Humanities, and rest of the time shall be and again divided between Anatomy and Physiology (2/3) plus Biochemistry (1/3)combined.

- Phase - II (three semesters) consisting of para-clinical / clinical subjects.

  During this phase teaching of para-clinical and clinical subjects shall be done concurrently.

  The para-clinical subjects shall consist of Pathology, Pharmacology, Microbiology, Forensic Medicine including Toxicology and part of Community Medicine.

  The clinical subjects shall consist of all those detailed below in Phase III.

  Out of the allotted time for para-clinical teaching, approximately equal time be allotted to Pathology, Pharmacology, Microbiology and Forensic Medicine, Community Medicine combined (1/3 for Forensic Medicine and 2/3 for Community Medicine).

- Phase - III (four semesters) Continuation of study of clinical subjects for seven semesters after passing Phase -I

The clinical subjects to be taught during Phase II and III are Medicine and its allied specialities, Surgery and its allied specialities, Obstetrics and Gynaecology and Community Medicine.

The Medicine and its allied specialities training will include General Medicine, Paediatrics, Tuberculosis and Chest, Skin and Sexually Transmitted Diseases, Psychiatry, Radio-diagnosis, Infectious Diseases etc. The Surgery and its allied specialities training will include General Surgery, Orthopaedic Surgery including Physiotherapy and Rehabilitation, Ophthalmology, Oto-rhino-laryngology, Anaesthesia, Dentistry, Radio-therapy etc. The Obstetrics & Gynaecology training will include family medicine, family welfare planning etc.

(c) The first 2 semesters (approximately 240 teaching days) shall be occupied in the Phase I (Pre-clinical) subjects and introduction to a broader understanding of the perspectives of medical education leading to delivery of health care. No student will be permitted to join the Phase II (Para - clinical) group of subjects until he has passed in all the PhaseI.

(d) After passing pre-clinical subjects, Phase II will be devoted to para-clinical and clinical subjects, along with clinical postings. During clinical phase (Phase III) pre-clinical and para-clinical teaching will be integrated into the teaching of clinical subjects where relevant.

(e) Supplementary examination will be conducted as follows:
Supplementary examination may be conducted within 3 months so that the students who pass can join the main batch and the failed students will have to appear in the subsequent year.

8. PHASE DISTRIBUTION AND TRAINING OFEXAMINATIONS:

6 Months	6 Months	6 Months	
1	2		I[st] Professional examination (during 2[nd]semester)
3	4	5	II[nd] Professional examination (during 5[th] semester)
6	7		III[rd] Professional Part I examination (during 7[th] semester)
8	9		III[rd] Professional Part II (Final Professional) (during 9[th] semester)

(a) Passing in I[st] Professional examination is compulsory before proceeding to Phase II training.

(b) A student who fails in the II[nd] Professional examination, shall not be allowed to appear for III[rd] Professional Part I examination unless he/she passes all subjects of II[nd] Professional examination.

(c) Passing in III[rd] Professional (Part I) is compulsory for being eligible for III[rd] Professional (Part II) examination.

During third to ninth semesters, clinical postings of three hours duration daily as specified is suggested for various departments, after introductory course in Clinical Methods in Medicine and Surgery of two weeks each for the whole class.

9. ACADEMICTERMS

First M.B.B.S
Part-I & Part II - 1[st] August to June 15[th]

10. CUT OFFDATES

As decided by the appropriate bodies from time to time.

11. EXAMINATIONDATE

There shall be two sessions of University examinations in an academic year, viz., June and December.

12. WORKING DAYS IN AN ACADEMICYEAR

Each academic year shall consist of not less than 240 working days.

13. ATTENDANCE REQUIRED FOR ADMISSION TO EXAMINATION

(a) No candidate shall be permitted to any one of the parts of MBBS Examinations unless he/she attended the course in the subject for the prescribed period and produces the necessary certificate of study, attendance and progress from the Head of the Institution.

(b) A candidate is required to put in minimum 75% of attendance in a subject for appearing in the examination, inclusive of attendance in non-lectures teaching, i.e. seminars, group discussions, tutorials, demonstrations, practicals, Hospital (Tertiary, Secondary, Primary) postings and bed side clinics, etc.

(c) A candidate lacking in the prescribed attendance and progress in any one subject in theory and practical / clinical in the first appearance shall not be permitted for admission to the university examination in that subject only.

14. MIGRATION/TRANSFER OF CANDIDATES

The Medical Council of India Regulations relating to Migration will be followed by the University as reproduced below:

(1) Migration of students from one medical college to another medical college may be granted on any genuine ground subject to the availability of vacancy in the college where migration is sought and fulfilling the other requirements laid down in the Regulations. Migration would be restricted to 5% of the sanctioned intake of the college during the year. No migration will be permitted on any ground from one medical college to another located within the same city.

(2) Migration of students from one College to another is permissible only if both the colleges are recognized by the Central Government under section 11(2) of the Indian Medical Council Act,1956 and further subject to the condition that it shall not result in increase in the sanctioned intake capacity for the academic year concerned in respect of the receiving medical college.

(3) The applicant candidate shall be eligible to apply for migration only after qualifying in the first professional MBBS examination. Migration during clinical course of study shall not be allowed on any ground.

(4) For the purpose of migration an applicant candidate shall first obtain "No Objection Certificate" from the college where he is studying for the present and the university to which that college is affiliated and also from the college to which the migration is sought and the university to it that college is affiliated. He / She shall submit his application for migration within a period of 1 month of passing (Declaration of result of the 1st Professional MBBS examination) along with the above cited four "No Objection Certificates" to: (a) the Director of Medical Education of the State, if migration is sought from one college to another within the same State **or** (b) the Medical Council of India, if the migration is sought from one college to another located outside the State.

(5) A student who has joined another college on migration shall be eligible to appear in the IInd professional MBBS examination only after attaining the minimum attendance in that college in the subjects, lectures, seminars etc. required for appearing in the examination prescribed under Regulation 12 (1)

Note-1: The State Governments / Universities / Institutions may frame appropriate guidelines for grant of No Objection Certificate or migration, as the case may be, to the students subject to provisions of these regulations.

Note-2: Any request for migration not covered under the provisions of these Regulations shall be referred to the Medical Council of India for consideration on individual merits by the Director (Medical Education) of the State or the Head of Central Government Institution concerned. The decision taken by the Council on such requests shall be final.

Note-3: The College/Institutions shall send intimation to the Medical Council of India about the number of students admitted by them on migration within one month of their joining. It shall be open to the Council to undertake verification of the compliance of the provisions of the regulations governing migration by the Colleges at any point of time."

15. SUBMISSION OF LABORATORY RECORD NOTEBOOKS

At the time of practical/clinical examination, each candidate shall submit to the Examiners his/her laboratory notebooks duly certified by the Head of the Department as a bonafide record of work done by the candidate. The practical record shall be evaluated by the Head of the Department.

The candidate may be permitted by the Examiners to refer to the practical record book during the practical examination in the subject of Biochemistry only. No other material, handwritten, cyclostyled or printed guides is allowed for reference during the practical examinations.

In respect of failed candidates, the marks awarded for records at previous examinations will be carried over for the subsequent examination or the candidates shall have the option to improve his performance by submission of fresh records.

16. INTERNAL ASSESSMENT

1] A minimum of three written and practical examinations shall be conducted in each subject during an academic year and the average marks of three best performances shall be taken into consideration for the award of sessional marks.

2] Day to day records and logbook (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on skills and competencies. Students must have completed the required certifiable competencies and completed logbook appropriate for each phase of training to be eligible for appearing at the final university examination of that subject.

3] Learner must secure at least 50% marks of total marks (combined in theory / Practical, not less than 40% in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final university examination of the subject. Internal assessment marks will not be added to university examination and reflected as a separate head of passing at the summative examination.

4] The results of Internal Assessment should be displayed on notice board within 1-2 weeks of the test. Formulate remedial measures for students who are either not able to score qualifying marks or have missed some assessment due to any reason by forming committee under the Chairmanship of Dean, Dr. D. Y. Patil Medical College, Hospital and Research Center, Pune and three more members.

There shall be one additional examination after third internal assessment (Prelim) examination as per recommendation by institutional grievance committee before the submission of IA marks sheet to University.

17. CLASSIFICATION OF SUCCESSFULCANDIDATES

A successful candidate

i. Who secures not less than 75% in the aggregate marks shall be declared to have secured, **FIRST CLASS WITH DISTINCTION'** provided he/she passes the whole examination in the FIRSTATTEMPT;

ii. Who secures not less than 65% in the aggregate marks and completes the course within the stipulated course period shall be declared to have passed the examinations in the **'FIRSTCLASS'**;

iii. Who secures above 50% marks and completes the course within the stipulated course period shall be declared to have **PASSED** the examinations

18. EXEMPTION FROM RE-EXAMINATION IN ASUBJECT

Where a candidate obtains pass marks in a subject (or) subjects but fails in other subject (s) he / she shall be exempted from reexamination in the subject (s) he / she has passed.

MAPPING OF PROGRAMME OUTCOMES [POs] AND COURSE OUTCOMES [COs] OF- II - MBBS PROGRAMMES

PROGRAMME OUTCOMES :

Programme Name: MBBS	
Programme Code: MB	
Sr. No.	By the end of the programme, the MBBS Graduate will have /be:
PO 1	Knowledge and Skills
PO 2	Planning and problem-solving abilities
PO 3	Communication
PO 4	Research Aptitude
PO 5	Professionalism and Ethics
PO 6	Leadership
PO 7	Societal Responsibilities
PO 8	Environment and Sustainability
PO 9	Lifelong Learner

Year II	
Course Code	**Course Title**
MB201	Pathology
MB202	Pharmacology and Therapeutics
MB203	Microbiology
MB204	Forensic Medicine and Toxicology

	Pathology : (MB201)	
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Programme Outcomes**
201.1	Enumerate and understand common definitions and terms used in pathology	PO1, PO2, PO3, PO4, PO9
201.2	Understand etiopathogenesis of various cellular and tissue lesions. Interpret effects on gross and microscopy	PO1, PO2, PO3, PO4, PO5, PO9
201.3	Comprehend, classify, identify and interpret characteristics of benign and malignant tumors on gross and microscopy. Acquire knowledge of spread of tumors along with molecular basis of neoplasia	PO1, PO2, PO3, PO4, PO5, PO9
201.4	Define and classify anaemia and other RBC disorders. Comprehend Etiology, characteristics and investigations in various types of anaemia. Prepare and interpret PBS and BM aspiration and biopsy.	PO1, PO2, PO3, PO4, PO5, PO7, PO9
201.5	Enumerate, comprehend and interpret leucocyte disorders. Etiopathogenesis and classification of acute and chronic leukemias and lymphomas.	PO1, PO2, PO3, PO4, PO5, PO7, PO9
201.6	Understand normal hemostasis. Comprehend and diagnosis congenital and acquired disorders of hemostasis	PO1, PO2, PO3, PO4, PO9
201.7	Classify, describe, identify and interpret various blood group disorders. Understand and describe compatibility testing and principles of blood component therapy. Must know various transfusion reactions with their investigations along with provisioning of safe blood and autologous transfusion.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9
201.8	Know the process, to collect and interpret various clinical, cytological and histopathological specimens.	PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9
201.9	Comprehend Etiopathogenesis, classification, gross and microscopy, genetics, grading, staging, prognostic and complication along with diagnostic and screening methods in various systemic disorders and tumors.	PO1, PO2, PO3, PO4, PO5, PO9

PATHOLOGY

PATHOLOGY

1. GOAL

Enable the medical graduate to acquire adequate knowledge and skill to understand and interpret varied clinical and morphological alterations in disease and make optimum use of these in diagnosis, management and prevention of disease processes.

2. LEARNING OBJECTIVES

2.1 KNOWLEDGE

At the end of the course the student should be able to

2.1.1

Understand, interpret and correlate the general mechanisms, effects and sequelae of injurious influences on cell and tissues.

2.1.2

Comprehend and correlate morphological and functional effects in various organs and systems due to genetic, environmental, immunological infectious and neoplastic influences.

2.1.3

Grasp the essential aspects of pathogenesis and pathology of common diseases and neoplasia relevant to specific agents, systems and organs with their clinical and diagnostic implications.

2.1.4

Acquire basic and essential knowledge of genesis and characteristics of important haematological disorders, essentials of transfusion medicine and clinical pathology.

2.2 SKILLS

At the end of the course candidate should be capable of

2.2.1

Chose relevant and essential lab investigations in common and specific clinical conditions in a rational and systematic manner, interpret the results, correlate them with the clinical features and arrive at a reasonable diagnosis.

2.2.2
Should be capable of giving clear instructions to the patient, collect the correct and adequate sample/specimen with required knowledge of the specific requirements of the laboratory including principles of important laboratory investigations.

2.2.3
Perform essential haematological and clinic – pathological investigations pertinent to the symptoms and clinical features of the patient.

2.2.4
Recognise and interpret important gross and microscopic alterations of tissues and organs in common diseases.

2.3 INTEGRATION

At the end of the course of one and a half years, the candidate should be able to integrate the his knowledge and skill in important clinical conditions and utilize it efficiently in arriving at diagnosis for optimum management and preventive measures.

3. LEARNING SCHEDULE

3.1 SEMESTERS (TERMS) 3, 4 AND 5

3.2 MINIMUM WORKING DAYS - 315

3.3 DISTRIBUTION OF WORKING HOURS -

3.3.1 Lectures and seminars	104 Hours
3.3.2 Tutorials, group discussions	50 Hours
3.3.4 Practicals and demonstrations	100 Hours
3.3.5 Revisions, evaluation	46 Hours
Total	**300 Hours**

4. SYLLABUS

4.1 DISTRIBUTION OF TEACHING

Lectures / Seminars (1hour) Tutorials (2hours) Practicals (2 hours)

4.1.1 General Pathology	34	04	13
4.1.2 Haematology	18	07	10
4.1.3 Systemic Pathology	46	09	11
4.1.4 Clinical Pathology	04	03	04
4.1.5 Autopsy	02	02	02

4.2 COURSE CONTENTS

The broad area of study shall be

4.2.1 General Pathology including general neoplasia

4.2.2 Systemic Pathology including specific neoplasia

4.2.3 Haematology including essential of transfusion medicine.

4.2.4 Clinical Pathology

4.3 LECTURE AND SEMINAR TOPICS (Desirable to Know x)

4.3.1 CELL INJURY

(1) Introduction to Pathology History -Evolution of pathology, important definitions, common aetiological factors causing disease with examples

(2) General response to injury at cellular level including role of free radicals.

(3) Reversible cell injury – intracellular accumulations – hydro pic and fatty change - I

(4) Reversible cell injury - Pigment and other substances - II

(5) Irreversible injury - Types of necrosis, gangrene and pathological calcification.

(6) Apoptosis – Mechanisms and its relevance in disease and neoplasia

(7) Amyloidosis – Pathogenesis and diagnosis.

4.3.2 INFLAMMATION AND REPAIR

(1) Acute inflammation – Definition, vascular and cellular response.

(2) Acute inflammation – Chemical mediators – their role.

(3) Acute inflammation – Chemical mediators - control mechanisms.

(4) Chronic and granulomatous inflammation.

(5) Repair and regeneration – Wound healing and factors influencing.

(6) Repair in specialised tissues, bone, muscle, nerve, parenchymal organs.

4.3.3 IMMUNOPATHOLOGY

(1) Immunity – General and cells involved in immune mechanisms.

(2) Hypersensitivity – Mechanism and types.

(3) Autoimmune diseases – Pathogenesis and Mechanisms.

(4) Autoimmune disorders – SLE, Rheumatoid arthritis.

(5) Mechanism and effects of transplant rejection and graft versus host reaction.

4.3.4 INFECTIOUS DISEASES

(1) Mycobacterial diseases – tuberculosis.

(2) Mycobacterial diseases – Leprosy.

(3) Bacterial infections – Typhoid, Dysentery, syphilis.

(4) Viral – AIDS, Transmission pathogenesis, pathology and diagnosis**.**

(5) Fungal infections; Superficial and deep – Pathology.

(6) Parasitic diseases

4.3.5 CIRCULATORY DISTURBANCES

(1) Oedema – Pathogenesis and Pathology in important organs.

(2) Hyperaemia – Chronic Venous Congestion – Lung, Liver, Spleen.

(3) Thrombosis – Mechanisms and Morphology.

(4) Embolism and infarction.

(5) Hypertension – Pathogenesis and its effects on various systems and organs.

(6) Haemorrhage and shock.

4.3.6 GROWTH DISTURBANCES & GENERAL NEOPLASIA

(1) Alterations and adaptations in cells and tissues due to environmental influences – Definitions and illustrative examples.

(2) Neoplasia – Definitions and characters of benign and malignant neoplasms, metastasis.

(3) Neoplasia – Nomenclature, grading, staging, predispositions.

(4) Carcinogenesis – Chemical carcinogens, radiation, microbial agents.

(5) Molecular basis of cancer.,

(6) Tumour and host interactions – Effect of tumour on host, Para-neoplastic x Syndromes, Tumour immunity. Laboratory diagnosis of cancer, Cytology, biopsy, tumour markers.

4.3.7 MISCELLANEOUS DISORDERS

(1) Important genetic disorders with examples.

(2) Protein Energy malnutrition and obesity.

(3) Vitamin deficiency disorders**,**

(4) Effects of radiation.

4.3.8 HAEMATOLOGY AND TRANSFUSION MEDICINE

(1) Anaemias – Etiological classification. Normal parameters and morphological classification.

(2) Nutritional anaemias – Iron deficiency, vitamin B_{12} and folic acid.

(3) Haemolytic anaemias – Classification and investigations.

(4) Hereditary haemolytic anaemias – Thalassemia, Sickle cell anaemia, **x** hereditary spherocytosis and G6PD deficiency.

(5) Immuno-haemolytic anaemias and acquired haemolytic anaemias.

(6) Haemorrhagic disorders – Platelet, vascular disorders

(7) Haemorrhagic disorders – Coagulation disorders.

(8) Investigation in haemorrhagic disorders.

(9) Leucocytosis, leukopenia, leukaemoid reactions.

(10) Classification and criteria for diagnosis of acute leukaemias.

(11) Chronic leukaemias.

(12) Myelo-dysplastic syndrome. **,**

(13) Myelo-proliferative disorders. **,**

(14) Plasma cell dyscrasias and dys-proteinemias.

(15) Blood transfusion – Important blood groups, antigen and antibodies. Grouping and cross matching.

(16) Blood collection, storage, blood components.

(17) Transfusion reactions and their investigations

4.3.9 CARDIOVASCULAR SYSTEM

(1) Rheumatic Heart Disease – Pathogenesis, pathology, sequelae

(2) Infective endocarditis Pathogenesis, pathology, effects

(3) Atherosclerosis – Etiological factors, morphology and complications *****

(4) Ischaemic Heart Disease - Effects of coronary artery disease

(5) Congenital heart diseases, aneurysms**,**

(6) Pericarditis, cardiomyopathy

(7) Other diseases of blood vessels - Vasculitis, tumours

4.3.10 RESPIRATORY TRACT

(1) Inflammation of bronchi – Bronchitis, asthma, bronchiectasis

(2) Pneumonia – Lobar, bronchopneumonia and interstitial

(3) Lung abscess, empyema, emphysema

(4) Nasopharyngeal and laryngeal tumours

(5) Tumours of the Lung – Important benign and malignant tumours Morphology and behaviour.

(6) Occupational Lung Disease – Anthracosis, silicosis, asbestosis, effects**,**

(7) Atelectasis and hyaline membrane disease.

4.3.11 GASTROINTESTINAL TRACT

(1) Lesions of oral cavity and salivary glands

(2) Gastritis and peptic ulcer – Pathogenesis pathology and sequelae

(3) Tumours of upper GIT – Oesophagus and stomach

(4) Tumours of intestines – Polypi, benign and malignant tumours

(5) Idiopathic inflammatory bowel disease

(6) Pancreatitis, tumours of the pancreas

4.3.12 HEPATOBILIARY SYSTEM

(1) Pathogenesis and pathology of acute and chronic hepatitis

(2) Alcoholic liver disease Pathology and complications

(3) Cirrhosis of liver – Classification and morphology

(4) Tumours of liver and gall bladder **x**

4.3.13 KIDNEY AND URINARY TRACT

(1) Etio-pathogenesis, pathology and effects of nephritic syndrome

(2) Etio-pathogenesis, pathology and effects of nephrotic syndrome

(3) Acute renal failure – clinic-pathological correlations

(4) End stage renal disease and chronic renal failure-sequelae*****

(5) Important tumours of the kidneys and urinary tract,

(6) Nephrolithiasis and obstructive uro-pathy

4.3.14 LYMPHORETICULAR SYSTEM

(1) Benign lesions, granulomas of lymph nodes; Spleen in important diseases

(2) Hodgkin's Lymphoma and general features of lymphoma

(3) Non- Hodgkin's Lymphoma

4.3.15 REPRODUCTIVE SYSTEM

(1) Carcinoma cervix, tumours of the uterine corpus

(2) Trophoblastic diseases – Hydatidiform mole, chorio-carcinoma

(3) Tumours of the ovary

(4) Tumours of the testis

(5) Hyperplasia and carcinoma of prostate and penis

(6) Benign lesions of the breast

(7) Malignant tumours of the breast

4.3.16 BONE AND SOFT TISSUE

(1) Osteomyelitis and metabolic diseases of the bone

(2) Tumours of the bone – Osteosarcoma, giant cell tumour, Ewing's sarcoma, Chondro-sarcoma

(3) Arthritis – Rheumatoid arthritis and others

(4) Tumours and tumour like lesions of soft tissue – fibrous tissue Fibro-histolytic

(5) Tumours and tumour like lesions of soft tissue – Adipose tissue, muscle, peripheral nerves

4.3.17 ENDOCRINE ORGANS

(1) Diabetes Mellitus, pathogenesis, pathology, complications*****

(2) Benign thyroid swellings

(3) Tumours of the thyroid

(4) Adrenal hyperplasia, atrophy, tumours

4.3.18 CENTRAL NERVOUS SYSTEM

(1) Inflammatory disorders of meninges and brain

(2) CNS tumours – Glioma, meningioma, metastatic tumours

4.3.19 SKIN

(1) Tumours – Squamous cell carcinoma, basal cell carcinoma, nevi and melanoma.

4.3.20 CLINICAL PATHOLOGY

(1) Differential diagnosis of jaundice, investigations and interpretation

(2) Investigations in renal disease with special emphasis on urine

Examination:

(3) Investigation in Diabetes Mellitus

(4) Examination of body fluids – CSF, Exudate, Transudate, Semen

4.3.21 AUTOPSY

(1) Importance, indication and procedures for medical autopsies x

4.3.22 RESEARCH METHODOLOGY (10 sessions in II MBBS)

4.3.23 COMMUNICATION SKILLS (5 sessions in II MBBS)

4.3.24 LANGUAGE SESSIONS (5 sessions in II MBBS)

5. TOPICS FOR TUTORIALS, GROUP DISCUSSIONS, DEMONSTRATIONS

1. Cell injury
2. Inflammation
3. Circulatory disturbances
4. Tuberculosis
5. Neoplasia
6. Collection of blood and other specimens, anticoagulants, smears , needles
7. Anaemia, haemoglobin and haematological parameters
8. Peripheral blood smear examination

9. Leucocyte disorders
10. Haemorrhagic disorders
11. Urine examination
12. Clinical charts – Interpretation and differential diagnosis
13. Cardiovascular system I
14. Cardiovascular system II
15. Respiratory system
16. Genito- Urinary system
17. Liver and Spleen
18. Diseases of Lymph nodes
19. Tumours and tumour like lesions of bone
20. Tumours and tumour like lesions of soft tissues
21. Lesions of the breast
22. Diabetes Mellitus
23. Haematology transparencies
24. Systemic and general pathology transparencies
25. Discussion of museum specimens 1
26. Discussion of museum specimens 2
27. Discussion of typical clinical pathology and haematology charts
28. Orientation to theory examination
29. Orientation to practical examination

6. TOPICS FOR INTEGRATED TEACHING, SEMINARS, SYMPOSIA

1. Rheumatic heart disease
2. Hypertension
3. Diabetes Mellitus
4. Nephritic and Nephrotic syndrome
5. Acute and chronic renal failure
6. Jaundice
7. Malaria
8. Ischaemic Heart Disease
9. Salivary gland lesions

*** INTEGRATED TEACHING FOR II MBBS –**

Sr. No.	Broad topic	Department	Lecture topics	Duration
1	**PYELONEPHRITIS**	**Pathology**	Pathology of Pyelonephritis	1 Hour
		Microbiology	Bacteriology of Pyelonephritis	1 Hour
		Medicine	Clinical features	1 Hour
		Pharmacology	Treatment	1 Hour
2	**PNEUMONIA**	**Microbiology**	Lab diagnosis of Pneumonia	1 Hour
		Pathology	Pathology of Pneumonia	1 Hour
		Medicine	Clinical features and Radiology	1 Hour
		Pharmacology	Treatment	1 Hour
		Community Medicine	Epidemiology and prevention	1 Hour
		F.M.T	Medico Legal Aspect of Pneumonia	1 Hour
3	**TUBERCULOSIS**	**Microbiology**	Lab diagnosis of TB	1 Hour
		Pathology	Pathology of Pulmonary TB	1 Hour
			Pathology of Extra Pulmonary TB	1 Hour
		Medicine	Clinical features and Radiology	1 Hour
		Pharmacology	Treatment-1	1 Hour
			Treatment-2	1 Hour
		Community Medicine	Epidemiology Prevention, RNTCP	1 Hour
		Pulmonary Medicine	Management	1 Hour
4	**HIV**	**Microbiology**	Virology of HIV	1 Hour
			Diagnosis of HIV	1 Hour
		Pathology	Pathogenesis of HIV Infection	1 Hour
		Medicine	Clinical features and Opportunistic infections in HIV	1 Hour
		Pharmacology	Treatment of HIV	1 Hour

Sr. No.	Broad topic	Department	Lecture topics	Duration
		Community Medicine	Epidemiology of HIV	1 Hour
			Prevention of HIV	1 Hour
			NACO activities	1 Hour
		F.M.T.	Medico legal aspect of HIV	1 Hour
5	**ENTERIC FEVER**	**Microbiology**	Bacteriology and of enteric fever	1 Hour
		Pathology	Pathology of enteric fever	1 Hour
		Medicine	Clinical features	1 Hour
		Pharmacology	Treatment	1 Hour
		Community Medicine	Epidemiology and prevention	1 Hour

7. BIO-ETHICS IN UNDERGRADUATE MEDICAL CURRICULUM (4 + 10)

Sr. No.	Theory Topic	Department	Hours
1	Autonomy & individual responsibility	Pathology	**One Hour**
2	Respect of the individual and dignity	Pathology	**One Hour**
3	Ethics in Stem cell and genetic research	Pathology	**One Hour**
4	Equality, Justice and equity	Pathology	**One Hour**

The practical aspects of topics in bioethics will be discussed as an interactive session during regular practicals

8. Following modifications in certain topics in the syllabus of II MBBS Pathology Theory Classes

Sr. No.	Existing Theory Topic	Proposed Theory Topics
1	Oedema — Pathogenesis and Pathology in important organs.	Oedema — Pathogenesis and Pathology in important organs.
2	Hyperemia — Chronic Venous Congestlon Lung, Liver, Spleen	Hyperemia — Chronic Venous Congestion Lung, Liver, Spleen
3	Thrombosis — Mechanisms and Morphology.	Thrombosis—Mechanisms and Morphology.
4	Embolism and infarction	Embolism and infarction
5	Hypertension — Pathogenesis and its effects on various systems	Hypertension — Pathogenesis and its effects on various systems

Sr. No.	Existing Theory Topic	Proposed Theory Topics
6	Haemorrhage and shock	Haemorrhage and shock
7	Alterations and adaptations in cells and tissues due to environmental Influences Definitions and illustrative examples.	Alterations and adaptations in cells and tissues due to environmental Influences — efinitions and illustrative examples.
8	Neoplasia Definitions and characters of benign and malignant neoplasms, metastasis.	Neoplasia Definitions and characters of benign and malignant neoplasm's, metastasis.
9	Neoplasia - Nomenclature, grading, staging predispositions	Neoplasia — Nomenclature, grading, staging predispositions
10	Carcinogenesis Chemical carcinogens, Radiation, microbial agents.	Carcinogenesis —Chemical carcinogens Radiation, microbial agents.
11	Molecular basis of cancer.	Molecular basis of cancer.
12	Tumour and host interactions — Effect of tumour on host, Para-neoplastic Syndromes, Tumour immunity **(desirable to know)**	Tumour and host interactions — Effect of tumour on host, Para-neoplastic Syndromes, Tumour immunity **(Must know)**
13	Laboratory diagnosis of cancer, Cytology, biopsy, tumour markers.	Laboratory diagnosis of cancer, Cytology, biopsy, tumour markers.

7. PRACTICALS AND DEMONSTRATIONS:

1. Tissue processing and microscopy
2. Identification of cells
3. Reversible cell injury. Degenerations
4. Acute inflammation
5. Chronic inflammation
6. Necrosis, gangrene and infarction
7. Hyperaemia, Oedema, Thrombosis and Embolism
8. Pigments, Calcification, Amyloid
9. Leprosy, Syphilis
10. Tuberculosis
11. Neoplasia I – Benign Tumours
12. Neoplasia II – Non- pigmented skin tumours, Adenocarcinoma
13. Neoplasia III – Pigmented skin tumours, Sarcoma
14. Collection of blood, Bulbs and needles

15. Haemopoiesis
16. Haemoglobin estimation
17. Total WBC count
18. Differential leucocyte count
19. Peripheral blood smears examination
20. Investigation of anaemia
21. Leukaemia
22. Blood groups and blood transfusion
23. Investigations of haemorrhagic disorders , charts
24. Cardiovascular system I
25. Cardiovascular system II
26. Respiratory system
27. Kidney
28. Urine examination
29. Gastrointestinal tract
30. Liver diseases
31. CNS lesions / CSF examination
32. Diseases of lymph node
33. Diseases of bone and joint
34. Male / Female genital tract
35. Breast, Endocrine system
36. Diabetes /GTT
37. Pregnancy test / Semen examination
38. Cytological preparations ID
39. Autopsy
40. Autopsy

8. DRAWING OF SLIDES

These are grouped under two headings as slides the students
a) Must see (M) b) Desirable to see (D)

8.1 HISTOPATHOLOGY SLIDES

8.2 HAEMATOLOGY SLIDES

8.3 LIST OF SPECIMENS

8.1 HISTOPATHOLOGY SLIDES

- Fatty change liver (M)
- Uterus – Leiomyoma with hyaline change (M)
- Kidney amyloid (D)
- Lymph node – Caseous necrosis (M)
- Kidney infarct (M)
- Acute ulcerative appendicitis (M)
- Pyogenic meningitis (D)
- Tuberculoid leprosy – skin (M)
- Actino-mycosis (D)
- Granulation tissue (M)
- Tuberculous lymphadenitis (M)
- Lung Chronic passive congestion (M)
- Liver Chronic passive congestion (M)
- Artery – recent/organized thrombus
- Pulmonary oedema (D)
- Skin – Papilloma (M)
- Thyroid – Follicular adenoma (D)
- Uterus – Leiomyoma (M)
- Lipoma (M)
- Skin – Squamous cell carcinoma (M)
- Skin Basal cell carcinoma (M)
- Skin – Nevus and Malignant melanoma (M)
- Malignant soft tissue tumour (D)
- Salivary gland – Pleomorphic adenoma (D)
- Adenocarcinoma colon (M)
- Heart – healed infarct (M)
- Skin – Capillary hemangioma (M)
- Cavernous hemangioma (D)
- Heart – rheumatic myocarditis (D)
- Aorta – atherosclerosis (D)
- Lung – Lobar and bronchopneumonia (M)
- Lung fibro-caseous tuberculosis (M)
- Kidney – Chronic Pyelonephritis (M)
- Kidney – Crescentic Glomerulonephritis (D)
- Kidney – Renal cell carcinoma (D)
- Ileum – typhoid ulcer (D)
- Stomach – Chronic peptic ulcer (M)
- Liver – Cirrhosis (M)
- Liver – massive necrosis (D)

- Brain – Meningioma (D)
- Neuri-lemmoma (D)
- Lymph node – Hodgkin's lymphoma (M)
- Lymph node – Non Hodgkin's lymphoma (D)
- Lymph node – Metastasis (M)
- Bone – Osteogenic sarcoma (M)
- Bone – Giant cell tumour (M)
- Bone – Chondroma (D)
- Bone – Ewing's sarcoma (D)
- Benign Prostatic hyperplasia (M)
- Mature cystic teratoma (M)
- Testis – Seminoma (M)
- Products of conception (D)
- Breast – Fibro-adenoma (M)
- Breast – Infiltrating duct carcinoma (M)
- Hashimoto's thyroiditis (D)
- Thyroid – Multi nodular goiter (D)

8.2 HAEMATOLOGY SLIDES

- Eosinophilia (M)
- Poly-Morphonuclear Leucocytosis (M)
- Iron deficiency anaemia (M)
- Hemolytic anaemia (M)
- Macrocytic anaemia (M)
- Chronic myeloid leukaemia (M)
- Acute leukaemia (D)
- Bone Marrow-Plasma cells, Mega-karyocytes, Megalo-blast(M)
- Malarial Parasite (M)

8.3 LIST OF SPECIMENS

- Liver – Fatty change (M)
- Kidney – Cloudy change (D)
- Atheroma with calcification (D)
- Kidney – Infarct (M)
- Spleen – Infarct (M)
- Intestine – Gangrene (M)
- Foot – Gangrene (D)
- Lymph node – Caseation (M)
- Lobar pneumonia (M)
- Kidney – Abscess (D)
- Liver – Abscess (M)

- Acute appendicitis (M)
- Acute pyogenic meningitis (M)
- Fibrinous pericarditis (M)
- Syphilitic aortitis (D)
- Lymph node – TB (M)
- Lung – Miliary TB (M)
- Fibro-caseous TB (M)
- Kidney - Amyloidosis (D)
- Spleen – Amyloidosis (D)
- Liver and spleen – Malaria (M)
- Liver and spleen – Prusssian blue reaction
- Liver – Chronic passive congestion (M)
- Lung – Chronic passive congestion (M)
- Intestine – gangrene (M)
- Infarction – Kidney, spleen (M)
- Infarction – Lung, testis (D)
- Heart – Left ventricular hypertrophy (M)
- Heart – Brown atrophy (M)
- Kidney – Hydro-Nephrosis (M)
- Skin – Papilloma (M)
- Adenomatous polyp (M)
- Fibro-adenoma breast (M)
- Squamous cell carcinoma – skin (M)
- Basal cell carcinoma – skin (M)
- Adenocarcinoma – colon (M)
- Metastasis – lung, liver (M)
- Leiomyoma uterus (M)
- Soft tissue – Lipoma (M)
- Soft tissue sarcoma (D)
- Melanoma Metastasis in LN, liver (M)
- Rheumatic mitral stenosis (M)
- Healed myocardial infarct (M)
- Atheroma with complications (M)
- Aortic aneurysm (D)
- Bacterial endocarditis (D)
- Lung – Lobar/bronchopneumonia (M)
- Lung abscess (D)
- Bronchogenic carcinoma (M)
- Fibro-caseous TB (M)
- Lung – emphysema, bronchiectasis (D)

- Flea bitten kidney (M)
- Large white kidney (D)
- Contracted granular kidney (M)
- Renal cell carcinoma (M)
- Bladder – transitional carcinoma (D)
- Stomach – Chronic peptic ulcer (M)
- Stomach carcinoma (M)
- Intestine TB (M)
- Colon – amoebic colitis, carcinoma colon (M)
- Liver – Amoebic abscess (M)
- Liver – Cirrhosis (M)
- Liver – Hepatocellular carcinoma (D)
- Liver – Metastasis (M)
- Brain – Meningitis (M)
- Brain – Glioma (M)
- Brain – hemorrhage (CVA) (D)
- Lymph Node TB (M)
- Lymph Node Lymphoma (D)
- Spleen – Infarct, splenomegaly (D)
- Bone – giant cell tumour (M)
- Bone – Osteogenic sarcoma (M)
- Seminoma –Testis (M)
- Teratoma _ Testis (M)
- Uterus – Leiomyoma (M)
- Ovary – Dermoid cyst (M)
- Breast – Fibro-adenoma (M)
- Breast – carcinoma (M)
- Thyroid – Multi-nodular goiter (M)
- Thyroid adenoma (M)

9. TEACHING / LEARNING METHODS

- Lectures
- Structured interactive sessions
- Small group discussions
- Seminar and symposia , integrated teaching sessions
- Problem based learning with different clinical situations and written case scenario
- Self -learning tools and resources selection
- Interactive learning
- e – modules

10. BOOKS RECOMMENDED FOR READING

1. Robbins Basic Pathology – Kumar Cotran Robbins
2. de Gruchy's Clinical Haematology in Medical Practice
3. Pathology – Muir
4. Clinical Pathology
   - Essential Lab Medicine – V. H. Talib,
   - Medical Lab Technology by Kanai Mukherjee Vol. I,II,III
   - Clinical Pathology by Sanyal
5. IAPM textbook of Pathology
6. Y.M. Bhendes General Pathology – S. G. Deodhar
7. Textbook of Pathology – Harsh Mohan
8. Atlas and textbook of haematology – Dr. Tejinder Singh

11. REFERENCE BOOKS

1. Robbins and Cotran's Pathologic basis of disease – Kumar & Abbas
2. Pathology Rubin , Farber
3. Anderson's Pathology- Vol. I & II
4. Pathology Illustrated – Govan , Callander
5. Concise Pathology – Chandrasoma
6. Internet resources

12. EVALUATION METHODS

Internal assessment examination and comprehensive final examination at the end of 1½ years of learning in Theory, Orals and Practicals

12.1 INTERNAL ASSESSMENT

Evaluation shall be done at the end of 3rd, 4th and 5th term as per the following pattern

12.1.1 MODE OF EXAMINATION TIME OF EXAMINATION

THEORY	**Total Marks**
3rd Term ending	50
4th Term ending	50
5th Term ending	80
(Preliminary exam)	
Total Theory (to be reduced to 15)	**180**

PRACTICALS	Total Marks
3rd Term ending	40
4th Term ending	40
5th Term ending	40
(Preliminary exam)	
Total Theory (to be reduced to 15)	**120**

JOURNAL (5th Term Ending) 03

Thus total marks for consideration of internal assessment is 30

12.1.2

Preliminary Examination shall be in the pattern of the final University Examination (Theory, Oral And Practicals) and will be conducted at least 4 weeks before the date of the final university examination.

12.1.3

The term ending examination will have the following pattern

THEORY 150 MINUTES

MCQ (1/2 mark each) 20	= 10 marks
SAQ (3 marks each) 8/9	= 24 marks
LAQ (8 marks each) 2/2	= 16 marks
Total	**= 50 Marks**

PRACTICALS 90 MINUTES

Bench work	20 marks
Viva	20 marks
Total	**40 Marks**

12.2 FINAL UNIVERSITY EXAMINATION

UNIVERSITY PATTERN OF EXAMINATION- (Theory -Examination)
Time Allowed: - 2.00 Hours For Each Paper

				Marks	**Total**
Paper I	Section **A**	Question 1	One Sentence Answer Questions (8 Out of 10)	8X1=08	22
		Question 2	Long Answer Questions (2 Out of 3)	7X 2=14	
	Section **B**	Question 3	Short Answer Questions (6 Out of 8)	6X3=18	18
				Total =	**40**
Paper II	Section **A**	Question 1	One Sentence Answer Questions (8 Out of 10)	8X1=08	22
		Question 2	Long Answer Questions (2 Out of 3)	7X2=14	
	Section **B**	Question 3	Short Answer Questions (6 Out of 8)	6X3=18	18
				Total =	**40**

THEORY EXAMINATION TOPICS IN PATHOLOGY

PATHOLOGY PAPER - I
General Pathology including general neoplasia, Hematology and transfusion medicine

PATHOLOGY PAPER - II
Systemic Pathology and Clinical pathology.

12.2.2

PRACTICALS TOTAL MARKS = 40

Practical examination will be conducted as per the following schedule

A) Exercise (**Total Marks** =**26 Marks**)

10 spots, 90 seconds each
4 specimens, 1 instrument} Identification ½ mark
3 histopathology slides} Specific short
1 haematology slide and} question ½ mark
1 chart }
Total 1 mark for each spot- **10 Marks**

B) URINE EXAMINATION

Complete physical examination and detection - **08 Marks**
of two abnormal constituents

C) ONE EXERCISE to be chosen by lot system from

(i) Haemoglobin estimation
(ii) Blood smear staining and study **- 08 Marks**
(iii) Total leucocyte count
(iv) Blood grouping

12.2.3

ORAL EXAMINATION (VIVA)

Two tables. Each candidate will face 2 examiners for 5 minutes each

Table I	General and Systemic Pathology	07 marks
Table II	Clinical Pathology and Haematology	07 marks
	Total	**14 marks**

These marks will be added to theory marks

Note: Number of candidates for practicals should not exceed 30/day