MGM INSTITUTE OF HEALTH SCIENCES

(Deemed University u/s 3 of UGC Act, 1956)
Grade 'A' Accredited by NAAC
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Syllabus for

MBBS – (Second Year)

Approved as per BOM. 04/2007, dated 14.12.2007, item 4 & amended up to BOM. 43/2015 dated 14.11.2015

Syllabus have been categorized as **'Must know'** (70%), **'Desirable to Know'** (30%) and **'Nice to Know'** (10%) topics.

Inside this booklet, **'Desirable to know'** & **'Nice to Know'** topics are stamped and remaining all unstamped topics belong to **'Must Know'** area.

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GENERAL CONSIDERATIONS AND TEACHING APPROACH

(1) Graduate medical curriculum is oriented towards training students to undertake the responsibilities of a physician of first contact who is capable of looking after the preventive, promotive, curative & rehabilitative aspect of medicine.

(2) With wide range of career opportunities available today, a graduate has a wide choice of career opportunities. The training, though broad based and flexible should aim to provide an educational experience of the essentials required for health care in our country.

"Training should be able to meet internationally acceptable standards."

(3) To undertake the responsibilities of service situations which is a changing condition and of various types, it is essential to provide adequate placement training tailored to the needs of such services as to enable the graduates to become effective instruments of implementation of those requirements. To avail of opportunities and be able to conduct professional requirements, the graduate shall endeavour to have acquired basic training in different aspects of medical care.

(4) The importance of the community aspects of health care and of rural health care services is to be recognized. This aspect of education & training of graduates should be adequately recognized in the prescribed curriculum. Its importance has been systematically upgraded over the past years and adequate exposure to such experiences should be available throughout all the three phases of education & training. This has to be further emphasized and intensified by providing exposure to field practice areas and training during the internship period. The aim of the period of rural training during internship is to enable the fresh graduates to function efficiently under such settings.

(5) The educational experience should emphasize health and community orientation instead of only disease and hospital orientation or being concentrated – on - curative - aspects. As such all the basic concepts of modern scientific medical education are to be adequately dealt with.

(6) There must be enough experiences to be provided for self learning. The methods and techniques that would ensure this must become a part of teaching - learning process.

(7) The medical graduate of modern scientific medicine shall endeavour to become capable of functioning independently in both urban and rural environment. He/she shall endeavour to give emphasis on fundamental aspects of the subjects taught and on common problems of health and disease avoiding unnecessary details of specialization.

(8) The importance of social factors in relation to the problem of health and diseases should receive proper emphasis throughout the course and to achieve this purpose, the

educational process should also be community based than only hospital based. The importance of population control and family welfare planning should be emphasized throughout the period of training with the importance of health and development duly emphasized.

(9) Adequate emphasis is to be placed on cultivating logical and scientific habits of thought, clarity of expression and independence of judgment, ability to collect and analyze information and to correlate them.

(10) The educational process should be placed in a historic background as an evolving process and not merely as an acquisition of a large number of disjointed facts without a proper perspective. The history of Medicine with reference to the evolution of medical knowledge both in this country and the rest of the world should form a part of this process.

(11) Lectures alone are generally not adequate as a method of training and are a poor means of transferring/acquiring information and even less effective at skill development and in generating the appropriate attitudes. Every effort should be made to encourage the use of active methods related to demonstration and on firsthand experience. Students will be encouraged to learn in small groups, through peer interactions so as to gain maximal experience through contacts with patients and the communities in which they live. While the curriculum objectives often refer to areas of knowledge or science, they are best taught in a setting of clinical relevance and hands on experience for students who assimilate and make this knowledge a part of their own working skills.

(12) The graduate medical education in clinical subjects should be based primarily on out-patient teaching, emergency departments and within the community including peripheral health care institutions. The out-patient departments should be suitably planned to provide training to graduates in small groups.

(13) Clinics should be organized in small groups of preferably not more than 10 students so that a teacher can give personal attention to each student with a view to improve his skill and competence in handling of the patients.

(14) Proper records of the work should be maintained which will form the basis for the students' internal assessment and should be available to the inspectors at the time of inspection of the college by the Medical Council of India.

(15) Maximal efforts have to be made to encourage integrated teaching between traditional subject areas using a problem based learning approach starting with clinical or community cases and exploring the relevance of various preclinical disciplines in both understanding and resolution of the problem. Every attempt be made to de-emphasize compartmentalization of disciplines so as to achieve both horizontal and vertical integration in different phases.

(16) Every attempt is to be made to encourage students to participate in group discussions and seminars to enable them to develop personality, character, expression and other faculties which are necessary for a medical graduate to function either in solo practice or as a team leader when he begins his independent career. A discussion group should not have more than 20 students.

(17) Faculty member should avail of modern educational technology while teaching the students and to attain this objective, Medical Education Units/ Departments be established in all medical colleges for faculty development and providing learning resource material to teachers.

(18) To derive maximum advantage out of this revised curriculum, the vacation period to students in one calendar year should not exceed one month, during the 4 ½ years Bachelor of Medicine and Bachelor of Surgery (MBBS) Course.

(19) In order to implement the revised curriculum in Toto, State Govts. and Institution Bodies must ensure that adequate financial and technical inputs are provided.

(20) HISTORY OF MEDICINE –The students will be given an outline on "History of Medicine". This will be taught in an integrated manner by subject specialists and will be coordinated by the Medical Education Unit of the College.

(21) All medical institutions should have curriculum committee which would plan curricula and instructional method which will be regularly updated.

(22) Integration of ICT in learning process will be implemented.

OBJECTIVE OF MEDICAL GRADUATE TRAINING PROGRAMME:

(1) **NATIONAL GOALS** : At the end of undergraduate program, the medical student should be able to :

(a) Recognize 'health for all' as a national goal and health right of all citizens and by undergoing training for medical profession fulfill his/her social obligations towards realization of this goal.

(b) Learn every aspect of National policies on health and devote himself / herself to its practical implementation.

(c) Achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.

(d) Develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.

(e) Become exemplary citizen by observation of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

(2) **INSTITUTIONAL GOALS**: (1) In consonance with the goals each medical institution should evolve institutional goals to define the manpower (or professionals) they intend to produce. The undergraduate students coming out of a medical institute should:

(a) Be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.

(b) Be competent to practice preventive, promotive, curative and rehabilitative medicine in respect to the commonly encountered health problems.

(c) Appreciate rationale for different therapeutic modalities; be familiar with the administration of the "essential drugs" and their common side effects.

(d) Be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

(e) Possess the attitude for continued self learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.

(f) be familiar with the basic factors which are essential for the implementation of the National Health Programmes including practical aspects of the following:-

(i) Family Welfare and Material and Child Health(MCH)

(ii) Sanitation and water supply

(iii) Prevention and control of communicable and non-communicable diseases
(iv) Immunization
(v) Health Education
(vi) IPHS standard of health at various level of service delivery, medical waste disposal.
(vii) Organizational institutional arrangements.

(g) Acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, General and hospital management, principal inventory skills and counseling

(h) Be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.

(i) Be able to work as a leading partner in health care teams and acquire proficiency in communication skills.

(j) Be competent to work in a variety of health care settings.

(k) Have personal characteristics and attitudes required for professional life such as personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.

All efforts must be made to equip the medical graduate to acquire the skills as detailed as under:

A comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) Graduate:

1. **Clinical Evaluation:**

(a) To be able to take a proper and detailed history.
(b) To perform a complete and thorough physical examination and elicit clinical signs.
(c) To be able to properly use the stethoscope, Blood Pressure, Apparatus Auroscope, Thermometer, Nasal Speculum, Tongue Depressor, Weighing Scales, Vaginal Speculum etc.:
(d) To be able to perform internal examination-Per Rectum (PR), Per Vaginum (PV) etc.
(e) To arrive at a proper provisional clinical diagnosis.

II. **Bed side Diagnostic Tests:**

(a) To do and interpret Haemoglobin (HB), Total Count (TC), Erythrocytic Sedimentation Rate (ESR), Blood smear for parasites, Urine examination /albumin /sugar /ketones /microscopic:
(b) Stool exam for ova and cysts;
(c) Gram, staining and Siehl-Nielsen staining for AFB;
(d) To do skin smear for lepra bacilli
(e) To do and examine a wet film vaginal smear for Trichomonas
(f) To do a skin scraping and Potassium Hydroxide (KOH) stain for fungus infections;
(g) To perform and read Montoux Test.

III. **Ability to Carry Out Procedures:**

(a) To conduct CPR (Cardiopulmonary resuscitation) and First aid in newborns, children and adults.
(b) To give Subcutaneous (SC) /Intramuscular (IM) /Intravenous (IV) injections and start Intravenous (IV) infusions.
(c) To pass a Nasogastric tube and give gastric leavage.
(d) To administer oxygen-by masic/catheter
(e) To administer enema
(f) To pass a ruinary catheter-male and female
(g) To insert flatus tube
(h) To do pleural tap, Ascitic tap & lumbar puncture
(i) Insert intercostal tube to relieve tension pneumothorax
(j) To control external Haemorrhage.

IV Anaesthetic Procedure

(a) Administer local anaesthesia and nerve block

(b) Be able to secure airway potency, administer Oxygen by Ambu bag.

V **Surgical Procedures**

(a) To apply splints, bandages and Plaster of Paris (POP) slabs;
(b) To do incision and drainage of abscesses;
(c) To perform the management and suturing of superficial wounds;
(d) To carry on minor surgical procedures, e.g. excision of small cysts and nodules, circumcision, reduction of paraphimosis, debridement of wounds etc
(e) To perform vasectomy;
(f) To manage anal fissures and give injection for piles.

VI Mechanical Procedures

(a) To perform thorough antenatal examination and identify high risk pregnancies.
(b) To conduct a normal delivery;
(c) To apply low forceps and perform and suture episiotomies;
(d) To insert and remove IUD's and to perform tubectomy

VII **Paediatrics**

(a) To assess new borns and recognize abnormalities and I.U. retardation
(b) To perform Immunization;
(c) To teach infant feeding to mothers;
(d) To monitor growth by the use of 'road to health chart' and to recognize development retardation;
(e) To assess dehydration and prepare and administer Oral Rehydration Therapy (ORT)
(f) To recognize ARI clinically;

VIII **ENT Procedures:**

(a) To be able to remove foreign bodies;
(b) To perform nasal packing for epistaxis;
(c) To perform trachesotomy

IX **Ophthalmic Procedures:**

(a) To invert eye-lids;
(b) To give Subconjunctival injection;
(c) To perform appellation of eye-lashes;
(d) To measure the refractive error and advise correctional glasses;
(e) To perform nasolacrimal duct syringing for potency

X. **Dental Procedures:**

To perform dental extraction

XI **Community Healthy**:

(a) To be able to supervise and motivate, community and para-professionals for corporate efforts for the health care;
(b) To be able to carry on managerial responsibilities, e.g. Management of stores, indenting and stock keeping and accounting
(c) Planning and management of health camps;
(d) Implementation of national health programmes;
(e) To effect proper sanitation measures in the community, e.g. disposal of infected garbage, chlorination of drinking water;
(f) To identify and institute and institute control measures for epidemics including its proper data collecting and reporting.

XII **Forensic Medicine Including Toxicology**

(a) To be able to carry on proper medico legal examination and documentation of injury and age reports.
(b) To be able to conduct examination for sexual offences and intoxication;
(c) To be able to preserve relevant ancillary material for medico legal examination;
(d) To be able to identify important post-mortem findings in common un-natural deaths.

XIII **Management of Emergency**

(a) To manage acute anaphylactic shock;
(b) To manage peripheral vascular failure and shock;
(c) To manage acute pulmonary oedema and LVF;
(d) Emergency management of drowning, poisoning and seizures
(e) Emergency management of bronchial asthma and status asthmaticus;
(f) Emergency management of hyperpyrexia;
(g) Emergency management of comatose patients regarding airways, positioning prevention of aspiration and injuries
(h) Assess and administer emergency management of burns

Syllabus for
PATHOLOGY

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BROAD CURRICULUM AS PER MCI GUIDELINES (PATHOLOGY):

i) GOAL

The broad goal of the teaching of undergraduate student in Pathology is to provide the students with a comprehensive knowledge of the mechanisms and causes of disease, in order to enable him/her to achieve complete understanding of the natural history and clinical manifestations of disease.

ii) OBJECTIVES

a) KNOWLEDGE

At the end of the course, the student should be able to:-

(1) Describe the structure and ultra structure of a sick cell, mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alterations.
(2) Explain the path physiological processes which govern the maintenance of homeostasis, mechanisms of their disturbance and the morphological and clinical manifestations associated with it.
(3) Describe the mechanisms and patterns to tissue response to injury such that she/he can appreciate the path physiology of disease processes and their clinical manifestations.
(4) Correlate normal and altered morphology (gross and microscopic) of different organ systems in common diseases to the extent needed for understanding of disease processes and their clinical significance.

b) SKILLS

At the end of the course, the student should be able to: -

1. Describe the rationale and principles of technical procedures of the diagnostic laboratory tests and interpretation of the results;
2. Perform the simple bed-side tests on blood, urine and other biological fluid samples;
3. Draw a rational scheme of investigations aimed at diagnosing and managing the cases of common disorders;
   Understand biochemical/physiological disturbances that occur as a result of disease in collaboration with pre clinical departments.

iii) INTEGRATION

At the end of training he/she should be able to integrate the causes of disease and relationship of different etiological factors (social, economic and environmental) that contribute to the natural history of diseases most prevalent in India.

PATHOLOGY

I. Learning Objectives

At the end of the course, the Student shall be able to,

1. Understand and describe the structure & ultra structure of a cell, the concept of cell injury, cell death, repair and the change produces thereby, in different tissues and organs.
2. Know the principles of collection, handling, storage, and dispatch of clinical samples from patient, in a proper manner.
3. Perform and interpret in a proper manner the basic clinico-pathological procedures.
4. Knowledge of the common hematological disorders and the investigations necessary to diagnose them and determine their prognosis.
5. Understand normal haemostatic mechanism, the derangements of this mechanism and the effect on human system.
6. Understand the etiopathogenesis, the pathological effects, and the clinico-pathological correlation of common infectious and non-infectious diseases.
7. Understand the concept of neoplasia with respect to etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.
8. Correlate normal and altered morphology (gross and microscopy) of different organ systems in different diseases to the extent needed of understanding of the disease processes and their clinical significance.
9. Have knowledge of common immunological disorders and their effects on human body.

Approved in BOM 43/2015, Dated 06/11/2015
Resolution No. 3.2(c)

Annexure-VII

Pathology

PATHOLOGY

I. Learning Objectives

At the end of the course, the Student shall be able to,

1. Understand and describe the structure & ultra structure of a cell, the concept of cell injury, cell death, repair and the change produces thereby, in different tissues and organs.
2. Know the principles of collection, handling, storage, and dispatch of clinical samples from patient, in a proper manner.
3. Perform and interpret in a proper manner the basic clinico-pathological procedures.
4. Knowledge of the common hematological disorders and the investigations necessary to diagnose them and determine their prognosis.
5. Understand normal haemostatic mechanism, the derangements of this mechanism and the effect on human system.
6. Understand the etiopathogenesis, the pathological effects, and the clinico-pathological correlation of common infectious and non-infectious diseases.
7. Understand the concept of neoplasia with respect to etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.
8. Correlate normal and altered morphology (gross and microscopy) of different organ systems in different diseases to the extent needed of understanding of the disease processes and their clinical significance.
9. Have knowledge of common immunological disorders and their effects on human body.

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29.9.2015

II. Total number of teaching hours: 300hrs (IIIrd, IVth & Vth Semester)

a) Theory (lectures & tutorials)	160 hrs
b) Practicals	110 hrs
c) Revisions & Evaluations (internal)	30 hrs
Total	300hrs

III. Distribution of teaching hours:

1) General Pathology	35hrs
2) Hematology	16hrs
3) Systemic Pathology	61hrs
4) Clinical Pathology	3hrs
6) Autopsy	1hr
5) Tutorials	44 hrs
Total	160hrs

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	Course Contents	Hrs	Must Know	Desirable to know
	General Pathology			
1	**Cell injury**	**6hrs**		
	Common definitions in pathology and causes of cell injury.	1hr	√	
	Modes of cell injury: Mechanisms of cell injury	1hr	√	
	Reversible cell injury: Definitions, cellular swelling, fatty change.	1hr	√	
	Irreversible cell injury: Definition Necrosis & gangrene: definitions & types. Apoptosis & its relevance.	1hr	√	√
	Intracellular accumulations & alterations: Types of Intracellular accumulations with alterations in cell organelles & cytoskeleton.	1hr	√	
	Cellular adaptations & growth disturbances: Hypertrophy, Hyperplasia, Metaplasia, Agenesis, dysplasia.	1hr	√	
2	**Acute & chronic Inflammation**	**3hrs**		
	Acute inflammation: Define & describe cellular & vascular changes. Outcomes & morphological patterns of acute inflammation.	1hr	√	
	Chemical mediators of inflammation: definition, classification, description of each type, role in acute & chronic inflammation.	1hr	√	
	Chronic inflammation: definition & causes. Granulomatous inflammation: etiology, pattern & systemic effects of granulomas.	1hr	√	
3	**Regeneration & repair**	**3hrs**		
	Regeneration & repair: define & describe mechanism of regeneration & repair.	1hr	√	
	Healing by primary & secondary intention with local & systemic factors affecting wound healing.	1hr	√	
	Repair in specialized tissue: Describe repair in fractures & parenchymal organs.	1hr	√	

	Course Contents	Hrs	Must Know	Desirable to know
4	**Circulatory disturbances**	5hrs		
	Hyperemia & congestion	1hr	√	
	Edema: Define, classify, pathogenesis & correlate morphology with clinical significance.	1hr	√	
	Thrombosis: Definition, etiopathogenesis, morphology, fate & effects of thrombosis.	1hr	√	
	Embolism & Infarction: Define types with clinical significance.	1hr	√	
	Shock: Define, classify, pathogenesis, mediators & stages of shock.	1hr	√	
5	**Genetic disorders**	1hr		
	Normal karyotype, classification of genetic disorders, types of genetic change.	1hr	√	
	Down's syndrome (Trisomy 21), Klinefelter's syndrome & Turner's syndrome.		√	
	Glycogen storage disease & lysosomal storage disorders.			√
6	**Disturbances of pigment metabolism**	1hr		
	Types, changes associated with common disturbances like lipofuscin, Hemosiderin, melanin & Bilirubin.	1hr	√	
7	**Disturbances of Mineral metabolism**	1hr		
	Types & morphological changes in calcification.	1hr	√	
	Disturbance of mineral like zinc			√
8	**Diseases of Immunity**	4hrs		
	Hypersensitivity reactions: Types & differentiate between different types of hypersensitivity reactions.	1hr	√	
	Transplant rejections			√
	Autoimmune diseases: Mechanism of autoimmunity, common autoimmune diseases, SLE.	1hr	√	
	Amyloidosis: Definition, physical & chemical nature of amyloid, classification, pathogenesis, morphology, lab diagnosis with special stain & clinical correlation.	1hr	√	

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	AIDS: Epidemiology, etiology, pathogenesis, morphology, clinical features, diagnosis & handling of infected materials & health education.	1hr	√	
9	**Infectious disease**	6hrs		
	Typhoid fever: Pathogenesis, morphology & clinical features.	1hr	√	
	Syphilis: Classify various stages, pathogenesis & morphology.	1hr	√	
	Tuberculosis: Epidemiology, etiology, pathogenesis, morphology, clinical features, lab diagnosis & importance of tuberculosis in the present day context.	1hr	√	
	Leprosy: Classify, pathogenesis, differentiate between different types of leprosy, histological features & sequelae.	1hr	√	
	Fungal: Classification of fungal diseases & opportunistic fungal infections.	1hr	√	
	Parasitic: **Malaria:** Types, morphological features in P. Vivax & Falciparum Malaria & lab diagnosis.	1hr	√	
	Leishmaniasis, Filariasis, Hydatid, Cysticercosis			√
10	**Neoplasia**	5hrs		
	Nomenclature, classification & differentiation between benign & malignant neoplasms.	1hr	√	
	Precancerous lesions.			√
	Carcinogenesis	1hr	√	
	Tumor host interactions: Systemic effects & paraneoplastic syndromes.	1hr	√	
	Biology of tumor growth & Lab Diagnosis: Diagnostic workup including tumor markers.	1hr	√	
	Spread, grading & staging.	1hr	√	

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	Course Contents	Hrs	Must Know	Desirable to know
1	**Hematopathology and transfusion medicine**	16hrs		
	Introduction to hematology & hemopoiesis	1hr	√	
	Anemia: classification and clinical features.	1hr	√	
	Nutritional anemia: Iron deficiency	1hr	√	
	Folic acid/ Vit B12 deficiency anemia including pernicious anemia.	1hr	√	
	Hemolytic anemia: Definition, classification, pathogenesis and investigations.	1hr	√	
	Hereditary spherocytosis and G6PD deficiency.			√
	Haemoglobinopathies: Thalassemia, Sickle cell anemia.	1hr	√	
	Aplastic anemia	1hr	√	
	Hemorrhagic disorders: Classify and lab. Screening tests for hemorrhagic disorders. Platelet deficiency, ITP.	1hr		√
	Coagulopathies: Coagulation factor deficiency, hemophilia, DIC, factor VIII.	1hr	√	
	Leucocytic disorders: Leucocytosis, leucopenia, Leukemoid reaction.	1hr	√	
	Acute leukemia: classification and diagnosis.	1hr	√	
	Chronic leukemia: classification and diagnosis.	1hr	√	
	Paraprotenemias and Multiple myeloma	1hr	√	
	Myelodysplastic syndromes and Myeloproliferative disorders	1hr		√
	Blood groups and its relevance in transfusion medicine and hematology. Erythoblastosis foetalis.	1hr	√	
	Blood transfusion: Indications, selection of donor criteria, cross matching, untoward reactions, transmissible infections including HIV and hepatitis.	1hr	√	

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	Course Contents		Must Know	Desirable to know
	Systemic Pathology			
1	**Cardiovascular system**	**9hrs**		
	Hypertension & hypertensive heart disease: Mechanism, clinical course and sequel.	1hr	√	
	Atherosclerosis: Definition, etiopathogenesis, gross and microscopic features, complications and clinical correlation	1hr	√	
	Other diseases of blood vessels: Aneurysms Vasculitis.	1hr	√	√
	Ischemic heart disease: Categories and pathogenesis. Myocardial infarction : incidence, risk factors, pathogenesis, morphology, complications, clinical course and investigations	1hr	√	
	Rheumatic heart disease: Incidence, etiology, Pathogenesis, morphology, complications, clinical course & investigations.	1hr	√	
	Infective endocarditis: Causes, Pathogenesis, morphology, complications and differential diagnosis of cardiac vegetations.	1hr	√	
	Pericarditis and other pericardial diseases	1hr	√	
	Congenital heart disease: ASD, VSD, Fallot's teratology, Bicuspid aortic PDA	1hr		√
	Cardiomyopathies	1hr		√
2	**Respiratory system**	**7hrs**		
	Pneumonias: Etiopathogenesis, classifications, morphology, clinical course and complications.	1hr	√	
	Lung abscess: Etiopathogenesis, Morphology and complications.	1hr	√	
	Atelectasis and hyaline membrane disease.			√
	Chronic obstructive pulmonary disease: Bronchial asthma and Bronchiectasis -Etiopathogenesis, Morphology and complications.	1hr	√	

	Chronic obstructive pulmonary disease: Chronic bronchitis and Emphysema: Etiopathogenesis, Morphology types of emphysema and complications.	1hr		
	Pulmonary tuberculosis: primary and secondary, morphologic types including pleuritis, clinical course.	1hr	√	
	Occupational lung disorders: Anthracosis, silicosis, asbestosis, mesothelioma.	1hr		√
	Tumors of lung and pleura: Classification, etiopathogenesis, gross and microscopic features, pattern of spread, staging, clinical course, para-neoplastic syndromes	1hr	√	
3	**Oral cavity and salivary gland**	**2hrs**		
	Precancerous lesions of oral cavity and oral cancers: etiopathogenesis, gross and microscopic features	1hr	√	
	Differential diagnosis of swelling of salivary gland.	1hr	√	
4	**Gastrointestinal tract**	**5hrs**		
	Gastritis: etiology and types.	1hr		√
	Peptic ulcer: definition, etiopathogenesis, gross and microscopic features and complications.		√	
	Ulcers of intestine: etiological classifications, morphology of typhoid, tubercular, amoebic ulcers and bacillary dysentery. Differential diagnosis of different forms of ulcers.	1hr	√	
	Idiopathic inflammatory bowel disease: etiopathogenesis, morphology and differences between Crohn's disease and ulcerative colitis.	1hr	√	
	Appendicitis		√	
	Tumors of upper Gastrointestinal Tract: Esophagus: etiopathogenesis, morphology and clinical features. Gastric carcinoma: etiopathogenesis, classification, gross and microscopic features and clinical features. Carcinoid tumors of GIT	1hr	√ √	√
	Tumors of lower Gastrointestinal Tract: Carcinoma colon- Etiopathogenesis, morphology and clinical features. Intestinal polyps and gastrointestinal stromal tumors.	1hr	√	√

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	Course Contents		Must Know	Desirable to know
5	**Liver and Biliary Tract**	5hrs		
	Viral hepatitis: Etiopathogenesis, types, clinical source, pathology, serologic diagnosis, sequelae.	1hr	√	
	Alcoholic liver disease: Pathogenesis, morphology and correlation with clinical features.	1hr	√	
	Cirrhosis: Etiopathogenesis, classification, pathology, complications and differential diagnosis.	1hr	√	
	Portal Hypertension: Types and manifestations.		√	
	Tumors of liver: Pathology of hepatocellular carcinoma.	1hr	√	
	Disease of gall bladder: cholecystitis, cholelithiasis and tumors.	1hr		√
6	**Urinary tract system**	8hrs		
	Basics of impaired function and urinalysis	1hr	√	
	Nephritic and Nephrotic syndrome			
	Glomerulonephritis: Classification, Acute nephritis, rapidly progressive glomerulonephritis.	1hr	√	
	Renal failure: definitions, criteria, etiology, systemic manifestations and investigations.	1hr	√	
	Nephrolithiasis and obstructive nephropathy	1hr	√	
	Pyelonephritis and interstitial nephritis: etiopathogenesis of acute and chronic, morphology and clinical correlation.	1hr	√	
	Tumors of kidney and pelvis: classifications, morphology, clinical course and paraneoplastic syndromes of common tumors.	1hr	√	
	Renal vascular disorders and malformations, polycystic kidney.	1hr		√
	Urinary bladder: cystitis and carcinoma	1hr	√	

Prof & Head

	Course Contents		Must Know	Desirable to know
7	**Female genital tract**	6hrs		
	Diseases of Uterus: Endometrial hyperplasia and carcinoma, adenomyosis, smooth muscle tumors	1hr	√	
	Trophoblastic diseases: hydatidiform mole, choriocarcinoma.	1hr		√
	Diseases of cervix: cervicitis, cervical carcinoma, etiology cytological diagnosis	1hr	√	
	Ovarian tumors	1hr	√	
	Pelvic inflammatory disease including salpingitis	1hr	√	
	Genital tuberculosis			√
	Breast: Non-neoplastic and Neoplastic lesions of the breast- Classification, Morphology, grading of carcinoma of breast and differential diagnosis of breast swellings.	1hr	√	
8	**Male Genital System**	2hrs		
	Prostate: Nodular hyperplasia, carcinoma	1hr	√	
	Testicular tumors and Carcinoma of penis	1hr	√	
9	**Lymphoreticular system**	3hrs		
	Diseases of spleen: Splenomegaly and effects	1hr		√
	Lymphadenitis: Non-specific, granulomatous		√	
	Hodgkin's lymphoma, classification, morphology	1hr	√	
	Non-Hodgkin's lymphoma, classification, morphology	1hr		
10	**Dermatopathology**	2hrs		
	Skin tumors: Non-pigmented -classification and morphology.	1hr	√	
	Skin tumors: pigmented- classification and morphological features of common nevi and malignant melanoma.	1hr	√	
11	**Soft tissue**	1hr		
	Classification, morphological features of lipomatous, fibrous, blood vessels tumors. Neural, muscle and fibro histiocytic tumors.	1hr	√	

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	Course Contents	Hrs	Must Know	Desirable to know
12	Skeletal System	3hrs		
	Osteomyelitis and Metabolic diseases: rickets / osteomalacia, osteoporosis, hyperparathyroidism	1hr		√
	Tumors: Primary, osteosarcoma, osteoclastoma, Ewing's sarcoma, chondrosarcoma, metastatic	1hr	√	
	Arthritis: Rheumatoid, osteoid and tuberculous	1hr		√
13	**Central Nervous system**	**3hrs**		
	CSF and its disturbances: Cerebral oedema, raised intracranial pressure	1hr	√	
	Inflammatory disorders: Pyogenic and tuberculous meningitis, brain abscess, tuberculoma.		√	
	Classify CNS tumors-primary glioma and meningioma and metastatic	1hr	√	
	Cerebrovascular disease: atherosclerosis, thrombosis, embolism, aneurysm, hypoxia, infraction and hemorrhage	1hr		√
14.	**Endocrine system**	**4hrs**		
	Thyroid: Differential diagnosis of thyroid nodule.	1hr	√	
	Adrenal diseases: Cortical hyperplasia, atrophy, tuberculosis, tumors of cortex and medulla.	1hr		√
	Parathyroid hiperplasias and tumours , hyperparathyroidism. Pituitary tumors	1hr		√
15.	**Myopathies:** Differential diagnosis of common muscle disorders.	1hr		√
	Clinical Pathology	**3hrs**		
1.	Jaundice: Differential diagnosis and laboratory investigations in jaundice.	1hr	√	
2.	Diabetes mellitus: Classification, pathogenesis of system involvement, sequelae and complications.	1hr	√	
3.	Renal function tests	1hr	√	

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	Medical Autopsy	1hr		
1.	Indications and techniques of medical autopsies	1hr	√	

Tutorials and Integrated teaching:

A	**Hematology**
1	Blood Collection and anticoagulant
2	Peripheral Smear
3	Iron deficiency Anemia
4	Megaloblastic Anemia
5	Hemolytic Anemia
6	Erythrocyte sedimentation Rate (ESR) & Packed Cell Volume (PCV)
7	Acute Leukemia
8	Chronic Leukemia
9	Bone Marrow Examination
B	**General Pathology**
1	Cell injury & Cell death
2	Intracellular accumulations
3	Inflammation & Repair
4	Circulatory Disturbances
5	Infections
6	Neoplasia
7	HIV/AIDS
C	Systemic Pathology
1	Atherosclerosis & Ischemic heart disease
2	Rheumatic heart disease
3	Infective Endocarditis

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4	Pneumonias
5	Tumors of Lung
6	Cirrhosis
7	Glomerulonephritis
8	Peptic Ulcer
9	Ulcers of Intestine
10	Carcinoma Breast
11	Carcinoma Cervix
12	Bone tumors
13	Museum Specimens
D	**Clinical Pathology**
1	Liver function tests
2	Renal function tests
3	Gastric function tests
4	Cerebrospinal Fluid Examination (CSF)
5	Urine Examination

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PRACTICAL

1. One – third of allotted practical hours to be devoted to

   a. Performing a complete urine examination and detecting abnormalities and correlating with pathological changes.

   b. To perform with accuracy and reliability basic hematological estimation: TLC DLC, peripheral smear, staining, reporting along with history.

2. One third of allotted practical hours to be devoted to

   Identify and interpret gross and microscopic features of inflammatory lesions of different organs and common systemic diseases.

3. One third of allotted practical hours to be devoted to

   Discussion of case studies (paper) clinical, gross and microscopic features and other parameters wherever applicable to learn clinico-pathological correlations.

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Practical Syllabus:

	Clinical Pathology
1	Introduction to Pathology
2	Blood collection and anticoagulants
3	Hemoglobin estimation, RBC Count, ESR & PCV
4	Total WBC count
5	Differential WBC count
6	Development of blood & bone marrow examination.
7	Laboratory investigations in anemias :
8	Acute Leukemia
9	Chronic Leukemia
10	Blood grouping
11	Urine Analysis
12	Examination of CSF
13	Bleeding disorders
14	Sputum and fluids
15	Renal function tests and clinical charts
16	Liver function tests and clinical charts
17	Gastric & Pancreatic function tests and clinical charts
18	Investigations in infertility
19	~~Investigations in PUO~~
20	~~Examination of faeces & malabsorption~~

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General and Systemic Pathology	
1	Microscope and microscopic study of cells and tissues.
2	Cell injury & adaptation.
3	Necrosis and Gangrene
4	Pigments
5	Amyloidosis
6	Acute inflammation
7	Chronic inflammation & repair
8	Typhoid & syphilis
9	Tuberculosis and Amoebic inflammation
10	Circulatory disturbances I, II & III
11	Disorders of cell growth
12	Tumor Pathology I & II
13	Immuno Pathology I &II
14	Respiratory System I & II
15	Cardiovascular System I & II
16	Alimentary System I, II & III
17	Hepatobiliary System I & II
18	Diseases of Kidney I & II
19	Female reproductive System
20	Male reproductive System
21	Lymph nodes and Spleen
22	Skeletal System
23	Diseases of Skin
24	Central nervous System
25	Tumors of Breast and Diseases of the endocrine organs

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EXAMINATION SKILLS

Skills

1 Be able to collect, store and transport materials for various pathological tests including histopathology, cytopathology, clinical pathology, hematology and biochemistry.

2 Interpret abnormal laboratory values of common diseases

3 Do complete urine examination including microscopy.

4 Do perform and interpret hemoglobin, TLC, DLC, ESR, PCV, peripheral blood smears and red cell morphology.

5 Interpret the peripheral smears of common diseases.

6 Do blood grouping and cross matching

7 Adapt universal precautions for self protection against HIV and hepatitis and counsel the patient.

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Semester / Term Ending Theory and Practical Examination in Pathology

Semester	Theory Marks	Practical Marks
III	40	40
IV	40	40
V	40	40
Total	**120**	**120**

There will be single theory paper at the end of each semester. The pattern for theory & Practical examination will be same as **Pathology University Examination.**

Pathology University Examination: Theory, Practicals and Viva

1. Scheme of internal assessment (Pathology) : The computation of internal assessment marks shall be as per rule No 2 and 3 mentioned in this rule and regulation

2. Pattern of Theory Examination including Distribution of Marks, Questions and Time.

a. Distribution of Marks

Sr.No		Total marks
1	Theory (2 papers - 40 marks each)	80
2	Oral (Viva)	15
3	Practical	25
4	Internal assessment (Theory -15, Practicals -15)	30
	Total	150

i) Total duration - 4 hrs (each paper of 2 hrs or 120 minutes)
ii) Each paper will have 3 sections.
iii) Pattern and marking for each paper of 40 marks as provided in the table.

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Sections	Nature of Question- Two Theory Papers	Total No. of Questions	Mark (s) per Question	Total Marks
A)	Multiple Choice Questions (MCQs)	16	16x1/2	08
B)	Brief Answer Questions (BAQs)	4 out of 5	4 x 4	16
C)	Long Answer Question (LAQ)	2 out of 3	2 x 8	16
Total				40

1. **Direction- Only short answer questions may be permitted from the portions marked as "Desirable to know"**

   - Paper wise distribution of theory topics and number of questions:-

A) **Paper I:**

General Pathology inclusive of general neoplasia, Haematology inclusive of transfusion medicine.
Out of 3 LAQs in Section C, 2 questions should be from General Pathology and General Neoplasia and one question should be from Haematology inclusive of transfusion medicine.

B) **Paper II:**

Systemic Pathology inclusive of Systemic Neoplasia and Clinical Pathology.
Out of 3 LAQs in Section C, 2 questions should be from Systemic Pathology and Systemic Neoplasia and one question should be from Clinical Pathology.

4. **Marking scheme:** Each paper of 40 marks as shown in the above table.

5. **University examination Nature of practicals and duration (Pathology)**

   a) Number of students for practical Examination should not exceed more than 30 /day

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b) Practicals Marks 25

	Practicals		Marks
a.	10 Spots (2 minutes each)	4 specimen, 3 histopathology, 1 hematology slide, 1 instrument and 1 chart Identification – 1/2 mark Specific short question - 1/2 mark 1 Mark for each spot	10 Marks
b.	Urine Examination	Physical Examination and two abnormal constituents.	05 Marks
c.	Histopathology slide	Draw, label and give diagnosis.	03 Marks
d.	Haematology Examination	Peripheral blood smear : stain and report.	03 Marks
		Hemoglobin Estimation / Total leukocyte count / Blood group Estimation.	04 Marks
		Total	25 Marks

C. **Viva: Duration and topic distribution: Viva marks shall be added to theory and shall be submitted separately out of 15 Marks.**

Viva consists of two tables; on each table the student will face 2 examiners for 5 minutes each:

Table - I General and Systemic Pathology 7 Marks

Table - II Clinical Pathology and Haematology 8 Marks

Total 15 Marks

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TEACHING LEARNING METHODS:

- Structured interactive sessions
- Small group discussion
- Practical including demonstrations
- Problem based exercises
- Self learning tools
- Interactive learning
- E-modules

LEARNING RESOURCE MATERIALS:

- Text books
  1) Robbin's : Pathologic basis of Disease
  2) Hematology De Gruchy
  3)Text book of Pathology by Harsh Mohan
  4) Clinical Pathology: A Practical Manual by Sabitri Sanyal
- Reference books
- Practical note books
- Internet resources

TIME OF EVALUATION:

There should be regular formative assessment. Formative assessment, day to day performance should be given greater importance. Examination of pathology should be at the end of 5th semester and formative assessment in middle of 3rd and 4th semester and summative assessment at the end of 5th semester.

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II. Total number of teaching hours: 300hrs (IIIrd, IVth & Vth Semester)

a) Theory (lectures & tutorials)	160 hrs
b) Practicals	110 hrs
c)Revisions & Evaluations (internal)	30 hrs
Total	300hrs

III. Distribution of teaching hours:

1) General Pathology	36hrs
2) Hematology	16hrs
3) Systemic Pathology	57hrs
4) Clinical Pathology	03hrs
6) Autopsy	01hrs
5) Tutorials	47hrs
Total	160hrs

	Course Contents	Hrs	Must Know	Desirable to know	Nice to know
	General Pathology				
1	**Cell injury**	**6hrs**			
	Common definitions in pathology and causes of cell injury.	1hr	√		
	Modes of cell injury: Mechanisms of cell injury	1hr	√		
	Reversible cell injury: Definitions, cellular swelling, fatty change.	1hr	√		
	Irreversible cell injury: Definition Necrosis & gangrene: definitions & types. Apoptosis & its relevance.	1hr	√	√	
	Intracellular accumulations & alterations: Types of Intracellular accumulations with alterations in cell organelles & cytoskeleton.	1hr	√		
	Cellular adaptations & growth disturbances: Hypertrophy, Hyperplasia, Metaplasia, Agenesis, dysplasia.	1hr	√		
	Cellular ageing and mechanism				√
2	**Acute & chronic Inflammation**	**3hrs**			
	Acute inflammation: Define & describe cellular & vascular changes. Outcomes & morphological patterns of acute inflammation.	1hr	√		
	Chemical mediators of inflammation: definition, classification, description of each type, role in acute & chronic inflammation.	1hr	√		
	Chronic inflammation: definition & causes.	1hr	√		
	Granulomatous inflammation: etiology, pattern & systemic effects of granulomas.				
3	**Regeneration & repair**	**3hrs**			
	Regeneration & repair: define & describe mechanism of regeneration & repair.	1hr	√		
	Healing by primary & secondary intention with local & systemic factors affecting wound healing.	1hr	√		
	Repair in specialized tissue: Describe repair in fractures & parenchymal organs.	1hr	√		
	Stem cell concept-Regenerative medicine				√

4	**Circulatory disturbances**	**5hrs**			
	Hyperemia & congestion	1hr	√		
	Edema: Define, classify, pathogenesis & correlate morphology with clinical significance.	1hr	√		
	Thrombosis: Definition, etiopathogenesis, morphology, fate & effects of thrombosis.	1hr	√		
	Embolism & Infarction: Define types with clinical significance.	1hr	√		
	Shock: Define, classify, pathogenesis, mediators & stages of shock.	1hr	√		
5	**Genetic disorders**	**1hr**			
	Normal karyotype, classification of genetic disorders, types of genetic change.	1hr	√		
	Down's syndrome (Trisomy 21), Klinefelter's syndrome & Turner's syndrome.		√		
	Glycogen storage disease & lysosomal storage disorders.			√	
6	**Disturbances of pigment metabolism**	**1hr**			
	Types, changes associated with common disturbances like lipofuscin, Hemosiderin, melanin & Bilirubin.	1hr	√		
7	**Disturbances of Mineral metabolism**	**1hr**			
	Types & morphological changes in calcification.	1hr	√		
	Disturbance of mineral like zinc			√	
8	**Diseases of Immunity**	**4hrs**			
	Hypersensitivity reactions: Types & differentiate between different types of hypersensitivity reactions.	1hr	√		
	Transplant rejections			√	
	Autoimmune diseases: Mechanism of autoimmunity, common autoimmune diseases, SLE.	1hr	√		
	Amyloidosis: Definition, physical & chemical nature of amyloid, classification, pathogenesis, morphology, lab diagnosis with special stain & clinical correlation.	1hr	√		

	AIDS: Epidemiology, etiology, pathogenesis, morphology, clinical features, diagnosis & handling of infected materials & health education.	1hr	√		
9	**Infectious disease**	**7hrs**			
	Typhoid fever: Pathogenesis, morphology & clinical features.	1hr	√		
	Syphilis: Classify various stages, pathogenesis & morphology.	1hr	√		
	Tuberculosis: Epidemiology, etiology, pathogenesis, morphology, clinical features, lab diagnosis & importance of tuberculosis in the present day context.	2hr	√		
	Leprosy: Classify, pathogenesis, differentiate between different types of leprosy, histological features & sequelae.	1hr	√		
	Fungal: Classification of fungal diseases & opportunistic fungal infections.	1hr	√		
	Parasitic: Malaria: Types, morphological features in P. Vivax &Falciparum Malaria & lab diagnosis.	1hr	√		
	Leishmaniasis, Filariasis, Hydatid, Cysticercosis			√	
10	**Neoplasia**	**5 hrs**			
	Nomenclature, classification & differentiation between benign & malignant neoplasms.	1hr	√		
	Precancerous lesions.			√	
	Carcinogenesis	1hr	√		
	Tumor host interactions: Systemic effects & paraneoplastic syndromes.	1hr	√		
	Biology of tumor growth & Lab Diagnosis: Diagnostic workup including tumor markers.	1hr	√		
	Spread, grading & staging.	1hr	√		
	Molecular basis of cancer				√
	Tumor immunology				√
11	**Environmental Pathology**	1hr			
	Air pollution, Iatrogenic drug injury. Radiation & physical injury & Obesity, Tobacco& Alcoholism	1hr			√

	Course Contents	Hrs	Must Know	Desirable to know	Nice to know
1	**Hematopathology and transfusion medicine**	**16hrs**			
	Introduction to hematology & hemopoiesis	1hr	√		
	Anemia: classification and clinical features.	1hr	√		
	Nutritional anemia: Iron deficiency, Folic acid/ Vit B12 deficiency anemia including pernicious anemia.	2hr	√		
	Hemolytic anemia: Definition, classification, pathogenesis and investigations.	1hr	√		
	Hereditary spherocytosis and G6PD deficiency.			√	
	Haemoglobinopathies: Thalassemia, Sickle cell anemia.	1hr	√		
	Aplastic anemia	1hr	√		
	Hemorrhagic disorders: Classify and lab. Screening tests for hemorrhagic disorders. Platelet deficiency, ITP.	1hr		√	
	Coagulopathies: Coagulation factor deficiency, hemophilia, DIC.	1hr	√		
	Leucocytic disorders: Leucocytosis, leucopenia, Leukemoid reaction.	1hr	√		
	Acute leukemia: classification and diagnosis.	1hr	√		
	Chronic leukemia: classification and diagnosis.	1hr	√		
	Paraprotenemias: Multiple myeloma	1hr	√		
	Myelodysplastic syndromes and Myeloproliferative disorders	1hr		√	
	Blood groups and its relevance in transfusion medicine and hematology. Erythoblastosis foetalis.	1hr	√		
	Blood transfusion: Indications, selection of donor criteria, cross matching, untoward reactions, transmissible infections including HIV and hepatitis.	1hr	√		

	Course Contents	Hrs	Must Know	Desirable to know	Nice to know
	Systemic Pathology				
1	**Cardiovascular system**	**9hrs**			
	Hypertension & hypertensive heart disease	1hr	√		
	Atherosclerosis: Definition, etiopathogenesis, gross and microscopic features, complications and clinical correlation	1hr	√		
	Other diseases of blood vessels : Aneurysms Vasculitis	1hr	√	√	
	Ischemic heart disease: Categories and pathogenesis. Myocardial infarction : incidence, risk factors, pathogenesis, morphology, complications, clinical course and investigations	1hr	√		
	Rheumatic heart disease: Incidence, etiology, Pathogenesis, morphology, complications, clinical course & investigations.	1hr	√		
	Infective endocarditis:Causes, Pathogenesis, morphology, complications and differential diagnosis of cardiac vegetations.	1hr	√		
	Pericarditis and other pericardial diseases	1hr	√		
	Congenital heart disease: ASD, VSD, Fallot's teratology, Bicuspid aortic PDA	1hr		√	
	Cardiomyopathies	1hr		√	
2	**Respiratory system**	**8hrs**			
	Pneumonias: Etiopathogenesis, classifications, morphology, clinical course and complications.	1hr	√		
	Lung abscess: Etiopathogenesis, Morphology and complications.	1hr	√		
	Atelectasis and hyaline membrane disease.			√	
	Chronic obstructive pulmonary disease:Bronchial asthma and Bronchiectasis -Etiopathogenesis, Morphology and complications.	1hr	√		
	Chronic bronchitis and Emphysema: Etiopathogenesis, Morphology types of emphysema and complications.	1hr	√		
	Pulmonary tuberculosis: primary and secondary, morphologic types including pleuritis, clinical course.	1hr	√		

	Occupational lung disorders: Anthracosis, silicosis, asbestosis, mesothelioma.	1hr		√	
	Tumors of lung and pleura:Classification, etiopathogenesis, gross and microscopic features, pattern of spread, staging, clinical course, para-neoplastic syndromes.	1hr	√		
3	**Oral cavity and salivary gland**	**2hrs**			
	Precancerous lesions of oral cavity and oral cancers: etiopathogenesis, gross and microscopic features.	1hr	√		
	Differential diagnosis of swelling of salivary gland.	1hr	√		
4	**Gastrointestinal tract**	**5hrs**			
	Gastritis: etiology and types.	1hr		√	
	Peptic ulcer: definition, etiopathogenesis, gross and microscopic features and complications.		√		
	Ulcers of intestine: etiological classifications, morphology of typhoid, tubercular, amoebic ulcers and bacillary dysentery. Differential diagnosis of different forms of ulcers.	1hr	√		
	Idiopathic inflammatory bowel disease: etiopathogenesis, morphology and differences between Crohn's disease and ulcerative colitis.	1hr	√		
	Appendicitis		√		
	Tumors of upper Gastrointestinal Tract: Esophagus: etiopathogenesis, morphology and clinical features. Gastric carcinoma: etiopathogenesis, classification, gross and microscopic features and clinical features. Carcinoid tumors of GIT.	1hr	√	√	
	Tumors of lower Gastrointestinal Tract: Carcinoma colon- Etiopathogenesis, morphology and clinical features.	1hr	√		
	Intestinal polyps and gastrointestinal stromal tumors.			√	
5	**Liver and Biliary Tract**	**5hrs**			
	Viral hepatitis: Etiopathogenesis, types, clinical source, pathology, serologic diagnosis, sequelae.	1hr	√		
	Alcoholic liver disease: Pathogenesis, morphology and correlation with clinical features.	1hr	√		
	Cirrhosis: Etiopathogenesis, classification, pathology,complications & differential diagnosis.	1hr	√		

	Portal Hypertension: Types and manifestations.		√		
	Tumors of liver: Pathology of hepatocellular carcinoma.	1hr	√		
	Disease of gall bladder: cholecystitis, cholelithiasis and tumors.	1hr		√	
6	**Urinary tract system**	**8hrs**			
	Basics of impaired function and urinalysis	1hr	√		
	Nephritic and Nephrotic syndrome				
	Glomerulonephritis: Classification, Acute nephritis, rapidly progressive glomerulonephritis.	1hr	√		
	Renal failure: definitions, criteria, etiology, systemic manifestations and investigations.	1hr	√		
	Nephrolithiasis and obstructive nephropathy	1hr	√		
	Pyelonephritis and interstitial nephritis: etiopathogenesis of acute and chronic, morphology and clinical correlation.	1hr	√		
	Tumors of kidney and pelvis: classifications, morphology, clinical course and paraneoplastic syndromes of common tumors.	1hr	√		
	Renal vascular disorders and malformations, polycystic kidney.	1hr		√	
	Urinary bladder: cystitis and carcinoma	1hr	√		
7	**Female genital tract**	**6hrs**			
	Diseases of Uterus: Endometrial hyperplasia and carcinoma, adenomyosis, smooth muscle tumors	1hr	√		
	Trophoblastic diseases: hydatidiform mole, choriocarcinoma.	1hr		√	
	Diseases of cervix: cervicitis, cervical carcinoma, etiology cytological diagnosis	1hr	√		
	Ovarian tumors	1hr	√		
	Pelvic inflammatory disease including salpingitis	1hr	√		
	Genital tuberculosis			√	
	Breast: Non-neoplastic and Neoplastic lesions of the breast- Classification, Morphology, grading of carcinoma of breast and differential diagnosis of breast swellings.	1hr	√		

8	**Male Genital System**	**3hrs**			
	Prostate: Nodular hyperplasia, carcinoma	1hr	√		
	Testicular tumors	1hr	√		
	Carcinoma of penis	1hr	√		
9	**Lymphoreticular system**	**3hrs**			
	Diseases of spleen: Splenomegaly and effects	1hr		√	
	Lymphadenitis: Non-specific, granulomatous		√		
	Hodgkin's lymphoma, classification, morphology	1hr	√		
	Non-Hodgkin's lymphoma, classification, morphology	1hr	√		
10	**Dermatopathology**	**2hrs**			
	Skin tumors: Non-pigmented -classification and morphology.	1hr	√		
	Skin tumors: pigmented- classification and morphological features of common nevi and malignant melanoma.	1hr	√		
11	**Soft tissue**	**1hr**			
	Classification, morphological features of lipomatous, fibrous, blood vessels tumors. Neural, muscle and fibro histiocytic tumors.	1hr	√		
12	**Skeletal System**	**3hrs**			
	Osteomyelitis and Metabolic diseases: rickets / osteomalacia, osteoporosis, hyperparathyroidism	1hr		√	
	Tumors: Primary, osteosarcoma, osteoclastoma, Ewing's sarcoma, chondrosarcoma, metastatic	1hr	√		
	Arthritis: rheumatoid, osteoid and tuberculosis	1hr		√	
13	**Central Nervous system**	**3hrs**			
	CSF and its disturbances: Cerebral oedema, raised intracranial pressure	1hr	√		
	Inflammatory disorders: Pyogenic and tuberculous meningitis, brain abscess, tuberculoma.		√		
	Cerebrovascular disease: atherosclerosis, thrombosis, embolism, aneurysm, hypoxia, infraction and hemorrhage	1hr		√	
	Classify CNS tumors-primary glioma and meningioma and metastatic	1hr	√		

14	**Endocrine system**	**4hrs**			
	Thyroid: Differential diagnosis of thyroid nodule.	1hr	√		
	Adrenal diseases: Cortical hyperplasia, atrophy, tuberculosis, tumors of cortex and medulla.	1hr		√	
	Parathyroid hiperplasias and tumours , hyperparathyroidism. Pituitary tumors	1hr		√	
15	**Myopathies:** Differential diagnosis of common muscle disorders.	**1hr**		√	
	Clinical Pathology	**3hrs**			
1	Jaundice: Differential diagnosis and laboratory investigations in jaundice.	1hr	√		
2	Diabetes mellitus: Classification, pathogenesis of system involvement, sequelae and complications.	1hr	√		
3	Renal function tests	1hr	√		
	Medical Autopsy	**1hr**			
1	Indications and techniques of medical autopsies	1hr	√		

Tutorials and Integrated teaching:

A	**Hematology**
1	Blood Collection and anticoagulant
2	Peripheral Smear
3	Iron deficiency Anemia
4	Megaloblastic Anemia
5	Hemolytic Anemia
6	Erythrocyte sedimentation Rate (ESR) & Packed Cell Volume (PCV)
7	Acute Leukemia
8	Chronic Leukemia
9	Bone Marrow Examination
B	**General Pathology**
1	Cell injury & Cell death
2	Intracellular accumulations
3	Inflammation & Repair
4	Circulatory Disturbances
5	Infections
6	Neoplasia
7	HIV/AIDS
C	**Systemic Pathology**
1	Atherosclerosis & Ischemic heart disease
2	Rheumatic heart disease
3	Infective Endocarditis
4	Pneumonias

5	Tumors of Lung
6	Cirrhosis
7	Glomerulonephritis
8	Peptic Ulcer
9	Ulcers of Intestine
10	Carcinoma Breast
11	Carcinoma Cervix
12	Bone tumors
13	Museum Specimens
D	**Clinical Pathology**
1	Liver function test & clinical charts
2	Renal function test & clinical charts
3	Gastric function test & clinical charts
4	Cerebrospinal Fluid Examination (CSF)
5	Urine Examination

PRACTICAL:

1. One – third of allotted practical hours to be devoted to

   a. Performing a complete urine examination and detecting abnormalities and correlating with pathological changes.

   b. To perform with accuracy and reliability basic hematological estimation: TLC DLC, peripheral smear, staining, reporting along with history.

2. One third of allotted practical hours to be devoted to

   Identify and interpret gross and microscopic features of inflammatory lesions of different organs and common systemic diseases.

3. One third of allotted practical hours to be devoted to

   Discussion of case studies (paper) clinical, gross and microscopic features and other parameters wherever applicable to learn clinico-pathological correlations.

Practical Syllabus:

	Clinical Pathology
1	Introduction to Pathology
2	Blood collection and anticoagulants
3	Hemoglobin estimation
4	Total WBC count
5	Differential WBC count
6	Development of blood & bone marrow examination.
7	Laboratory investigations in anemias :
8	Acute Leukemia
9	Chronic Leukemia
10	Blood grouping
11	Urine Examination
12	Examination of CSF
13	Bleeding disorders
14	Sputum and fluid tests
15	Renal function tests
16	Liver function tests
17	Gastric & Pancreatic function tests
18	Investigations in infertility

General and Systemic Pathology	
1	Microscope and microscopic study of cells and tissues
2	Retrogressive changes
3	Necrosis and Gangrene
4	Pigments
5	Amyloidosis
6	Acute inflammation
7	Chronic inflammation & repair
8	Typhoid & syphilis
9	Tuberculosis and Leprosy
10	Circulatory disturbances I, II & III
11	Disorders of cell growth
12	Tumor Pathology I & II
13	Immuno Pathology I &II
14	Respiratory System I & II
15	Cardiovascular System I & II
16	Alimentary System I, II & III
17	Hepatobiliary System I & II
18	Diseases of Kidney I & II
19	Female reproductive System
20	Male reproductive System
21	Lymph nodes and Spleen
22	Skeletal System
23	Diseases of Skin
24	Central nervous System
25	Tumors of Breast and Diseases of the endocrine organs

EXAMINATION SKILLS

1 Be able to collect, store and transport materials for various pathological tests including histopathology, cytopathology, clinical pathology, hematology and biochemistry.

2 Interpret abnormal laboratory values of common diseases

3 Do complete urine examination including microscopy.

4 Do perform and interpret hemoglobin, TLC, DLC, ESR, PCV, peripheral blood smears and red cell morphology.

5 Interpret the peripheral smears of common diseases.

6 Do blood grouping and cross matching

7 Adapt universal precautions for self protection against HIV and hepatitis and counsel the patient.

Semester / Term Ending Theory and Practical Examination in Pathology

Semester	Theory Marks	Practical Marks
III	40	40
IV	40	40
V	40	40
Total	**120**	**120**

There will be single theory paper at the end of each semester. The pattern for theory & Practical examination will be same as **Pathology University Examination.**

Pathology University Examination: Theory, Practicals and Viva

1. Scheme of internal assessment (Pathology) : The computation of internal assessment marks shall be as per rule No 2 and 3 mentioned in this rule and regulation

2. Pattern of Theory Examination including Distribution of Marks, Questions and Time.

a. Distribution of Marks

Sr.No		Total marks
1	Theory (2 papers - 40 marks each)	80
2	Oral (Viva)	15
3	Practical	25
4	Internal assessment (Theory -15, Practicals -15)	30
	Total	150

i) Total duration - 4 hrs (each paper of 2 hrs or 120 minutes)
ii) Each paper will have 3 sections.
iii) Pattern and marking for each paper of 40 marks as provided in the table

Sections	Nature of Question-Two Theory Papers	Total No. of Questions	Mark (s) per Question	Total Marks
A)	Multiple Choice Questions (MCQs)	16	1/2	08
B)	Brief Answer Questions (BAQs)	4 out of 5	4 x 4	16
C)	Long Answer Question (LAQ)	2 out of 3	2 x 8	16
Total				**40**

1. **Direction- Only short answer questions may be permitted from the portions marked as "Desirable to know"**

   - Paper wise distribution of theory topics and number of questions:-

A) **Paper I:**

General Pathology inclusive of general neoplasia, Haematology inclusive of transfusion medicine.
Out of 3 LAQs in Section C, 2 questions should be from General Pathology and General Neoplasia and one question should be from Haematology inclusive of transfusion medicine.

B) **Paper II:**

Systemic Pathology inclusive of Systemic Neoplasia and Clinical Pathology.
Out of 3 LAQs in Section C, 2 questions should be from Systemic Pathology and Systemic Neoplasia and one question should be from Clinical Pathology.

4. **Marking scheme**: Each paper of 40 marks as shown in the above table.

5. **University examination Nature of practicals and duration (Pathology)**

   a) Number of students for practical Examination should not exceed more than 35 /day

b) Practicals

Marks 25

	Practicals		Marks
a.	10 Spots (2 minutes each)	4 specimen, 3 histopathology, 1 hematology slide, 1 instrument and 1 chart Identification – 1/2 mark Specific short question - 1/2 mark 1 Mark for each spot	10 Marks
b.	Urine Examination	Physical Examination and two abnormal constituents.	05 Marks
c.	Histopathology slide	Draw, label and give diagnosis.	03 Marks
d.	Haematology Examination	Peripheral blood smear staining and do differential leukocyte count.	03 Marks
		Hemoglobin Estimation / Total leukocyte count / Blood group Estimation.	04 Marks
		Total	25 Marks

C. **Viva: Duration and topic distribution: Viva marks shall be added to theory and shall be submitted separately out of 15 Marks.**

Viva consists of two tables; on each table the student will face 2 examiners for 5 minutes each:

Table - I General and Systemic Pathology 7 Marks

Table - II Clinical Pathology and Haematology 8 Marks

Total 15 Marks

TEACHING LEARNING METHODS:

- Structured interactive sessions
- Small group discussion
- Practical including demonstrations
- Problem based exercises
- Self learning tools
- Interactive learning
- E-modules

LEARNING RESOURCE MATERIALS:

- Text books
  1) Robbin's : Pathologic basis of Disease
  2) Hematology De Gruchy
  3)Text book of Pathology by Harsh Mohan
  4) Clinical Pathology: A Practical Manual by Sabitri Sanyal
- Reference books
- Practical note books
- Internet resources

TIME OF EVALUATION:

There should be regular formative assessment. Formative assessment, day to day performance should be given greater importance. Examination of pathology should be at the end of 5th semester and formative assessment in middle of 3rd and 4th semester and summative assessment at the end of 5th semester.

Approved in BOM 43/2015, dated 06/11/2015 resolution no. 3.2 (d)

Resolution No. 3.2(d): Resolved to delete the topics OSPE, Mal absorption, PUO, Gastric Analysis in Practical of Pathology (UG) for the batch of Students entering into 2nd MBBS from the academic year 2016-17 onwards.

Approved in BOM 43/2015, Dated 06/11/2015, Resolution No. – 3.3 (d)

Resolution No. 3.3(d): Resolved that the basic research methodology should be taught to UG and PG students for all courses as per their regulatory Council Norms.

Approved in BOM 32/2013, Dated 29/10/2013

Resolution No. – 5.2.4.

5.2.4 **Introduction of "Quality control in Laboratory" in MD Pathology**

Resolution No. 5.2.4 : Resolved to add topic "Quality control in Laboratory" in MD Pathology theory syllabus.

Resolution No. 3.2(c)

BOM 40/2015, dated 13/03/2015, resolution no. 3.2 (c)

Resolution No. 3.2(c): Resolved to accept the break-up of 25 & 15 marks in Practical & Viva examination in Microbiology, Pathology and Pharmacology in II[nd] MBBS. (Annexure-23)

ANNEXURE - 23

MGM UNIVERSITY OF HEALTH SCIENCES, NAVI MUMBAI

MARKLIST FOR PRACTICAL AND VIVA

CENTRE: -

SUBJECT: - PATHOLOGY

EXAM :- SECOND MBBS MONTH/YEAR :- .....

DISTRIBUTION OF PRACTICAL MARKS

A: 10 spots 2 minutes each (4 Specimen, 1 Instrument, 3 histopathology slides, 1 haematology slide and 1 chart) ½ marks for identification and ½ mark for Specific short question together 1 mark for each spot. - 10 Marks.

B: Urine Examination - 05 Marks.

C: Histopathology Slides - 03 Marks.

HAEMATOLOGY EXAMINATION

D: Periferal Blood smear stain & Report - 03 Marks

E: Hb/ TLC/ Blood group - 05 Marks.

F: Total - 26 Marks.

DISTRIBUTION OF VIVA MARKS

G: General of Systemetic Pathology - 07 Marks

H: Clinical Pathlo. & Haematology - 07 Marks

I: Total - 14 Marks.

Seat No.	A (10)	B (05) 04	C (03)	D (03)	E (05)	F Practical Total 26 Max.26 Marks. Min.13 Marks	G (07) 8	H (07) 7	I Viva Total 14 Marks. 15

NAME OF EXAMINER COLLEGE SIGNATURE WITH DATE

1) _____ _____ (Convenor) _____

2) _____ _____ (Internal) _____

3) _____ _____ (External) _____

4) _____ _____ (External) _____

Resolution No. 3.2 (h)

BOM 40/2015, dated 13/03/2015, Resolution No. 3.2 (h)

ANNEXURE - 6

MGM Medical College, Kamothe,
Department of pathology.

Ref: MGMPatho - July 2015-179

Date: 15/7/15

To,
The Registrar,
MGMIHS,
Kamothe, Navi Mumbai.

Sub: Changes in the syllabus of Second MBBS (Para- clinical).

Respected Sir,

This is to inform you that there are no significant changes in the syllabus of second MBBS (Para-clinical) submitted to us in the subject of pathology except that the total time for theory examination will be 2hrs instead of 2hrs 30minutes [General section, A (iii)] and typing error in section B- 2 (2.2), instead of theory it should be practicals.

This is for your kind information and necessary action.

Thanking you,

Yours sincerely,

15.7.2015

Dr. Reeta Dhar.

Prof & HOD

Dept. of P athology.

Prof & Head
Dept. of Pathology
M G M Medical College
Kamothe, Navi Mumbai

(Approved in BOM 40/2015, dated 13.03.2015, Resolution No. 3.2(h))

MGM Institute Of Health Sciences
INWARD NO. 4874
DATE. 15/7/15

MGM INSTITUTE OF HEALTH SCIENCES
(Deemed University u/s 3 of UGC Act, 1956)
Grade 'A' Accredited by NAAC
Sector-1, Kamothe, Navi Mumbai - 410209
Tel. No. 022-27432471, 022-27432994, Fax No. 022 - 27431094
E-mail : registrar@mgmuhs.com ; Website : www.mgmuhs.com

SECOND YEAR MBBS

PARA-CLINICAL

SYLLABUS FOR THE SUBJECT OF
SECOND YEAR MBBS COURSE
AT CONSTITUENT COLLEGES OF
MGM INSTITUTE OF HEALTH SCIENCES,
NAVI MUMBAI / AURANGABAD

15.7.15
Prof & Head
Dept. of Pathology
M G M Medical College
Kamothe Navi Mumbai

EXAMINATION PATTERN FOR PATHOLOGY, MICROBIOLOGY & PHARMACOLOGY

GENERAL SECTION

A. PASSING:-

i. A candidate must obtain 50% in aggregate with a minimum of 50% in Theory including oral and minimum of 50% in practical and 35% in internal assessment combined theory and practical.

ii. Prelims examination on the basis of University pattern (Theory, Practical and viva): Minimum 3-4 weeks gap between Prelims and University examination.

iii. The total time will be 2 hours each for theory papers of 40 marks.

iv. Practical (total time 3 hours). The details of Practical examination exercises will be notified by Head of the department / Head of Institution.

v. Prelim pattern will be as per the University exam with 2 papers in theory each of 2 hours duration.

B. CALCULATION OF INTERNAL ASSESSMENT MARKS:

- Calculation of Theory and Practical Internal Assessment marks for **Pathology, Microbiology & Pharmacology** shall be as per following rule

1. Distribution of 15 marks in theory shall be as follows:

1.1 5 marks for attendance as per the following guidelines:
Below 75% -0
Upto75% -2.5
Above 75% proportionately higher marks at pro-rate basis (multiplication factor is 0.1)

1.2 10 marks for academic performance in theory in 2 term and prelim exam- (average of all the 3 internal examination shall be taken)

1.3 Marks in decimal computed in 1.1, 1.2 & 1.3 should be converted into whole number at the end.

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Dept. of Pathology
G M Medical College

2. Distribution of 15 marks in practical shall be as follow:

2.1 5 marks for attendance as per the following guidelines:

Below 75%- 0

Upto 75% -2.5

Above 75% proportionately higher marks at pro -rate basis (multiplication factor is 0.1)

2.2 10 marks for academic performance in Practicals in 2 term and prelim exam- (average of all the internal examination shall be taken).

2.3 Marks in decimal computed in 1.1, 1.2 & 1.3 should be converted into whole number at the end.

Minimum marks required by a candidate to be declared as pass will be as follows:

Subject	Theory and Oral		Practical		Internal assessment		Total	
	Max	Min Passing	Max	Min Passing	Max	Min Passing	Max	Min Passing
Pathology	95	47	25	13	30	11	150	75
Microbiology	95	47	25	13	30	11	150	75
Pharmacology	95	47	25	13	30	11	150	75
FMT	50	25	30	15	20	7	100	50

Prof & Head
Dept. of Pathology
G M Medical College
Kamothe Navi Mumbai

Dept. of Pathology
G M Medical College
Kamothe Navi Mumbai

SECOND YEAR MBBS
SYLLABUS: PATHOLOGY
2015

MGM Medical College, Kamothe,
Department of pathology.

Ref: MGMPatho - July 2015-180

Date: 15/7/15

To,
The Registrar,
MGMIHS,
Kamothe, Navi Mumbai.

Sub: Incorporation of Changes in the syllabus of Second MBBS (Para- clinical).

Respected Sir,

This is to inform you that according to resolution No. 3.2(h) required changes have been incorporated in the subject of pathology, IInd MBBS syllabus.

This is for your kind information.

Thanking you,

Yours sincerely,

RDhar. 15.7.2015

Dr. Reeta Dhar.

Prof & HOD

Dept. of P athology.

Prof. & Head
Dept. of Pathology
M G M Medical College
Kamothe, Navi Mumbai

MGM Institute Of Health Sciences
INWARD NO. 4875

PATHOLOGY

Learning Objectives

At the end of the course, the learned shall be able to,

1. Know the principles of collection, handling, storage, and dispatch of clinical samples from patient, in a proper manner.
2. Perform and interpret in a proper manner the basic clinico-pathological procedures.
3. Have an understanding of the common hematological disorders and the investigations necessary to diagnose them and determine their prognosis.
4. Understand the concept of cell injury, the change produces thereby, in different tissues and organs and the body capacity for healing.
5. Understand normal haemostatic mechanism, the derangements of this mechanism and the effect of human system.
6. Understand the etiopathogenesis, the pathological effects, and the clinico-pathological correlation of common infectious and non-infectious diseases.
7. Understand the concept of neoplasia with respect to etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.
8. Correlate normal and altered morphology (gross and microscopy) of different organ systems in different diseases to the extent needed of understanding of the disease processes and their clinical significance.
9. Have knowledge of common immunological disorders and their effects on human body.

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Dept. of Pathology

	Course Contents	Must Know	Desirable to know
	General Pathology		
1.	**Cell injury :** • Common definitions in pathology and causes of cell injury. • Modes of cell injury: Mechanisms of cell injury • Reversible cell injury: Definitions, cellular swelling, fatty change. • Irreversible cell injury: Definition Necrosis & gangrene: definitions & types. Apoptosis & its relevance. Differentiate necrosis & apoptosis • Intracellular accumulations & alterations: Types of Intracellular accumulations with alterations in cell organelles & cytoskeleton. • Cellular adaptations & growth disturbances: Hypertrophy, Hyperplasia, Metaplasia, Agenesis.	√ √ √ √ √ √	
2.	**Acute & chronic Inflammation:** • Acute inflammation: Define & describe cellular & vascular changes. Outcomes & morphological patterns of acute inflammation. • Chemical mediators of inflammation: definition, classification, description of each type, role in acute & chronic inflammation. • Chronic inflammation: definition & causes. Granulomatous inflammation: etiology, pattern & systemic effects of granulomas.	√ √ √	

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Prof & Head
Dept of Pathology

	Course Contents	Must Know	Desirable to know
3.	**Regeneration & repair :** • Regeneration & repair: define & describe mechanism of regeneration & repair. • Healing by primary & secondary intention with local & systemic factors affecting wound healing. • Repair in specialized tissue: Describe repair in fractures & parenchymal organs.	√ √ √	
4.	**Circulatory disturbances:** • Edema: Define, classify, pathogenesis & correlate morphology with clinical significance. • Hyperemia & congestion • Thrombosis: Definition, etiopathogenesis, morphology, fate & effects of thrombosis. • Embolism & Infarction: Define types with clinical significance. • Shock: Define, classify, pathogenesis, mediators & stages of shock.	√ √ √ √ √	
5.	**Genetic disorders:** • Normal karyotype, classification of genetic disorders, types of genetic change. • Down's syndrome (Trisomy 21), Klinefelter's syndrome & Turner's syndrome. • Glycogen storage disease & lysosomal storage disorders.	√ √	√
6.	**Disturbances of pigment metabolism:** Types, changes associated with common disturbances like lipofuscin, Hemosiderin, melanin & Bilirubin.	√	

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	Course Contents	Must Know	Desirable to know
7.	**Disturbances of Mineral metabolism:** • Types & morphological changes if calcification. • Disturbance of mineral like zinc	√	√
8.	**Diseases of Immunity:** • Hypersensitivity reactions: Types & differentiate between different types of hypersensitivity reactions. • Transplant rejections • Autoimmune diseases: Mechanism of autoimmunity, common autoimmune diseases, SLE. • Amyloidosis: Definition, physical & chemical nature of amyloid, classification, pathogenesis, morphology, lab diagnosis with special stain & clinical correlation. • AIDS: Epidemiology, etiology, pathogenesis, morphology, clinical features, diagnosis & handling of infected materials & health education.	√ √ √ √	√
9.	**Infectious disease:** **Typhoid fever:** Pathogenesis, morphology & clinical features. • **Syphilis:** Classify various stages, pathogenesis & morphology. • **Tuberculosis:** Epidemiology, etiology, pathogenesis, morphology, clinical features, lab diagnosis & importance of tuberculosis in the present day context. • **Leprosy:** Classify, pathogenesis, differentiate between different types of leprosy, histological features & sequelae. • **Fungal:** Classification of fungal diseases & opportunistic fungal infections. • **Parasitic:** • **Malaria:** Types, morphological features in P. Vivax & falciparum malaria & lab diagnosis. **Leishmaniasis, Filariasis, Hydatid, Cysticercosis**	√ √ √ √ √	√

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	Course Contents	Must Know	Desirable to know
8	**Osteopathology**		
	• Osteomyelitis : acute, chronic, tuberculosis	√	
	• Metabolic diseases: rickets / osteomalacia, osteoporosis, hyperparathyroidism	√	
	• Tumors: Primary, osteosarcoma, osteoclastoma, Ewing's sarcoma, chondrosarcoma, metastatic	√	
	• Arthritis: rheumatoid, osteoid and tuberculosis	√	
	• Healing of fractures	√	
9	**Endocrine pathology**		
	• Diabetes mellitus: types, pathogenesis, pathology	√	
	• Non neoplastic lesion of thyroid : Iodine deficiency goiter, autoimmune thyroiditis, thyrotoxicosis, myxoedema	√	
	• Tumors of thyroid : adenoma, carcinoma : papillary, follicular, medullary, anaplastic	√	
	• Adrenal disease: Cortical hyperplasia, atrophy, tuberculosis, tumors of cortex and medulla		√
	• Parathyroid hyperplasia and tumors		√
10	**Neuropathology**		
	• Inflammatory disorders: Pyogenic and tuberculous meningitis, brain abscess, tuberculoma.	√	
	• Classify CNS tumors-primary glioma and meningioma and metastatic	√	
	• CSF and its disturbances: Cerebral oedema, raised intracranial pressure	√	
	• Cerebrovascular disease: atherosclerosis, thrombosis, embolism, aneurysm, hypoxia, infraction and hemorrhage		√
	Dermatopathology		
	• Skin tumors: Squamous cell carcinoma, basal cell carcinoma and melanoma	√	

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	• Malasorption-coeliac disease, tropical sprue and other causes • Pancreatic tumors: endocrine, exocrine and periampullary.		√ √
5	**Liver and Billiary tract pathology** • Jaundice: Types, pathogenesis and differentiation • Hepatitis : acute and chronic, etiology, pathogenesis and pathology • Cirrhosis: etiology, classification, pathology, complications • Portal hypertension: types and manifestation • Diseases of gall bladder: Cholecystitis, cholelithiasis, carcinoma • Tumors of liver: hepatocellular, metastatic, tumor markers.	√ √ √ √ √ √	
6	**Lymphoreticular system** • Lymphadenitis: Non-specific, granulomatous • Hodgkin's and non-Hodgkin's lymphoma, classification, morphology • Diseases of spleen: splenomegaly and effects	√ √ √	
7	**Female reproductive system** • Diseases of cervix: cervicitis, cervical carcinoma, etiology cytological diagnosis • Diseases of Uterus: Endometrial hyperplasia and carcinoma, adenomyosis, smooth muscle tumors • Trophoblastic diseases : hydatidiform mole, choriocarcinoma • Diseases of breast: Mastitis, abscess, fibrocystic disease, neoplastic lesions, fibroadenoma, carcinoma, phyllodes tumors • Ovarian tumors • Pelvic inflammatory disease including salpingitis • Genital tuberculosis **Male reproductive system** • Prostate: Nodular hyperplasia, carcinoma • Testicular tumors • Carcinoma of penis	√ √ √ √ √ √ √ √	√

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	Course Contents	Must Know	Desirable to know
3	**Urinary Tract pathology**		
	• Basics of impaired function and urinalysis	√	
	• Glomerulonephritis : Classification, primary proliferative and non proliferative, secondary (SLE, polyarteritis, amyloidosis, diabetes)	√	
	• Nephritic syndrome	√	
	• Acute renal failure: acute tubular and cortical necrosis	√	
	• Pyelonephritis, reflux nephropathy, interstitial nephritis	√	
	• Renal cell tumors : renal cell carcinoma, nephroblastoma	√	
	• Urinary bladder: cystitis, carcinoma	√	
	• Progressive renal failure and end stage renal disease.		√
	• Renal vascular disorders.		√
	• Urinary tract tuberculosis		√
	• Nephrolithiasis and obstructive nephropathy	√	
	• Renal malformation polycystic kidney.		√
4	**Pathology of Gatrointestinal tract**		
	• Oral Pathology: Leukoplakia, carcinoma oral cavity and esophagus	√	
	• Peptic ulcer: etiopathogenesis and complications, gastritis types	√	
	• Tumors of stomach: benign, polyp, Leiomyoma, malignant adenocarcinoma, lymphoma	√	
	• Inflammatory disease of small intestine: typhoid, tuberculosis, Crohn's disease, appendicitis.	√	
	• Inflammatory disease of large intestine: amoebic colitis, bacillary dysentery, ulcerative colitis	√	
	• Large and small intestine tumors: polyps, carcinoid, carcinoma, lymphoma.	√	
	• Pancreatitis	√	
	• Salivary gland tumors: mixed, adenoids, cystic, warthins		√
	• Ischemic and pseudomembranous enterocolitis, diverticulitis.		√

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	Course Contents	Must Know	Desirable to know
	Systemic Pathology		
1	**Cardiovascular Pathology**		
	• Rheumatic heart disease : Pathogenesis and morphology	√	
	• Infective endocarditis: Causes and pathogenesis	√	
	• Atherosclerosis and ischemic heart disease : myocardial infraction	√	
	• Hypertension and hypertensive heart disease.	√	
	• Congenital heart disease: ASD, VSD, Fallot's teratology, Biscuspid aortic PDA		√
	• Pericarditis		
	• Cardiomyopathy		
2	**Respiratory Pathology**		
	• Inflammatory diseases of bronchi: Chronic bronchitis, bronchial asthma, Bronchiectasis	√	
	• Pneumonias : Lobar, broncho, interstitial	√	
	• Lung abscess: etiopathogenesis and morphology	√	
	• Pulmonary tuberculosis: primary and secondary, morphologic types including pleuritis	√	
	• Emphysema : type and pathogenesis	√	
	• Tumors : Benign, malignant, Squamous cell, oat cell, adeno, etiopathogenesis	√	
	• Structure of bronchial tree and alveolar walls, normal and altered lung function, concepts of obstructive and restrictive lung disorders		√
	• Nasopharyngeal and laryngeal tumors		√
	• Occupational lung disorders: anthracosis, silicosis, asbestosis, mesothelioma.	√	
	• Atelectasis and hyaline membrane disease.		√

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	Course Contents	Must Know	Desirable to know
1.	**Hematopathology:**		
	• Introduction to hematology & hemopoiesis	√	
	• Anemia: classification and clinical features.	√	
	• Nutritional anemia: Iron deficiency, folic acid/ Vit B12 deficiency anemia including pernicious anemia.	√	
	• Hemolytic anemia: classification and investigation.	√	
	• Hereditary hemolytic anemia: thalassemia, Sickle cell anemia.	√	
	• Hereditary spherocytosis and G6PD deficiency.		√
	• Acquired hemolytic anemia		√
	• Aplastic anemia	√	
	• Hemorrhagic disorders: Classify hemorrhagic disorders; describe clinical distinction between purpuras & coagulation disorders and lab. Screening tests.		√
	• Haemostatic disorders: Platelet deficiency, ITP, drug induced, secondary.		√
	• Coagulopathies: Coagulation factor deficiency, hemophilia, DIC and anticoagulant control.	√	
	• Leucocytic disorders: Leucocytosis, leucopenia, Leukemoid reaction.	√	
	• Acute and chronic leukemia: classification and diagnosis.	√	
	• Multiple myeloma and dysproteinemias.	√	
	• Blood transfusion: grouping and cross matching untoward reactions, transmissible infections including HIV and hepatitis.	√	
	• Hemolytic anemias: autoimmune, alloimmune, drug induced, microangiopathic and malaria	√	
	• Myelodysplastic syndrome	√	
	• Myeloproliferative disorders: polycythemia, myelofibrosis.	√	

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Kamothe, Navi Mumbai

	Course Contents	Must Know	Desirable to know
10.	**Neoplasia:**		
	• Nomenclature & classification. Precancerous lesions	√	
	• Biology of tumor growth, differentiate between benign & malignant neoplasms.	√	
	• Carcinogenesis	√	
	• Tumor host interactions: Systemic effects & paraneoplastic syndromes.	√	
	• Lab Diagnosis: Diagnostic workup including tumor markers.	√	
	• Spread, grading & staging.	√	

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Dept. of Pathology

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PATHOLOGY

University Examination: Theory, Practicals and Viva

1. Scheme of internal assessment (Pathology) : The computation of internal assessment marks shall be as per rule No 2 and 3 mentioned in this rule and regulation

2. Pattern of Theory Examination including Distribution of Marks, Questions and Time.
   a. Distribution of Marks

Sr.No		Total marks
1	Theory (2 papers - 40 marks each)	80
2	Oral (Viva)	15
3	Practical	25
4	Internal assessment (Theory -15, Practicals -15)	30
	TOTAL	150

i) Total duration - 4 hrs (each paper of 2 hrs or 120 minutes)
ii) Each paper will have 3 sections.
iii) Pattern and marking for each paper of 40 marks as provided in the table

Sections	Nature of Question- Two Theory Papers	Total No. of Questions	Mark (s) per Question	Total Marks
A)	Multiple Choice Questions (MCQs)	16	1/2	08
B)	Brief Answer Questions (BAQs)	4 out of 5	4	16
C)	Long Answer Question (LAQ)	2 out of 3	8	16
Total				40

3. **Direction- Only short answer questions may be permitted from the portions marked as "Desirable to know"**
   - Paper wise distribution of theory topics and number of questions:-

A) **Paper 1:- General Pathology inclusive of general neoplasia, Haematology inclusive of transfusion medicine.**
Out of 3 LAQs in Section C, 2 questions should be from General Pathology and General Neoplasia and one question should be from Haematology inclusive of transfusion medicine.

B) **Paper II:-Systemic Pathology inclusive of Systemic Neoplasia and Clinical Pathology.**
Out of 3 LAQs in Section C, 2 questions should be from Systemic Pathology and Systemic Neoplasia and one question should be from Clinical Pathology.

4. **Marking scheme:-** Each paper of 40 marks as shown in the above table.

5. **University examination Nature of practicals and duration (Pathology)**

   a) Number of students for practical Examination should not exceed more than 35 /day

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Kamothe Navi Mumbai

b) **Practicals:** **Marks 25**

a.	10 Spots 2 minutes each (4 specimen, 1 instrument, 3 histopathology slides, 1 hematology slide and 1 chart)	10
	Identification – 1/2 mark } together 1.mark for Specific short question - 1/2 mark } each spot	
b.	Urine Examination-physical and two abnormal constituents	05
c.	Histopathology slides: Diagnosis and discussion	03
d.	Hematology examination	
i).	peripheral blood smear, staining and report	03
ii).	Hb/TLC/Blood group	04
	Total	**25**

C. Viva: duration and topic distribution: Viva marks shall be added to theory and shall be submitted separately out of 15 Marks. Viva consists of two tables; on each table the student will face 2 examiners for 5 minutes each:

Table - I General and Systemic Pathology	7 Marks
Table - II Clinical Pathology and Hematology	8 Marks
Total 15 Marks	

15.7.15

Prof & Head
Dept. of Pathology
A. G. M Medical College
Kamothe, Navi Mumbai

Ref.: MGM/Patho./2016/O- 242

Date : 06.01.2016

To,
Dr. Rajesh Goel
Dy. Registrar
MGM Institute of Health Sciences,
Kamothe, Navi Mumbai.

Dear Sir,

Hereby submitting the final revised syllabus for II year MBBS for Pathology subject. This syllabus was discussed and approved in the last BOS meeting which was in the month of October 2015.

Thanking you,
Yours Truly,

6/1/16

Dr. Reeta Dhar
Professor & Head
Department of Pathology

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6/1/16

MGM Institute Of Health Sciences
INWARD NO. 145
DATE: 7.1.16

PATHOLOGY

I. Learning Objectives

At the end of the course, the Student shall be able to,

1. Understand and describe the structure & ultra structure of a cell, the concept of cell injury, cell death, repair and the change produces thereby, in different tissues and organs.
2. Know the principles of collection, handling, storage, and dispatch of clinical samples from patient, in a proper manner.
3. Perform and interpret in a proper manner the basic clinico-pathological procedures.
4. Knowledge of the common hematological disorders and the investigations necessary to diagnose them and determine their prognosis.
5. Understand normal haemostatic mechanism, the derangements of this mechanism and the effect on human system.
6. Understand the etiopathogenesis, the pathological effects, and the clinico-pathological correlation of common infectious and non-infectious diseases.
7. Understand the concept of neoplasia with respect to etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.
8. Correlate normal and altered morphology (gross and microscopy) of different organ systems in different diseases to the extent needed of understanding of the disease processes and their clinical significance.
9. Have knowledge of common immunological disorders and their effects on human body.

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II. Total number of teaching hours: 300hrs (IIIrd, IVth & Vth Semester)

a) Theory (lectures & tutorials)	160 hrs
b) Practicals	110 hrs
c)Revisions & Evaluations (internal)	30 hrs
Total	300hrs

III. Distribution of teaching hours:

1) General Pathology	36hrs
2) Hematology	16hrs
3) Systemic Pathology	57hrs
4) Clinical Pathology	03hrs
6) Autopsy	01hrs
5) Tutorials	47hrs
Total	160hrs

	Course Contents	Hrs	Must Know	Desirable to know	Nice to know
	General Pathology				
1	**Cell injury**	**6hrs**			
	Common definitions in pathology and causes of cell injury.	1hr	√		
	Modes of cell injury: Mechanisms of cell injury	1hr	√		
	Reversible cell injury: Definitions, cellular swelling, fatty change.	1hr	√		
	Irreversible cell injury: Definition Necrosis & gangrene: definitions & types. Apoptosis & its relevance.	1hr	√	√	
	Intracellular accumulations & alterations: Types of Intracellular accumulations with alterations in cell organelles & cytoskeleton.	1hr	√		
	Cellular adaptations & growth disturbances: Hypertrophy, Hyperplasia, Metaplasia, Agenesis, dysplasia.	1hr	√		
	Cellular ageing and mechanism				√
2	**Acute & chronic Inflammation**	**3hrs**			
	Acute inflammation: Define & describe cellular & vascular changes. Outcomes & morphological patterns of acute inflammation.	1hr	√		
	Chemical mediators of inflammation: definition, classification, description of each type, role in acute & chronic inflammation.	1hr	√		
	Chronic inflammation: definition & causes.	1hr	√		
	Granulomatous inflammation: etiology, pattern & systemic effects of granulomas.				
3	**Regeneration & repair**	**3hrs**			
	Regeneration & repair: define & describe mechanism of regeneration & repair.	1hr	√		
	Healing by primary & secondary intention with local & systemic factors affecting wound healing.	1hr	√		
	Repair in specialized tissue: Describe repair in fractures & parenchymal organs.	1hr	√		
	Stem cell concept-Regenerative medicine				√

4	**Circulatory disturbances**	**5hrs**			
	Hyperemia & congestion	1hr	√		
	Edema: Define, classify, pathogenesis & correlate morphology with clinical significance.	1hr	√		
	Thrombosis: Definition, etiopathogenesis, morphology, fate & effects of thrombosis.	1hr	√		
	Embolism & Infarction: Define types with clinical significance.	1hr	√		
	Shock: Define, classify, pathogenesis, mediators & stages of shock.	1hr	√		
5	**Genetic disorders**	**1hr**			
	Normal karyotype, classification of genetic disorders, types of genetic change.	1hr	√		
	Down's syndrome (Trisomy 21), Klinefelter's syndrome & Turner's syndrome.		√		
	Glycogen storage disease & lysosomal storage disorders.			√	
6	**Disturbances of pigment metabolism**	**1hr**			
	Types, changes associated with common disturbances like lipofuscin, Hemosiderin, melanin & Bilirubin.	1hr	√		
7	**Disturbances of Mineral metabolism**	**1hr**			
	Types & morphological changes in calcification.	1hr	√		
	Disturbance of mineral like zinc			√	
8	**Diseases of Immunity**	**4hrs**			
	Hypersensitivity reactions: Types & differentiate between different types of hypersensitivity reactions.	1hr	√		
	Transplant rejections			√	
	Autoimmune diseases: Mechanism of autoimmunity, common autoimmune diseases, SLE.	1hr	√		
	Amyloidosis: Definition, physical & chemical nature of amyloid, classification, pathogenesis, morphology, lab diagnosis with special stain & clinical correlation.	1hr	√		

	AIDS: Epidemiology, etiology, pathogenesis, morphology, clinical features, diagnosis & handling of infected materials & health education.	1hr	√		
9	**Infectious disease**	**7hrs**			
	Typhoid fever: Pathogenesis, morphology & clinical features.	1hr	√		
	Syphilis: Classify various stages, pathogenesis & morphology.	1hr	√		
	Tuberculosis: Epidemiology, etiology, pathogenesis, morphology, clinical features, lab diagnosis & importance of tuberculosis in the present day context.	2hr	√		
	Leprosy: Classify, pathogenesis, differentiate between different types of leprosy, histological features & sequelae.	1hr	√		
	Fungal: Classification of fungal diseases & opportunistic fungal infections.	1hr	√		
	Parasitic: Malaria: Types, morphological features in P. Vivax &Falciparum Malaria & lab diagnosis.	1hr	√		
	Leishmaniasis, Filariasis, Hydatid, Cysticercosis			√	
10	**Neoplasia**	**5 hrs**			
	Nomenclature, classification & differentiation between benign & malignant neoplasms.	1hr	√		
	Precancerous lesions.			√	
	Carcinogenesis	1hr	√		
	Tumor host interactions: Systemic effects & paraneoplastic syndromes.	1hr	√		
	Biology of tumor growth & Lab Diagnosis: Diagnostic workup including tumor markers.	1hr	√		
	Spread, grading & staging.	1hr	√		
	Molecular basis of cancer				√
	Tumor immunology				√
11	**Environmental Pathology**	1hr			
	Air pollution, Iatrogenic drug injury. Radiation & physical injury & Obesity, Tobacco& Alcoholism	1hr			√

	Course Contents	Hrs	Must Know	Desirable to know	Nice to know
1	**Hematopathology and transfusion medicine**	**16hrs**			
	Introduction to hematology & hemopoiesis	1hr	√		
	Anemia: classification and clinical features.	1hr	√		
	Nutritional anemia: Iron deficiency, Folic acid/ Vit B12 deficiency anemia including pernicious anemia.	2hr	√		
	Hemolytic anemia: Definition, classification, pathogenesis and investigations.	1hr	√		
	Hereditary spherocytosis and G6PD deficiency.			√	
	Haemoglobinopathies: Thalassemia, Sickle cell anemia.	1hr	√		
	Aplastic anemia	1hr	√		
	Hemorrhagic disorders: Classify and lab. Screening tests for hemorrhagic disorders. Platelet deficiency, ITP.	1hr		√	
	Coagulopathies: Coagulation factor deficiency, hemophilia, DIC.	1hr	√		
	Leucocytic disorders: Leucocytosis, leucopenia, Leukemoid reaction.	1hr	√		
	Acute leukemia: classification and diagnosis.	1hr	√		
	Chronic leukemia: classification and diagnosis.	1hr	√		
	Paraprotenemias: Multiple myeloma	1hr	√		
	Myelodysplastic syndromes and Myeloproliferative disorders	1hr		√	
	Blood groups and its relevance in transfusion medicine and hematology. Erythoblastosis foetalis.	1hr	√		
	Blood transfusion: Indications, selection of donor criteria, cross matching, untoward reactions, transmissible infections including HIV and hepatitis.	1hr	√		

	Course Contents	Hrs	Must Know	Desirable to know	Nice to know
	Systemic Pathology				
1	**Cardiovascular system**	**9hrs**			
	Hypertension & hypertensive heart disease	1hr	√		
	Atherosclerosis: Definition, etiopathogenesis, gross and microscopic features, complications and clinical correlation	1hr	√		
	Other diseases of blood vessels : Aneurysms Vasculitis	1hr	√	√	
	Ischemic heart disease: Categories and pathogenesis. Myocardial infarction : incidence, risk factors, pathogenesis, morphology, complications, clinical course and investigations	1hr	√		
	Rheumatic heart disease: Incidence, etiology, Pathogenesis, morphology, complications, clinical course & investigations.	1hr	√		
	Infective endocarditis:Causes, Pathogenesis, morphology, complications and differential diagnosis of cardiac vegetations.	1hr	√		
	Pericarditis and other pericardial diseases	1hr	√		
	Congenital heart disease: ASD, VSD, Fallot's teratology, Bicuspid aortic PDA	1hr		√	
	Cardiomyopathies	1hr		√	
2	**Respiratory system**	**8hrs**			
	Pneumonias: Etiopathogenesis, classifications, morphology, clinical course and complications.	1hr	√		
	Lung abscess: Etiopathogenesis, Morphology and complications.	1hr	√		
	Atelectasis and hyaline membrane disease.			√	
	Chronic obstructive pulmonary disease:Bronchial asthma and Bronchiectasis -Etiopathogenesis, Morphology and complications.	1hr	√		
	Chronic bronchitis and Emphysema: Etiopathogenesis, Morphology types of emphysema and complications.	1hr	√		
	Pulmonary tuberculosis: primary and secondary, morphologic types including pleuritis, clinical course.	1hr	√		

	Occupational lung disorders: Anthracosis, silicosis, asbestosis, mesothelioma.	1hr		√	
	Tumors of lung and pleura:Classification, etiopathogenesis, gross and microscopic features, pattern of spread, staging, clinical course, para-neoplastic syndromes.	1hr	√		
3	**Oral cavity and salivary gland**	**2hrs**			
	Precancerous lesions of oral cavity and oral cancers: etiopathogenesis, gross and microscopic features.	1hr	√		
	Differential diagnosis of swelling of salivary gland.	1hr	√		
4	**Gastrointestinal tract**	**5hrs**			
	Gastritis: etiology and types.	1hr		√	
	Peptic ulcer: definition, etiopathogenesis, gross and microscopic features and complications.		√		
	Ulcers of intestine: etiological classifications, morphology of typhoid, tubercular, amoebic ulcers and bacillary dysentery. Differential diagnosis of different forms of ulcers.	1hr	√		
	Idiopathic inflammatory bowel disease: etiopathogenesis, morphology and differences between Crohn's disease and ulcerative colitis.	1hr	√		
	Appendicitis		√		
	Tumors of upper Gastrointestinal Tract: Esophagus: etiopathogenesis, morphology and clinical features. Gastric carcinoma: etiopathogenesis, classification, gross and microscopic features and clinical features. Carcinoid tumors of GIT.	1hr	√	√	
	Tumors of lower Gastrointestinal Tract: Carcinoma colon- Etiopathogenesis, morphology and clinical features.	1hr	√		
	Intestinal polyps and gastrointestinal stromal tumors.			√	
5	**Liver and Biliary Tract**	**5hrs**			
	Viral hepatitis: Etiopathogenesis, types, clinical source, pathology, serologic diagnosis, sequelae.	1hr	√		
	Alcoholic liver disease: Pathogenesis, morphology and correlation with clinical features.	1hr	√		
	Cirrhosis: Etiopathogenesis, classification, pathology,complications & differential diagnosis.	1hr	√		

	Portal Hypertension: Types and manifestations.		√		
	Tumors of liver: Pathology of hepatocellular carcinoma.	1hr	√		
	Disease of gall bladder: cholecystitis, cholelithiasis and tumors.	1hr		√	
6	**Urinary tract system**	**8hrs**			
	Basics of impaired function and urinalysis	1hr	√		
	Nephritic and Nephrotic syndrome				
	Glomerulonephritis: Classification, Acute nephritis, rapidly progressive glomerulonephritis.	1hr	√		
	Renal failure: definitions, criteria, etiology, systemic manifestations and investigations.	1hr	√		
	Nephrolithiasis and obstructive nephropathy	1hr	√		
	Pyelonephritis and interstitial nephritis: etiopathogenesis of acute and chronic, morphology and clinical correlation.	1hr	√		
	Tumors of kidney and pelvis: classifications, morphology, clinical course and paraneoplastic syndromes of common tumors.	1hr	√		
	Renal vascular disorders and malformations, polycystic kidney.	1hr		√	
	Urinary bladder: cystitis and carcinoma	1hr	√		
7	**Female genital tract**	**6hrs**			
	Diseases of Uterus: Endometrial hyperplasia and carcinoma, adenomyosis, smooth muscle tumors	1hr	√		
	Trophoblastic diseases: hydatidiform mole, choriocarcinoma.	1hr		√	
	Diseases of cervix: cervicitis, cervical carcinoma, etiology cytological diagnosis	1hr	√		
	Ovarian tumors	1hr	√		
	Pelvic inflammatory disease including salpingitis	1hr	√		
	Genital tuberculosis			√	
	Breast: Non-neoplastic and Neoplastic lesions of the breast- Classification, Morphology, grading of carcinoma of breast and differential diagnosis of breast swellings.	1hr	√		

8	**Male Genital System**	3hrs			
	Prostate: Nodular hyperplasia, carcinoma	1hr	√		
	Testicular tumors	1hr	√		
	Carcinoma of penis	1hr	√		
9	**Lymphoreticular system**	**3hrs**			
	Diseases of spleen: Splenomegaly and effects	1hr		√	
	Lymphadenitis: Non-specific, granulomatous		√		
	Hodgkin's lymphoma, classification, morphology	1hr	√		
	Non-Hodgkin's lymphoma, classification, morphology	1hr	√		
10	**Dermatopathology**	**2hrs**			
	Skin tumors: Non-pigmented -classification and morphology.	1hr	√		
	Skin tumors: pigmented- classification and morphological features of common nevi and malignant melanoma.	1hr	√		
11	**Soft tissue**	**1hr**			
	Classification, morphological features of lipomatous, fibrous, blood vessels tumors. Neural, muscle and fibro histiocytic tumors.	1hr	√		
12	**Skeletal System**	**3hrs**			
	Osteomyelitis and Metabolic diseases: rickets / osteomalacia, osteoporosis, hyperparathyroidism	1hr		√	
	Tumors: Primary, osteosarcoma, osteoclastoma, Ewing's sarcoma, chondrosarcoma, metastatic	1hr	√		
	Arthritis: rheumatoid, osteoid and tuberculosis	1hr		√	
13	**Central Nervous system**	**3hrs**			
	CSF and its disturbances: Cerebral oedema, raised intracranial pressure	1hr	√		
	Inflammatory disorders: Pyogenic and tuberculous meningitis, brain abscess, tuberculoma.		√		
	Cerebrovascular disease: atherosclerosis, thrombosis, embolism, aneurysm, hypoxia, infraction and hemorrhage	1hr		√	
	Classify CNS tumors-primary glioma and meningioma and metastatic	1hr	√		

14	**Endocrine system**	**4hrs**			
	Thyroid: Differential diagnosis of thyroid nodule.	1hr	√		
	Adrenal diseases: Cortical hyperplasia, atrophy, tuberculosis, tumors of cortex and medulla.	1hr		√	
	Parathyroid hiperplasias and tumours , hyperparathyroidism. Pituitary tumors	1hr		√	
15	**Myopathies:** Differential diagnosis of common muscle disorders.	**1hr**		√	
	Clinical Pathology	**3hrs**			
1	Jaundice: Differential diagnosis and laboratory investigations in jaundice.	1hr	√		
2	Diabetes mellitus: Classification, pathogenesis of system involvement, sequelae and complications.	1hr	√		
3	Renal function tests	1hr	√		
	Medical Autopsy	**1hr**			
1	Indications and techniques of medical autopsies	1hr	√		

Tutorials and Integrated teaching:

A	**Hematology**
1	Blood Collection and anticoagulant
2	Peripheral Smear
3	Iron deficiency Anemia
4	Megaloblastic Anemia
5	Hemolytic Anemia
6	Erythrocyte sedimentation Rate (ESR) & Packed Cell Volume (PCV)
7	Acute Leukemia
8	Chronic Leukemia
9	Bone Marrow Examination
B	**General Pathology**
1	Cell injury & Cell death
2	Intracellular accumulations
3	Inflammation & Repair
4	Circulatory Disturbances
5	Infections
6	Neoplasia
7	HIV/AIDS
C	**Systemic Pathology**
1	Atherosclerosis & Ischemic heart disease
2	Rheumatic heart disease
3	Infective Endocarditis
4	Pneumonias

5	Tumors of Lung
6	Cirrhosis
7	Glomerulonephritis
8	Peptic Ulcer
9	Ulcers of Intestine
10	Carcinoma Breast
11	Carcinoma Cervix
12	Bone tumors
13	Museum Specimens
D	**Clinical Pathology**
1	Liver function test & clinical charts
2	Renal function test & clinical charts
3	Gastric function test & clinical charts
4	Cerebrospinal Fluid Examination (CSF)
5	Urine Examination

PRACTICAL:

1. One – third of allotted practical hours to be devoted to

   a. Performing a complete urine examination and detecting abnormalities and correlating with pathological changes.

   b. To perform with accuracy and reliability basic hematological estimation: TLC DLC, peripheral smear, staining, reporting along with history.

2. One third of allotted practical hours to be devoted to

   Identify and interpret gross and microscopic features of inflammatory lesions of different organs and common systemic diseases.

3. One third of allotted practical hours to be devoted to

   Discussion of case studies (paper) clinical, gross and microscopic features and other parameters wherever applicable to learn clinico-pathological correlations.

Practical Syllabus:

Clinical Pathology	
1	Introduction to Pathology
2	Blood collection and anticoagulants
3	Hemoglobin estimation
4	Total WBC count
5	Differential WBC count
6	Development of blood & bone marrow examination.
7	Laboratory investigations in anemias :
8	Acute Leukemia
9	Chronic Leukemia
10	Blood grouping
11	Urine Examination
12	Examination of CSF
13	Bleeding disorders
14	Sputum and fluid tests
15	Renal function tests
16	Liver function tests
17	Gastric & Pancreatic function tests
18	Investigations in infertility

General and Systemic Pathology	
1	Microscope and microscopic study of cells and tissues
2	Retrogressive changes
3	Necrosis and Gangrene
4	Pigments
5	Amyloidosis
6	Acute inflammation
7	Chronic inflammation & repair
8	Typhoid & syphilis
9	Tuberculosis and Leprosy
10	Circulatory disturbances I, II & III
11	Disorders of cell growth
12	Tumor Pathology I & II
13	Immuno Pathology I &II
14	Respiratory System I & II
15	Cardiovascular System I & II
16	Alimentary System I, II & III
17	Hepatobiliary System I & II
18	Diseases of Kidney I & II
19	Female reproductive System
20	Male reproductive System
21	Lymph nodes and Spleen
22	Skeletal System
23	Diseases of Skin
24	Central nervous System
25	Tumors of Breast and Diseases of the endocrine organs

EXAMINATION SKILLS

1 Be able to collect, store and transport materials for various pathological tests including histopathology, cytopathology, clinical pathology, hematology and biochemistry.

2 Interpret abnormal laboratory values of common diseases

3 Do complete urine examination including microscopy.

4 Do perform and interpret hemoglobin, TLC, DLC, ESR, PCV, peripheral blood smears and red cell morphology.

5 Interpret the peripheral smears of common diseases.

6 Do blood grouping and cross matching

7 Adapt universal precautions for self protection against HIV and hepatitis and counsel the patient.

Semester / Term Ending Theory and Practical Examination in Pathology

Semester	Theory Marks	Practical Marks
III	40	40
IV	40	40
V	40	40
Total	**120**	**120**

There will be single theory paper at the end of each semester. The pattern for theory & Practical examination will be same as **Pathology University Examination.**

Pathology University Examination: Theory, Practicals and Viva

1. Scheme of internal assessment (Pathology) : The computation of internal assessment marks shall be as per rule No 2 and 3 mentioned in this rule and regulation

2. Pattern of Theory Examination including Distribution of Marks, Questions and Time.

a. Distribution of Marks

Sr.No		Total marks
1	Theory (2 papers - 40 marks each)	80
2	Oral (Viva)	15
3	Practical	25
4	Internal assessment (Theory -15, Practicals -15)	30
	Total	150

i) Total duration - 4 hrs (each paper of 2 hrs or 120 minutes)
ii) Each paper will have 3 sections.
iii) Pattern and marking for each paper of 40 marks as provided in the table

Sections	Nature of Question- Two Theory Papers	Total No. of Questions	Mark (s) per Question	Total Marks
A)	Multiple Choice Questions (MCQs)	16	1/2	08
B)	Brief Answer Questions (BAQs)	4 out of 5	4 x 4	16
C)	Long Answer Question (LAQ)	2 out of 3	2 x 8	16
Total				**40**

1. **Direction- Only short answer questions may be permitted from the portions marked as "Desirable to know"**

   - Paper wise distribution of theory topics and number of questions:-

A) **Paper I:**

General Pathology inclusive of general neoplasia, Haematology inclusive of transfusion medicine.
Out of 3 LAQs in Section C, 2 questions should be from General Pathology and General Neoplasia and one question should be from Haematology inclusive of transfusion medicine.

B) **Paper II:**

Systemic Pathology inclusive of Systemic Neoplasia and Clinical Pathology.
Out of 3 LAQs in Section C, 2 questions should be from Systemic Pathology and Systemic Neoplasia and one question should be from Clinical Pathology.

4. **Marking scheme**: Each paper of 40 marks as shown in the above table.

5. **University examination Nature of practicals and duration (Pathology)**

   a) Number of students for practical Examination should not exceed more than 35 /day

b) **Practicals** Marks 25

	Practicals		Marks
a.	10 Spots (2 minutes each)	4 specimen, 3 histopathology, 1 hematology slide, 1 instrument and 1 chart Identification – 1/2 mark Specific short question - 1/2 mark 1 Mark for each spot	10 Marks
b.	Urine Examination	Physical Examination and two abnormal constituents.	05 Marks
c.	Histopathology slide	Draw, label and give diagnosis.	03 Marks
d.	Haematology Examination	Peripheral blood smear staining and do differential leukocyte count.	03 Marks
		Hemoglobin Estimation / Total leukocyte count / Blood group Estimation.	04 Marks
		Total	25 Marks

C. **Viva: Duration and topic distribution: Viva marks shall be added to theory and shall be submitted separately out of 15 Marks.**

Viva consists of two tables; on each table the student will face 2 examiners for 5 minutes each:

Table - I General and Systemic Pathology 7 Marks

Table - II Clinical Pathology and Haematology 8 Marks

Total 15 Marks

TEACHING LEARNING METHODS:

- Structured interactive sessions
- Small group discussion
- Practical including demonstrations
- Problem based exercises
- Self learning tools
- Interactive learning
- E-modules

LEARNING RESOURCE MATERIALS:

- Text books
  1) Robbin's : Pathologic basis of Disease
  2) Hematology De Gruchy
  3)Text book of Pathology by Harsh Mohan
  4) Clinical Pathology: A Practical Manual by Sabitri Sanyal
- Reference books
- Practical note books
- Internet resources

TIME OF EVALUATION:

There should be regular formative assessment. Formative assessment, day to day performance should be given greater importance. Examination of pathology should be at the end of 5th semester and formative assessment in middle of 3rd and 4th semester and summative assessment at the end of 5th semester.

6/1/2016

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Navi Mumbai

EXAMINATION SKILLS

	Skills	P. Indep	Under guidance	Assist	observe
1	Be able to collect, store and transport materials for various pathological tests including histopathology, cytopathology, clinical pathology, hematology and biochemistry.	√			
2	Interpret abnormal laboratory values of common diseases	√			
3	Do complete urine examination including microscopy.	√			
4	Do perform and interpret hemoglobin, TLC, DLC, ESR, PCV, bleeding time, clotting time, blood smears and red cell morphology.	√			
5	Interpret the peripheral smears of common disease's	√			
6	Do blood grouping and cross matching	√			
7	Adapt universal precautions for self protection against HIV and hepatitis and counsel the patient.	√			

PRACTICAL:

1. One – third of allotted practical hours to be devoted to
   a. Performing a complete urine examination and detecting abnormalities and correlating with pathological changes.
   b. To perform with accuracy and reliability basic hematological estimation: TLC DLC, peripheral smear, staining, reporting along with history.
   c. To perform basic lab hematological tests like BT & CT.
2. One third of allotted practical hours to be devoted to
   a. Identify and interpret gross and microscopic features of acute inflammation in organs such as appendix, lungs, and meninges.
   b. Cellular components of chronic and granulomatous inflammation.

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c. Granulation tissue.
d. Typhoid, tuberculosis, amoebic ulcers in intestine.
e. Rhinosporiodosis, actinomycosis, mycetoma, molluscum contagiosum.
f. Amoebic liver abscess, malarial liver and spleen, filarial lymphadenitis, Cysticercosis.
g. Fatty liver and kidney, Amyloidosis of spleen, kidney and liver.
h. Types of necrosis: caseous, coagulative, liquefactive and fat.
i. Common systemic diseases.

3. One third of allotted practical hours to be devoted to
   a. Discussion of case studies (paper) clinical, gross and microscopic features and other parameters wherever applicable to learn clinico-pathological correlations.

SUGGESTED TOPICS FOR INTEGRATED TEACHING.

1. Immunology
2. Deficiency diseases
3. Genetics
4. Integrated seminars
   a. Rheumatic heart disease.
   b. Ischemic heart disease
   c. Hypertension and hypertensive heart disease.
   d. Tuberculosis lung.
   e. Nephrotic syndrome
   f. Inflammatory disease of small and large bowel
   g. Cirrhosis
   h. Metabolic bone disease
   i. Diabetes mellitus
   j. HIV/ AIDS
   k. Iron deficiency anemia.
   l. Jaundice
   m. Malaria

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TEACHING LEARNING METHODS:

- Structured interactive sessions
- Small group discussion
- Practical including demonstrations
- Problem based exercises
- Written case scenario
- Self learning tools
- Interactive learning
- E-modules

LEARNING RESOURCE MATERIALS:

- Text books
- Reference books
- Practical note books
- Internet resources

TIME OF EVALUATION:

There should be regular formative assessment. Formative assessment, day to day performance should be given greater importance. Examination of pathology should be at the end of 5th semester and formative assessment in middle of 3rd and 4th semester and summative assessment at the end of 5th semester.

15.7.15

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Approved in BOM 45/2016, Dated 28/04/2016

Resolution No. 3.2(b)

Resolution No. 3.2(b): Resolved to accept revised method to calculate internal assessment marks for IInd MBBS Exam effective from batch entering into 2nd MBBS from August 2016 onwards.

For Theory:

	Microbiology	Pharmacology	Pathology	FMT
IIIrd, IVth Sem. & Prelim Exam.	10	10	10	07
Day to day assessment as per MCI norms	05	05	05	03
Total marks	15	15	15	10

For Practical:

	Microbiology	Pharmacology	Pathology	FMT
IIIrd, IVth,Sem. & Prelim Exam.	10	10	10	07
Day to day assessment as per MCI norms	05	05	05	03
Total marks	15	15	15	10

Ref: MGM/Patho/2016/0-424

To,

Date:14/12/16

The Registrar,
MGMIHS,
MGM Medical College,
Navi Mumbai.

Subject: Submission of Final Revised Second MBBS syllabus.

Respected Sir,

Hereby submitting the final revised second MBBS syllabus and corrections have been done wherever needed.

Thanking You,

Yours faithfully,

R Dhar 14/12/16

Dr. Reeta Dhar,
Prof & HOD,
Dept. of Pathology,
MGM Medical college,
Navi Mumbai.

Dean

MGM Institute Of Health Sciences
INWARD NO. 9383
DATE: 15/12/16
REF:

PATHOLOGY (SYLLABUS)

I. Learning Objectives

At the end of the course, the Student shall be able to,

1. Understand and describe the structure & ultra structure of a cell, the concept of cell injury, cell death, repair and the change produces thereby, in different tissues and organs.
2. Know the principles of collection, handling, storage, and dispatch of clinical samples from patient, in a pro per manner.
3. Perform and interpret in a proper manner the basic clinico-pathological procedures.
4. Knowledge of the common hematological disorders and the investigations necessary to diagnose them and determine their prognosis.
5. Understand normal haemostatic mechanism, the derangements of this mechanism and the effect on human system.
6. Understand the etiopathogenesis, the pathological effects, and the clinico-pathological correlation of common infectious and non-infectious diseases.
7. Understand the concept of neoplasia with respect to etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.
8. Correlate normal and altered morphology (gross and microscopy) of different organ systems in different diseases to the extent needed of understanding of the disease processes and their clinical significance.
9. Have knowledge of common immunological disorders and their effects on human body.

II. Total number of teaching hours: 300hrs (IIIrd, IVth & Vth Semester)

a)Theory	**160 hrs**
b)Practicals	**110 hrs**
c)Revisions & Evaluations (internal)	**30 hrs**
Total	**300hrs**

III. Distribution of teaching hours:

1) General Pathology	**37 hrs**
2) Hematology	**16 hrs**
3) Systemic Pathology	**61 hrs**
4) Clinical Pathology	**03 hrs**
6) Autopsy	**01 hr**
5) Tutorials, Integrated Teaching and Seminars	**42 hrs**
Total	**160hrs**

	Course Contents	Hrs	Must Know	Desirable to know	Nice to know
	General Pathology				
1	**Cell injury**	**6hrs**			
	Common definitions in pathology and causes of cell injury.	1hr	√		
	Modes of cell injury: Mechanisms of cell injury	1hr	√		
	Reversible cell injury: Definitions, cellular swelling, fatty change.	1hr	√		
	Irreversible cell injury: Definition Necrosis & gangrene: definitions & types. Apoptosis & its relevance.	1hr	√	√	
	Intracellular accumulations & alterations: Types of Intracellular accumulations with alterations in cell organelles & cytoskeleton.	1hr	√		
	Cellular adaptations & growth disturbances: Hypertrophy, Hyperplasia, Metaplasia, Agenesis, dysplasia.	1hr	√		
	Cellular ageing and mechanism				√
2	**Acute & chronic Inflammation**	**3hrs**			
	Acute inflammation: Define & describe cellular & vascular changes. Outcomes & morphological patterns of acute inflammation.	1hr	√		
	Chemical mediators of inflammation: definition, classification, description of each type, role in acute & chronic inflammation.	1hr	√		
	Chronic inflammation: definition & causes.	1hr	√		
	Granulomatous inflammation: etiology, pattern & systemic effects of granulomas.				
3	**Regeneration & repair**	**3hrs**			
	Regeneration & repair: define & describe mechanism of regeneration & repair.	1hr	√		
	Healing by primary & secondary intention with local & systemic factors affecting wound healing.	1hr	√		
	Repair in specialized tissue: Describe repair in fractures & parenchymal organs.	1hr	√		
	Stem cell concept-Regenerative medicine				√

4	**Circulatory disturbances**	**5hrs**			
	Hyperemia & congestion	1hr	√		
	Edema: Define, classify, pathogenesis & correlate morphology with clinical significance.	1hr	√		
	Thrombosis: Definition, etiopathogenesis, morphology, fate & effects of thrombosis.	1hr	√		
	Embolism & Infarction: Define types with clinical significance.	1hr	√		
	Shock: Define, classify, pathogenesis, mediators & stages of shock.	1hr	√		
5	**Genetic disorders**	**1hr**			
	Normal karyotype, classification of genetic disorders, types of genetic change.	1hr	√		
	Down's syndrome (Trisomy 21), Klinefelter's syndrome & Turner's syndrome.		√		
	Glycogen storage disease & lysosomal storage disorders.			√	
6	**Disturbances of pigment metabolism**	**1hr**			
	Types, changes associated with common disturbances like lipofuscin, Hemosiderin, melanin & Bilirubin.	1hr	√		
7	**Disturbances of Mineral metabolism**	**1hr**			
	Types & morphological changes in calcification.	1hr	√		
	Disturbance of mineral like zinc			√	
8	**Diseases of Immunity**	**4hrs**			
	Hypersensitivity reactions: Types & differentiate between different types of hypersensitivity reactions.	1hr	√		
	Transplant rejections			√	
	Autoimmune diseases: Mechanism of autoimmunity, common autoimmune diseases, SLE.	1hr	√		
	Amyloidosis: Definition, physical & chemical nature of amyloid, classification, pathogenesis, morphology, lab diagnosis with special stain & clinical correlation.	1hr	√		
	AIDS: Epidemiology, etiopathogenesis, morphology,clinical features, diagnosis, handling of infected materials & health education.	1hr	√		

9	**Infectious disease**	**7hrs**			
	Typhoid fever: Pathogenesis, morphology & clinical features.	1hr	√		
	Syphilis: Classify various stages, pathogenesis & morphology.	1hr	√		
	Tuberculosis: Epidemiology, etiology, pathogenesis, morphology, clinical features, lab diagnosis & importance of tuberculosis in the present day context.	2hr	√		
	Leprosy: Classify, pathogenesis, differentiate between different types of leprosy, histological features & sequelae.	1hr	√		
	Fungal: Classification of fungal diseases & opportunistic fungal infections.	1hr	√		
	Parasitic: Malaria: Types, morphological features in P. Vivax &Falciparum Malaria & lab diagnosis.	1hr	√		
	Leishmaniasis, Filariasis, Hydatid, Cysticercosis			√	
10	**Neoplasia**	**5 hrs**			
	Nomenclature, classification & differentiation between benign & malignant neoplasms.	1hr	√		
	Precancerous lesions.			√	
	Carcinogenesis	1hr	√		
	Tumor host interactions: Systemic effects & paraneoplastic syndromes.	1hr	√		
	Biology of tumor growth & Lab Diagnosis: Diagnostic workup including tumor markers.	1hr	√		
	Spread, grading & staging.	1hr	√		
	Molecular basis of cancer				√
	Tumor immunology				√
11	**Environmental Pathology**	**1hr**			
	Air pollution, Iatrogenic drug injury. Radiation & physical injury & Obesity, Tobacco& Alcoholism	1hr			√

	Course Contents	Hrs	Must Know	Desirable to know	Nice to know
1	**Hematopathology and transfusion medicine**	**16hrs**			
	Introduction to hematology & hemopoiesis	1hr	√		
	Anemia: classification and clinical features.	1hr	√		
	Nutritional anemia: Iron deficiency, Folic acid/ Vit B12 deficiency anemia including pernicious anemia.	2hr	√		
	Hemolytic anemia: Definition, classification, pathogenesis and investigations.	1hr	√		
	Hereditary spherocytosis and G6PD deficiency.			√	
	Haemoglobinopathies: Thalassemia, Sickle cell anemia.	1hr	√		
	Aplastic anemia	1hr	√		
	Hemorrhagic disorders: Classify and lab. Screening tests for hemorrhagic disorders. Platelet deficiency, ITP.	1hr		√	
	Coagulopathies: Coagulation factor deficiency, hemophilia, DIC.	1hr	√		
	Leucocytic disorders: Leucocytosis, leucopenia, Leukemoid reaction.	1hr	√		
	Acute leukemia: classification and diagnosis.	1hr	√		
	Chronic leukemia: classification and diagnosis.	1hr	√		
	Paraprotenemias: Multiple myeloma	1hr	√		
	Myelodysplastic syndromes and Myeloproliferative disorders	1hr		√	
	Blood groups and its relevance in transfusion medicine and hematology. Erythoblastosis foetalis.	1hr	√		
	Blood transfusion: Indications, selection of donor criteria, cross matching, untoward reactions, transmissible infections including HIV and hepatitis.	1hr	√		

	Course Contents	Hrs	Must Know	Desirable to know	Nice to know
	Systemic Pathology				
1	**Cardiovascular system**	**9hrs**			
	Hypertension & hypertensive heart disease	1hr	√		
	Atherosclerosis: Definition, etiopathogenesis, gross and microscopic features, complications and clinical correlation	1hr	√		
	Other diseases of blood vessels : Aneurysms Vasculitis	1hr	√	√	
	Ischemic heart disease: Categories and pathogenesis. Myocardial infarction : incidence, risk factors, pathogenesis, morphology, complications, clinical course and investigations	1hr	√		
	Rheumatic heart disease: Incidence, etiology, Pathogenesis, morphology, complications, clinical course & investigations.	1hr	√		
	Infective endocarditis: Causes, Pathogenesis, morphology, complications and differential diagnosis of cardiac vegetations.	1hr	√		
	Pericarditis and other pericardial diseases	1hr	√		
	Congenital heart disease: ASD, VSD, Fallot's teratology, Bicuspid aortic PDA	1hr		√	
	Cardiomyopathies	1hr		√	
2	**Respiratory system**	**7 hrs**			
	Pneumonias: Etiopathogenesis, classifications, morphology, clinical course and complications.	1hr	√		
	Lung abscess: Etiopathogenesis, Morphology and complications.	1hr	√		
	Atelectasis and hyaline membrane disease.			√	
	Chronic obstructive pulmonary disease: Bronchial asthma and Bronchiectasis -Etiopathogenesis, Morphology and complications.	1hr	√		
	Chronic bronchitis and Emphysema: Etiopathogenesis, Morphology types of emphysema and complications.	1hr	√		
	Pulmonary tuberculosis: primary and secondary, morphologic types including pleuritis, clinical course.	1hr	√		

	Occupational lung disorders: Anthracosis, silicosis, asbestosis, mesothelioma.	1hr		√	
	Tumors of lung and pleura: Classification, etiopathogenesis, gross and microscopic features, pattern of spread, staging, clinical course, para- neoplastic syndromes.	1hr	√		
3	**Oral cavity and salivary gland**	**2hrs**			
	Precancerous lesions of oral cavity and oral cancers: etiopathogenesis, gross and microscopic features.	1hr	√		
	Differential diagnosis of swelling of salivary gland.	1hr	√		
4	**Gastrointestinal tract**	**5hrs**			
	Gastritis: Etiology and types.	1hr		√	
	Peptic ulcer: definition, etiopathogenesis, gross and microscopic features and complications.		√		
	Ulcers of intestine: etiological classifications, morphology of typhoid, tubercular, amoebic ulcers and bacillary dysentery. Differential diagnosis of different forms of ulcers.	1hr	√		
	Idiopathic inflammatory bowel disease: etiopathogenesis, morphology and differences between Crohn's disease and ulcerative colitis.	1hr	√		
	Appendicitis		√		
	Tumors of upper Gastrointestinal Tract: Esophagus: etiopathogenesis, morphology and clinical features. Gastric carcinoma: etiopathogenesis, classification, gross and microscopic features and clinical features. Carcinoid tumors of GIT.	1hr	√		
	Tumors of lower Gastrointestinal Tract: Carcinoma colon- Etiopathogenesis, morphology and clinical features.	1hr	√		
	Intestinal polyps and gastrointestinal stromal tumors.			√	
5	**Liver and Biliary Tract**	**5hrs**			
	Viral hepatitis: Etiopathogenesis, types, clinical source, pathology, serologic diagnosis, sequelae.	1hr	√		
	Alcoholic liver disease: Pathogenesis, morphology and correlation with clinical features.	1hr	√		
	Cirrhosis: Etiopathogenesis, classification, pathology, complications & differential diagnosis.	1hr	√		
	Portal Hypertension: Types and manifestations.		√		

	Tumors of liver: Pathology of hepatocellular carcinoma.	1hr	√		
	Disease of gall bladder: cholecystitis, cholelithiasis and tumors.	1hr		√	
6	**Urinary tract system**	**8hrs**			
	Basics of impaired function and urinalysis	1hr	√		
	Nephritic and Nephrotic syndrome				
	Glomerulonephritis: Classification, Acute nephritis, rapidly progressive glomerulonephritis.	1hr	√		
	Renal failure: definitions, criteria, etiology, systemic manifestations and investigations.	1hr	√		
	Nephrolithiasis and obstructive nephropathy	1hr	√		
	Pyelonephritis and interstitial nephritis: etiopathogenesis of acute and chronic, morphology and clinical correlation.	1hr	√		
	Tumors of kidney and pelvis: classifications, morphology, clinical course and paraneoplastic syndromes of common tumors.	1hr	√		
	Renal vascular disorders and malformations, polycystic kidney.	1hr		√	
	Urinary bladder: cystitis and carcinoma	1hr	√		
7	**Female genital tract**	**6hrs**			
	Diseases of Uterus: Endometrial hyperplasia and carcinoma, adenomyosis, smooth muscle tumors	1hr	√		
	Trophoblastic diseases: hydatidiform mole, choriocarcinoma.	1hr		√	
	Diseases of cervix: cervicitis, cervical carcinoma, etiology cytological diagnosis	1hr	√		
	Ovarian tumors	1hr	√		
	Pelvic inflammatory disease including salpingitis	1hr	√		
	Genital tuberculosis			√	
	Breast: Non-neoplastic and Neoplastic lesions of the breast-Classification, Morphology, grading of carcinoma of breast and differential diagnosis of breast swellings.	1hr	√		

8	**Male Genital System**	**3hrs**			
	Prostate: Nodular hyperplasia, carcinoma	1hr	√		
	Testicular tumors	1hr	√		
	Carcinoma of penis	1hr	√		
9	**Lymphoreticular system**	**3hrs**			
	Diseases of spleen: Splenomegaly and effects	1hr		√	
	Lymphadenitis: Non-specific, granulomatous		√		
	Hodgkin's lymphoma, classification, morphology	1hr	√		
	Non-Hodgkin's lymphoma, classification, morphology	1hr	√		
10	**Dermatopathology**	**2hrs**			
	Skin tumors: Non-pigmented -classification and morphology.	1hr	√		
	Skin tumors: pigmented- classification and morphological features of common nevi and malignant melanoma.	1hr	√		
11	**Soft tissue**	**1hr**			
	Classification, morphological features of lipomatous, fibrous, blood vessels tumors, Neural, muscle and fibro histiocytic tumors.	1hr	√		
12	**Skeletal System**	**3hrs**			
	Osteomyelitis and Metabolic diseases: rickets / osteomalacia, osteoporosis, hyperparathyroidism	1hr		√	
	Tumors: Primary, osteosarcoma, osteoclastoma, Ewing's sarcoma, chondrosarcoma, metastatic	1hr	√		
	Arthritis: rheumatoid, osteoid and tuberculosis	1hr		√	
13	**Central Nervous system**	**3hrs**			
	CSF and its disturbances: Cerebral oedema, raised intracranial pressure	1hr	√		
	Inflammatory disorders: Pyogenic and tuberculous meningitis, brain abscess, tuberculoma.		√		
	Cerebrovascular disease: atherosclerosis, thrombosis, embolism, aneurysm, hypoxia, infarction and haemorrhage	1hr		√	
	Classify CNS tumors -primary glioma and meningioma and metastatic.	1hr	√		

14	**Endocrine system**	**3hrs**			
	Thyroid: Differential diagnosis of thyroid nodule.	1hr	√		
	Adrenal diseases: Cortical hyperplasia, atrophy, tuberculosis, tumors of cortex and medulla.	1hr		√	
	Parathyroid hyperplasias and tumours , hyperparathyroidism. Pituitary tumors	1hr		√	
15	**Myopathies:** Differential diagnosis of common muscle disorders.	**1hr**		√	
	Clinical Pathology	**3hrs**			
1	Jaundice: Differential diagnosis and laboratory investigations in jaundice including Liver function.	1hr	√		
2	Diabetes mellitus: Classification, pathogenesis of system involvement, sequelae and complications.	1hr	√		
3	Renal function tests	1hr	√		
	Medical Autopsy	**1hr**			
1	Indications and techniques of medical autopsies	1hr	√		

Tutorials , Seminars and Integrated teaching (42 Hours)

SR. No	TOPICS (Tutorials & Seminars)	HOURS
1	Blood Collection and anticoagulant	1 hr
2	Peripheral Smear	1 hr
3	Iron deficiency Anemia	1 hr
4	Megaloblastic Anemia	1 hr
5	Hemolytic Anemia	1 hr
6	Erythrocyte sedimentation Rate (ESR) & Packed Cell Volume (PCV)	1 hr
7	Leukemias	1 hr
8	Bone Marrow Examination	1 hr
9	Cell injury & Cell death	1 hr
10	Inflammation & Repair	1 hr
11	Circulatory Disturbances	1 hr
12	Neoplasia	1 hr
13	Pneumonias	1 hr
14	Cirrhosis	1 hr
15	Glomerulonephritis	1 hr
16	Ulcers of Gastrointestinal Tract	1 hr
17	Carcinoma Breast	1 hr
18	Carcinoma Cervix	1 hr
19	Bone tumors	1 hr
20	Liver function test & clinical charts	1 hr
21	Renal function test & clinical charts	1 hr
22	Gastric function test & clinical charts	1 hr
	TOTAL	**22hrs**

SR. No	TOPICS (Integrated Teaching)	HOURS	SR. No
1	Auto immune disorders	Horizontal	2 hrs
2	Tuberculosis	Horizontal	2 hrs
3	Malaria	Horizontal	2 hrs
4	Urine Examination & UTI	Horizontal	2 hrs
5	HIV/AIDS	Vertical	2 hrs
6	Fungal Infection	Vertical	2 hrs
7	Typhoid	Vertical	2 hrs
8	Ischemic heart disease	Vertical	2 hrs
9	Rheumatic heart disease	Vertical	2 hrs
10	Meningitis	Vertical	2 hrs
	TOTAL		20hrs

PRACTICAL:

1. One – third of allotted practical hours to be devoted to

   a. Performing a complete urine examination and detecting abnormalities and correlating with pathological changes.

   b. To perform with accuracy and reliability basic hematological estimation: TLC DLC, peripheral smear, staining, reporting along with history.

2. One third of allotted practical hours to be devoted to

   Identify and interpret gross and microscopic features of inflammatory lesions of different organs and common systemic diseases.

3. One third of allotted practical hours to be devoted to

   Discussion of case studies (paper) clinical, gross and microscopic features and other parameters wherever applicable to learn clinico-pathological correlations.

Practical Syllabus:

Clinical Pathology	
1	Introduction to Pathology
2	Blood collection and anticoagulants
3	Hemoglobin estimation
4	Total WBC count
5	Differential WBC count
6	Development of blood & bone marrow examination.
7	Laboratory investigations in anemias :
8	Acute Leukemia
9	Chronic Leukemia
10	Blood grouping
11	Urine Examination
12	Examination of CSF
13	Bleeding disorders
14	Sputum and fluid tests
15	Renal function tests
16	Liver function tests
17	Gastric & Pancreatic function tests
18	Investigations in infertility

General and Systemic Pathology	
1	Microscope and microscopic study of cells and tissues
2	Retrogressive changes
3	Necrosis and Gangrene
4	Pigments
5	Amyloidosis
6	Acute inflammation
7	Chronic inflammation & repair
8	Typhoid & syphilis
9	Tuberculosis and Leprosy
10	Circulatory disturbances I, II & III
11	Disorders of cell growth
12	Tumor Pathology I & II
13	Immuno Pathology I &II
14	Respiratory System I & II
15	Cardiovascular System I & II
16	Alimentary System I, II & III
17	Hepatobiliary System I & II
18	Diseases of Kidney I & II
19	Female reproductive System
20	Male reproductive System
21	Lymph nodes and Spleen
22	Skeletal System
23	Diseases of Skin
24	Central nervous System
25	Tumors of Breast and Diseases of the endocrine organs

EXAMINATION SKILLS

1. Be able to collect, store and transport materials for various pathological tests including histopathology, cytopathology, clinical pathology, hematology and biochemistry.
2. Interpret abnormal laboratory values of common diseases
3. Do complete urine examination including microscopy.
4. Do perform and interpret hemoglobin, TLC, DLC, ESR, PCV, peripheral blood smears and red cell morphology.
5. Interpret the peripheral smears of common diseases.
6. Do blood grouping and cross matching
7. Adapt universal precautions for self protection against HIV and hepatitis and counsel the patient.

Semester / Term Ending Theory and Practical Examination in Pathology

Semester	Theory Marks	Practical Marks
III	40	40
IV	40	40
V	80	40
Total	**160**	**120**

There will be single theory paper at the end of each semester. The pattern for theory & Practical examination will be same as **Pathology University Examination.**

Pathology University Examination: Theory, Practicals and Viva

1. Scheme of internal assessment (Pathology) : The computation of internal assessment marks shall be as per university rule and regulations.

2. Pattern of Theory Examination including Distribution of Marks, Questions and Time.

Distribution of Marks

Sr. No		Total marks
1	Theory (2 papers - 40 marks each)	80
2	Oral (Viva)	15
3	Practical	25
4	Internal assessment (Theory -15, Practicals -15)	30
	Total	150

i) Total duration - 4 hrs (each paper of 2 hrs or 120 minutes)
ii) Each paper will have 3 sections.
iii) Pattern and marking for each paper of 40 marks as provided in the table

Sections	Nature of Question- Two Theory Papers	Total No. of Questions	Mark (s) per Question	Total Marks
A)	Multiple Choice Questions (MCQs)	16	1/2	08
B)	Brief Answer Questions (BAQs)	4 out of 5	4 x 4	16
C)	Long Answer Question (LAQ)	2 out of 3	2 x 8	16
Total				**40**

3. **Direction- For paper setting**

   LAQs and MCQs must be from must know area.

   SAQs must be from, Must know (90%), Desirable to know & Nice to know (10%)

Paper wise distribution of theory topics and number of questions:

A) **Paper I:**

General Pathology inclusive of general neoplasia, Haematology inclusive of transfusion medicine.

Out of the total 16marks for MCQs in section A, 10 MCQs should be from General Pathology inclusive of general neoplasia, 4 MCQs from hematology and 2 MCQs from transfusion medicine.

Out of 3 LAQs in Section C, 2 questions should be from General Pathology and General Neoplasia and one question should be from Haematology inclusive of transfusion medicine.

B) **Paper II:**

Systemic Pathology inclusive of Systemic Neoplasia and Clinical Pathology.

Out of the total 16 marks for MCQs in section A, 12 MCQs should be from systemic pathology inclusive of systemic neoplasia and 4 MCQs from clinical pathology.

Out of 3 LAQs in Section C, 2 questions should be from Systemic Pathology and Systemic Neoplasia and one question should be from Clinical Pathology.

4. **Marking scheme:** Each paper of 40 marks as shown in the above table.

5. University examination Nature of practicals and duration (Pathology)

a) Number of students for practical Examination should not exceed more than 35 /day.

b) **Practicals** **Marks 25**

	Practicals		**Marks**
a.	10 Spots (2 minutes each)	4 specimens, 3 histopathology slides, 1 hematology slide, 1 instrument and 1 chart Identification – 1/2 mark Specific short question - 1/2 mark 1 Mark for each spot	10 Marks
b.	Urine Examination	Physical Examination and two abnormal constituents.	05 Marks
c.	Histopathology slide	Draw, label and give diagnosis.	03 Marks
d.	Haematology Examination	Peripheral blood smear staining and do differential leukocyte count.	03 Marks
		Hemoglobin Estimation / Total leukocyte count / Blood group Estimation.	04 Marks
		Total	**25 Marks**

C) **Viva: Duration and topic distribution: Viva marks shall be added to theory and shall be submitted separately out of 15 Marks.**

Viva consists of two tables; on each table the student will face 2 examiners for 5 minutes each:

Table - I General and Systemic Pathology 7 Marks

Table - II Clinical Pathology and Haematology 8 Marks

Total 15 Marks

TEACHING LEARNING METHODS:

- Structured interactive sessions
- Small group discussion
- Practical including demonstrations
- Problem based exercises
- Self learning tools
- Interactive learning
- E-modules

LEARNING RESOURCE MATERIALS:

- Text books

  1) Robbin's : Pathologic basis of Disease
  2) Hematology De Gruchy
  3) Text book of Pathology by Harsh Mohan
  4) Clinical Pathology: A Practical Manual by Sabitri Sanyal
  5) Practical Pathology Book by Harsh Mohan

- Reference books

  1) Dacie and Lewis practical Hematology; 12th Edition.
  2) Pathology illustrated; 7th Edition by Robin Reid.
  3) Henry's Clinical diagnosis & Management By Laboratory Methods; 23rd Edition, by Richard McPherson.
  4) Transfusion Medicine, Technical Manual.2nd Edition 2003 , Edited by R. K. Saran.

TIME OF EVALUATION:

There should be regular formative assessment. Formative assessment, day to day performance should be given greater importance. Examination of pathology should be at the end of 5th semester and formative assessment in middle of 3rd and 4th semester and summative assessment at the end of 5th semester.

MGM INSTITUTE OF HEALTH SCIENCES

(Deemed University u/s 3 of UGC Act, 1956)

MARKLIST FOR PRACTICAL AND VIVA

EXAM CENTRE: -..... EXAM: - SECOND MBBS

SUBJECT: -PATHOLOGY **MONTH / YEAR: -.....**

DISTRIBUTION OF PRACTICAL MARKS

A: 10 spots2 minutes each (4 Specimen, 1 Instrument,
3 histopathology sides,1 hematology slide and 1 chart)
½ marks for identification and ½ mark for specific short question
together 1 mark for each spot." - 10 Marks
B : Urine Examination - 05 Marks
C : Histopathology Slides - 03 Marks

HAEMATOLOGY EXAMINATION

D : Peripheral Blood Smear Stain And Report - 03 Marks
E: Hb/TLC/ Blood group - 04 Marks
F: Total - 25 Marks

DISTRIBUTION OF VIVA MARKS

G: General of Systematic Pathology - 07 Marks
H: Clinical Patho and Hematology - 08 Marks
I : Total - 15 Marks

Seat No	A	B	C	D	E	F Practical Total 25 Max. 25 Marks Min.12.5 Marks	G	H	Viva Total.
	10	5	3	3	4	25 Marks	07	08	15 Marks

NAME OF EXAMINER	COLLEGE	SIGNATURE WITH DATE
1.		
2.		
3.		
4.		

MGM Medical College
Modal Question Paper
IInd MBBS

Subject: Pathology **PAPER -I**

Date:

Duration: 2hrs
Maximum Marks : 40
Section A: 15mins

Instructions:

1. **All questions are compulsory.**
2. **Please darken the correct box in an answer sheet.**

SECTION 'A' (MCQ's) **16x0.5 = 8Marks**

1) Bouin's fluid contains all except
   a) Picric acid
   b) Glacial acetic acid
   c) Formalin
   d) Methanol

2) Tissue sections are cut by an instrument called as
   a)Thermometer
   b) Cryostat
   c) Microtome
   d) Autotechnicon

3) Masson's trichrome stain is used for
   a) Fat
   b) Mucin
   c)connective tissue
   d) Pigment

4) Coagulative necrosis is seen in all of the following conditions except
   a) Myocardial infarction
   b) Thermal injury
   c) Tuberculosis of lung
   d) Kidney infarction

5) Gangrene of intestine is an example of
   a)Dry Gangrene
   b) Wet Gangrene
   c)Gas Gangrene
   d) Air embolism

6) Reversible cell injury does not show
   a) Loss of microvilli
   b) Karyolysis
   c) Endoplasmic reticulum swelling
   d) Myelin figures

7) Caisson disease is due to

a) Fat embolism
b) Air embolism
c) Amniotic fluid embolism
d) Thromboembolism

8) Release of lipopolysaccharide in the body leads to:

a) Cardiogenic shock
b) Septic shock
c) Hypovolemic shock
d) Neurogenic shock

9) In clean surgical wound, granulation tissue appears by

a) 24hrs
b) one week
c) 3 days
d) 5days

10) In acute inflammation ,the tissue response consists of all except

a) Exudation
b) Vasodilation
c) Neutrophilic response
d) Macrophage accumulation

11) All of the following investigations are done to diagnose iron deficiency anaemia except

a) Serum iron level
b) Serum ferritin level
c) Folic acid level
d) Total iron binding capacity

12) 1% sodium metabisulfite is used in

a) Sickling Test
b) Shilling's Test
c) Folic acid level
d) Total iron binding capacity

13) All of the following are the abnormalities in the shape of erythrocyte EXCEPT

a) Ovalocyte
b) Elliptocyte
c) Spherocyte
d) Reticulocyte

14) Following are the causes of iron deficiency anaemia EXCEPT

a)Hookworm infestation
b) Carcinoma of the stomach
c) Nutritional deficiency
d) Intrinsic factor deficiency

15) In Blood bag Adenine is added to CPD to

a) Increase Shelf – life
b) Prevent Coagulation of blood
c) Prevent Growth of microorganisms
d) All of above

16) Bombay phenotype are the individuals who:

a) Lack H genes and therefore H substance
b) Lack C, D, E antigens
c) Secrete excessive amount of H substance
d) Possess A, B antigens

MGM Medical College
Modal Question Paper
IInd MBBS

Subject: Pathology **PAPER -I**

Date: **Duration: 2hrs**
Maximum Marks: 40
Section B& C: 1hr 45mins

Instructions:

1. **All questions are compulsory.**
2. **Draw neat and labelled diagram wherever necessary.**

Section – B

Q 2) Write short answers (Any 4 out of 5) **4 x 4 = 16**

1) Difference between dry and wet gangrene. (Must Know)
2) Repair of fracture bone.(Must Know)
3) Down syndrome (Must Know)
4) Hereditary spherocytosis. (Desirable to Know)
5) Transfusion reactions. (Must Know)

Section – C

Q3) Write Long answers (Any 2 out of 3) **2 x 8 = 16**

1. Define inflammation. Write in detail about vascular and cellular events in acute inflammation. (Must Know)
2. Define carcinogens and discuss chemical carcinogenesis. (Must Know)
3. Classify anemias and discuss laboratory investigations in megaloblastic anaemia. (Must Know)

MGM Medical College
Modal Question Paper
IInd MBBS

Subject: Pathology **PAPER -II**

Date: **Duration: 2hrs**
Maximum Marks: 40
Section B& C: 1hr 45mins

Instructions:

1. **All questions are compulsory.**
2. **Draw neat and labelled diagram wherever necessary.**

Section – B

Q 2) Write short answers (Any 4 out of 5) **4 x 4 = 16**

1. Peptic ulcer. (Must Know)
2. Hepatocellular carcinoma (Must Know)
3. Vesicular mole (Desirable to Know)
4. Post streptococcal Glomerulonephritis. (Must Know)
5. Difference between pyogenic and tuberculous meningitis. (Must Know)

Section – C

Q3) Write Long answers (Any 2 out of 3) **2 x 8 = 16**

1. Discuss etiopathogenesis, gross and microscopic features of myocardial infarction. (Must Know)
2. Classify lung tumours and discuss in details about bronchogenic carcinoma (Must Know)
3. Classify Diabetes mellitus. Discuss laboratory investigations and complications of diabetes mellitus. (Must Know)

MGM Medical College
Modal Question Paper
IInd MBBS

Subject: Pathology **PAPER -II**

Date:

Duration: 2hrs
Maximum Marks : 40
Section A: 15mins

Instructions:

1. **All questions are compulsory.**
2. **Please darken the correct box in an answer sheet.**

SECTION 'A' (MCQ's) **16x0.5 = 8Marks**

1) Septic vegetations are seen in
   a) Bacterial endocarditis b) Hypercoagulable stat
   c) SLE d) RHD

2) The presence of endometrial glands or stroma in abnormal locations outside the uterus is termed as
   a) Endometritis b) Endometriosis
   c) Endometrial hiperplasia d) Adenomyosis

3) Atelectasis is
   a) Loss of lung Volume b) Loss of lung Lobe
   c) Loss of lung Lobule d) All of above

4) 'Leather bottle stomach' results from which type of carcinoma stomach?
   a) Fungating type b) Polypoidal type
   c) Diffuse infiltrating type d) Ulcerative type

5) Mallory hyaline bodies are seen in
   a) Viral Hepatitis b)Autoimmune Hepatitis
   c) Alcoholic hepatitis d)Drug induced hepatitis

6) On X ray onion skin appearance is characteristic of
   a) Osteogenic sarcoma b) Fibrosarcoma
   c) Ewings sarcoma d) Giant cell tumour

7) Hodgkins lymphoma is classified into all of the following except

a) Nodular sclerosis
b) Mixed cellularity type
c) Diffuse large cell type
d)Lymphocyte predominance type

8) Premalignant conditions of GIT are

a) Familial Polyposis Coli
b) Villous adenoma
c) Ulcerative Colitis
d) All of the above

9) Nephrotic syndrome includes all of the following EXCEPT

a) Heavy Proteinuria
b) Hypoalbuminemia
c) Lipiduria
d) Hematuria

10) Following are the type of germ cell tumours except

a) Seminoma
b) Embryonal carcinoma
c) Granulosa cell tumour
d) Choriocarcinoma

11) Leiomyomas are commonly seen in

a) Women after menopause
b) Women during active reproductive life
c) Prepubertal age
d) Elderly women

12) All of the following are true about chronic pyelonephritis EXCEPT

a) Significant bacteriuria is not found
b) Involvement of the kidney is bilateral and symmetric
c) Chronic pyelonephritis associated with reflux nephritis exhibit acute recur pyelonephritis
d) Appearance of proteinuria and focal segmental sclerosis indicate bad prognosis

13) One of the following crystal is found in alkaline urine

a) Uric acid
b) Triple phosphate
c) Oxalate
d) Cystine

14) All of the following sugars are detected by benedicts test except

a) Galactose
b) Maltose
c) Lactose
d) Sucrose

15) For the diagnosis of early diabetic nephropathy urine is tested for

a) B J Protiens
b) Ketone bodies
c) Urobilinogen
d) Microalbuminuria

16) Kimmelstiel Wilson lesion in the glomeruli are seen in

a) S L E
b) Amyloidosis
c) Diabetes Mellitus
d) Bacterial endocarditis

MGM Medical College
Modal Question Paper
IInd MBBS

PAPER -II

Subject: Pathology

Date:

Duration: 2hrs
Maximum Marks: 40
Section B& C: 1hr 45mins

Instructions:

1. **All questions are compulsory.**
2. **Draw neat and labelled diagram wherever necessary.**

Section – B

Q 2) Write short answers (Any 4 out of 5) **4 x 4 = 16**

1. Peptic ulcer.
2. Hepatocellular carcinoma
3. Vesicular mole
4. Post streptococcal Glomerulonephritis.
5. Difference between pyogenic and tuberculous meningitis.

Section – C

Q3) Write Long answers (Any 2 out of 3) **2 x 8 = 16**

1. Discuss etiopathogenesis, gross and microscopic features of myocardial infarction.
2. Classify lung tumours and discuss in details about bronchogenic carcinoma.
3. Classify Diabetes mellitus. Discuss laboratory investigations and complications of diabetes mellitus.

1st Year - MBBS

Resolution No. 1.3.7.1 of BOM-51/2017: Resolved to continue the current Internal Assessment pattern for MBBS (i.e. 5 marks for Day-to-day assessment) for Pre and Para Clinical subjects (Anatomy, Physiology, Biochemistry, Microbiology, Pharmacology, Pathology and FMT).
For rest of the subjects, Internal Assessment is to be calculated from terminal/Post end exam marks and Prelims examination, with immediate effect.

MBBS Pathology

Resolution No. 1.3.8.8 of BOM-51/2017: Resolved to:

(i) Introduce problem case discussion (problem based learning) in all para-clinical subjects on topics identified from batch entering in II[nd] MBBS in 2017-18 onwards. [Annexure-VI]

Problem based learning topics for undergraduates (MBBS)

2. **Pathology**
   - Diabetes Mellitus
   - Anaemias – a) Iron Deficiency, b) Megaloblastic c) Hemolytic
   - Hepatitis

2nd MBBS, Pathology

Resolution No. 1.3.8.13 of BOM-51/2017: Resolved to approve the topics for vertical and horizontal integrated teaching in II[nd] MBBS Curriculum from batch entering in II[nd] MBBS in 2017-18 onwards. Annexure-X

Pathology

1. Topics for Integrated Teaching (Horizontal)

1	Auto immune disorders	Horizontal
2	Tuberculosis	Horizontal
3	Malaria	Horizontal
4	Urine Examination & UTI	Horizontal
Topics for Integrated Teaching (Vertical)		
5	HIV/AIDS	Vertical
6	Fungal Infection	Vertical
7	Typhoid	Vertical
8	Ischemic heart disease	Vertical
9	Rheumatic heart disease	Vertical
10	Meningitis	Vertical

2nd MBBS, Pathology

Resolution No. 1.3.8.11 of BOM-51/2017: Resolved to approve the topics to be included under Bioethics in UG. [Annexure-IX]

Bioethics Topics for UG/PG

Topics for II-MBBS Pathology Syllabus

1. Blood Transfusion.
2. Integrity

Resolution No. 4.2.1 of BOM-53/2018: Resolved that the printed format of the Medico-legal examination proforma (sexual violence) may be provided to 2nd MBBS students during practical's in formative and summative assessments **[Annexure-X]**, to be applicable from batch entering into 2nd MBBS 2017-18 onwards.

Annexure 38 for item NO. (4)

Annexure - X

CONFIDENTIAL

Medico-legal Examination Report of Sexual Violence

1. Name of the Hospital ..... OPD No. ..... Inpatient No .....
2. Name . . .. D/o or S/o (where known)..... .....
3. Address..... .....
4. Age (as reported) ..... Date of Birth (if known).....
5. Sex (M/F/Others) ..,.....
6. Date and Time of arrival in the hospital .....
7. Date and Time of commencement of examination.....
8. Brought by..... (Name & signatures)
9. MLC No. . ..... Police Station. ....
10. Whether conscious, oriented in time and place and person ✓.....
11. Any physical/intellectual/psychosocial disability .....

(Interpreters or special educators will be needed where the survivor has special needs such as hearing/speech disability, language barriers, intellectual or psychosocial disability.)

12. Informed Consent/refusal

I.....D/o or S/o.....

hereby give my consent for:

a) medical examination for treatment Yes ☐ No ☐
b) this medico legal examination Yes ☐ No ☐
c) sample collection for clinical & forensic examination Yes ☐ No ☐

I also understand that as per law the hospital is required to inform police and this has been explained to me.

I want the information to be revealed to the police Yes ☐ No ☐

I have understood the purpose and the procedure of the examination including the risk and benefit, explained to me by the examining doctor. My right to refuse the examination at any stage and the consequence of such refusal, including that my medical treatment will not be affected by my refusal, has also been explained and may be recorded. Contents of the above have been explained to me in ..... language with the help of a special educator/interpreter/support person (circle as appropriate).....

If special educator/interpreter/support person has helped, then his/her name and signature.....

(31)

(2)

Name & signature of survivor or parent/Guardian/person in whom the child reposes trust in case of child (<12 yrs)

.. ..
.. ..
... .

With date, time & place
Name & signature/thumb impression of Witness
.....
.....
.....

With Date, time and place

13. Marks of identification (Any scar/mole)
(1) .....
(2) .....

Left Thumb impression

14. Relevant Medical/Surgical history

Onset of menarche (in case of girls) Yes No Age of onset.....
Menstrual history – Cycle length and duration ..... Last menstrual period.....

Menstruation at the time of Incident - Yes/ No, Menstruation at the time of examination - Yes/ No

Was the survivor pregnant at time of incident - Yes/No, If yes duration of pregnancy ..... weeks

Contraception use: Yes/No..... If yes – method used: .....

Vaccination status – Tetanus (vaccinated/not vaccinated), Hepatitis B (vaccinated/not vaccinated)

(32)

(3)

15 A.History of Sexual Violence

(I) Date of incident/s being reported (ii) Time of incident/s (iii) Location/s

(iv)Estimated duration : 1-7 days..... 1 week to 2 months.....
2-6 months..... >6 months.....
Episode: One..... Multiple .....Chronic (>6 months) .....Unknown.....

(v) Number of Assailant(s) and name/s.....
(vi) Sex of assailant(s).....Approx. Age of assailant (s)..... If known to the survivor – relationship with the survivor.....

(vii) Description of incident in the words of the narrator:
Narrator of the incident: survivor/informant (specify name and relation to survivor)
.....

If this space is insufficient use extra page

15 B. Type of physical violence used if any (Describe):

Hit with (Hand, fist, blunt object, sharp object)	Burned with
Biting	Kicking
Pinching	Pulling Hair
Violent shaking	Banging head
	Dragging

Any other:

(33)

15 C.

i. Emotional abuse or violence if any (insulting, cursing, belittling, terrorizing).....
.....

ii. Use of restraints if any .....

iii. Used or threatened the use of weapon(s) or objects if any.....
.....

iv. Verbal threats (for example, threats of killing or hurting survivor or any other person in whom the survivor is interested; use of photographs for blackmailing, etc.) if any:
.....

v. Luring (sweets, chocolates, money, job) if any: .....

vi. Any other:.....

15 D.

i. Any H/O drug/alcohol intoxication:

ii. Whether sleeping or unconscious at the time of the incident: .....

15 E. If survivor has left any marks of injury on assailant/s, enter details: .....

15 F. Details regarding sexual violence:

Was penetration by penis, fingers or object or other body parts (Write Y=Yes, N=No, DNK=Don't know) Mention and describe body part/s and/or object/s used for penetration.

	Penetration			Emission of Semen		
Orifice of Victim	By Penis	By body part of self or assailant or third party (finger, tongue or any other)	By Object	Yes	NO	Don't know
Genitalia (Vagina and/or urethra)						
Anus						
Mouth						

Oral sex performed by assailant on survivor	Y	N	DNK
Forced Masturbation of self by survivor	Y	N	DNK
Masturbation of Assailant by Survivor, Forced Manipulation of genitals of assailant by survivor	Y	N	DNK
Exhibitionism (perpetrator displaying genitals)	Y	N	DNK
Did ejaculation occur outside body orifice (vagina/anus/mouth/urethra)?	Y	N	DNK

If yes, describe where on the body			
Kissing, licking or sucking any part of survivor's body	Y	N	If Yes, describe
Touching/Fondling	Y	N	If Yes, describe
Condom used*	Y	N	DNK
If yes status of condom	Y	N	DNK
Lubricant used*	Y	N	DNK
If yes, describe kind of lubricant used			
If object used, describe object:			
Any other forms of sexual violence			

*** Explain what condom and lubricant is to the survivor**

Post Incident has the survivor	Yes/No/Do Not know	Remarks
Changed clothes		
Changed undergarments		
Cleaned/washed clothes		
Cleaned/washed undergarments		
Bathed		
Douched		
Passed urine		
Passed stools		
Rinsing of mouth/Brushing/ Vomiting (Circle any or all as appropriate)		

Time since incident..... H/o vaginal/anal/oral bleeding/discharge prior to the incident of sexual violence.....

H/o vaginal/anal/oral bleeding/discharge since the incident of sexual violence.....

H/o painful urination/ painful defecation/ fissures/ abdominal pain/pain in genitals or any other part since the incident of sexual violence

16. General Physical Examination-

i. Is this the first examination.....

ii. Pulse..... BP.....

iii. Temp.....Resp. Rate.....

iv. Pupils .....

v. Any observation in terms of general physical wellbeing of the survivor.....

17. Examination for injuries on the body if any

The pattern of injuries sustained during an incident of sexual violence may show considerable variation. This may range from complete absence of injuries (more frequently) to grievous injuries (very rare).

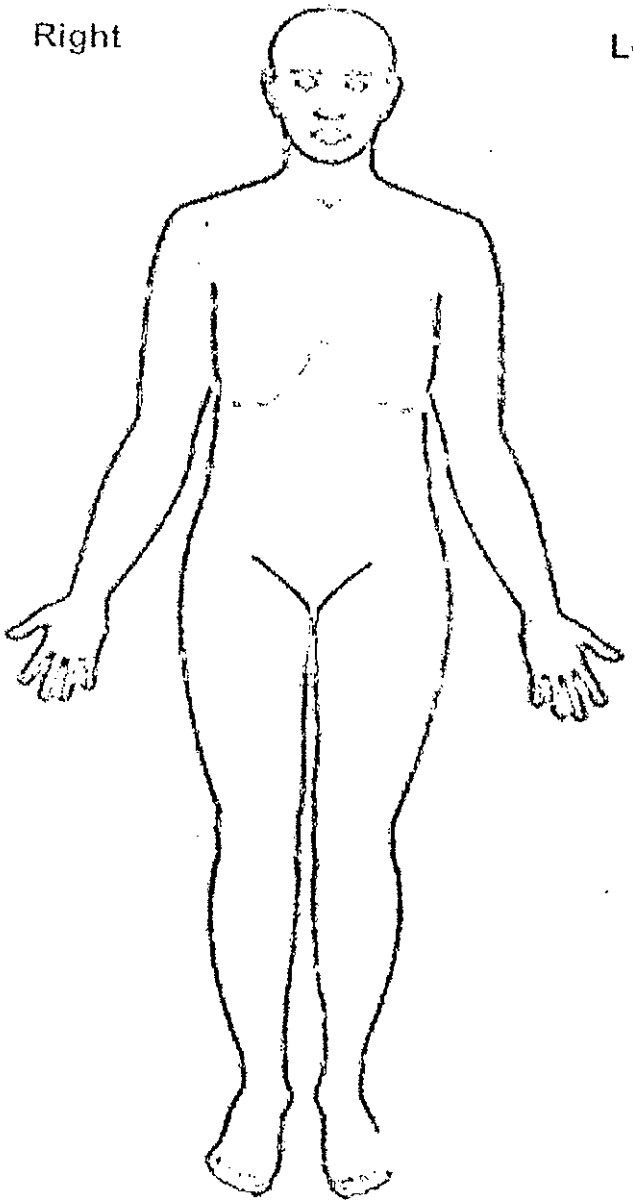
(Look for bruises, physical torture injuries, nail abrasions, teeth bite marks, cuts, lacerations, fracture, tenderness, any other injury, boils, lesions, discharge specially on the scalp, face, neck, shoulders, breast, wrists, forearms, medial aspect of upper arms, thighs and buttocks) Note the Injury type, site, size, shape, colour, swelling signs of healing simple/grievous, dimensions.)

Scalp examination for areas of tenderness (if hair pulled out/ dragged by hair)	
Facial bone injury: orbital blackening, tenderness	
Petechial haemorrage in eyes and other places	
Lips and Buccal Mucosa / Gums	
Behind the ears	
Ear drum	
Neck, Shoulders and Breast	
Upper limb	
Inner aspect of upper arms	
Inner aspect of thighs	
Lower limbButtocks	
Other, please specify	

(7)

Right

Left



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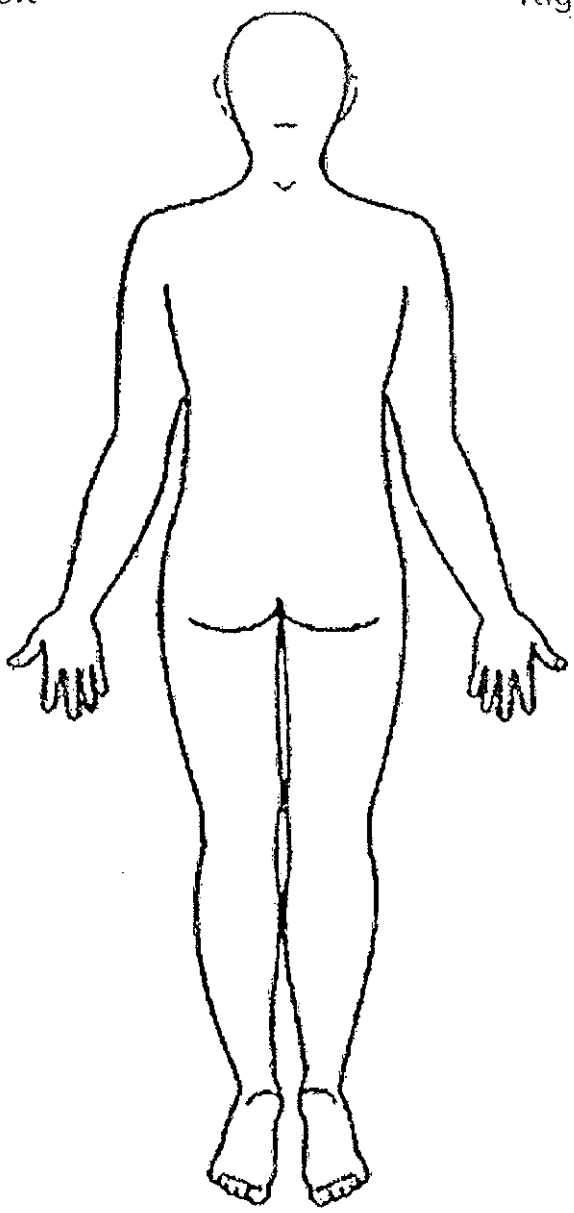
(37)

(8)

Left

Right



(38)

(9)

18. Local examination of genital parts/other orifices*:

A. External Genitalia: Record findings and state NA where not applicable.

Body parts to be examined	Findings	
Urethral meatus & vestibule		
Labia majora		
Labia minora		
Fourchette & Introitus		
Hymen Perineum		
External Urethral Meatus		✓
Penis		
Scrotum		
Testes		
Clitoropenis		
Labioscrotum		
Any Other		

* Per/Vaginum /Per Speculum examination should not be done unless required for detection of injuries or for medical treatment.

P/S findings if performed .....
P/V findings if performed .....
Record reasons if P/V of P/S examination performed .....

C. Anus and Rectum (encircle the relevant)
Bleeding/ tear/ discharge/ oedema/ tenderness

D. Oral Cavity - (encircle the relevant)
Bleeding/ discharge/ tear/oedema/ tenderness

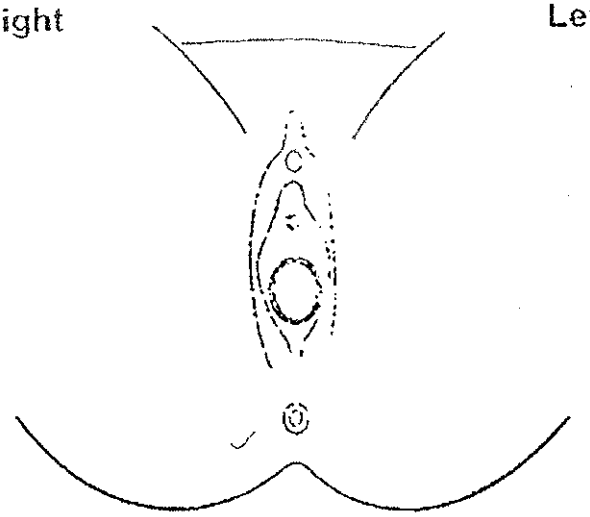
19. Systemic examination:

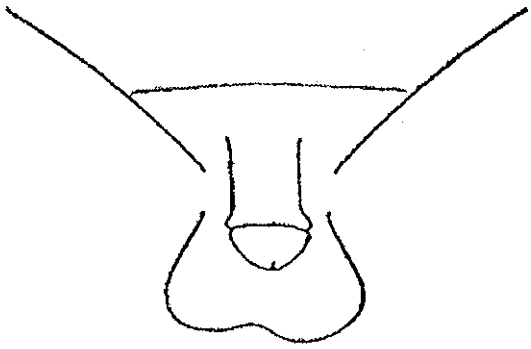
Central Nervous System: .....
Cardio Vascular System: .....
Respiratory System: .....
Chest: .....
Abdomen: .....

(39)

(10)

Right Left





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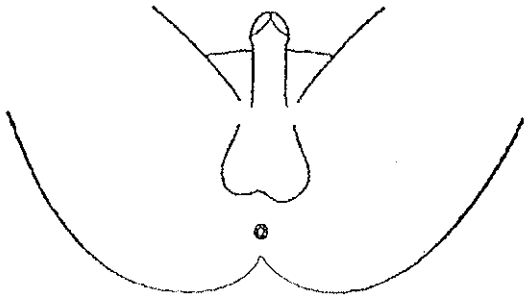


(40)

20. Sample collection/investigations for hospital laboratory/ Clinical laboratory

1) Blood for HIV, VDRL, HbsAg
2) Urine test for Pregnancy/
3) Ultrasound for pregnancy/internal injury
4) X-ray for injury

21. Samples Collection for Central/ State Forensic Science Laboratory

1) Debris collection paper
2) Clothing evidence where available – (to be packed in separate paper bags after air drying)

List and Details of clothing worn by the survivor at time of incident of sexual violence

3) Body evidence samples as appropriate (duly labeled and packed separately)

	Collected/Not Collected	Reason for not collecting
Swabs from Stains on the body (blood, semen, foreign material, others)		
Scalp hair (10-15 strands)		
Head hair combing		
Nail scrapings (both hands separately)		
Nail clippings (both hands separately)		
Oral swab		
Blood for grouping, testing drug/alcohol intoxication (plain vial)		
Blood for alcohol levels (Sodium fluoride vial)		
Blood for DNA analysis (EDTA vial)		
Urine (drug testing)		
Any other (tampon/sanitary napkin/condom/object)		

(12)

4) **Genital and Anal evidence** (Each sample to be packed, sealed, and labeled separately-to be placed in a bag)

* Swab sticks for collecting samples should be moistened with distilled water provided.

	Collected/Not Collected	Reason for not collecting
Matted pubic hair		
Pubic hair combing (mention if shaved)		
Cutting of pubic hair (mention if shaved)		
Two Vulval swabs (for semen examination and DNA testing)		
Two Vaginal swabs (for semen examination and DNA testing)		
Two Anal swabs (for semen examination and DNA testing)		
Vaginal smear (air-dried) for semen examination		
Vaginal washing		
Urethral swab		
Swab from glans of penis/clitoropenis		

*Samples to be preserved as directed till handed over to police along with duly attested sample seal.

22. Provisional medical opinion

I have examined (name of survivor).....M/F/Other.....aged..... reporting_ (type of sexual violence and circumstances)....., XYZ days/hours after the incident, after having (bathed/douched etc)..... My findings are as follows:

- Samples collected (for FSL), awaiting reports
- Samples collected (for hospital laboratory)
- Clinical findings
- Additional observations (if any)

(42)

(13)

23. Treatment prescribed:

Treatment	Yes	NO	Type and comments
STI prevention treatment			
Emergency contraception			
Wound treatment			
Tetanus prophylaxis			
Hepatitis B vaccination			
Post exposure prophylaxis for HIV			
Counselling			
Other			

24. **Date and time of completion of examination** .....

This report contains ..... number of sheets and ..... number of envelopes.

Signature of Examining Doctor

Name of Examining Doctor

Place:

Seal

25. **Final Opinion** (After receiving Lab reports)

Findings in support of the above opinion, taking into account the history, clinical examination findings and Laboratory reports of ..... bearing identification marks described above, ... hours/ days after the incident of sexual violence, I am of the opinion that:

Signature of Examining Doctor

Name of Examining Doctor

Place:

Seal

COPY OF THE ENTIRE MEDICAL REPORT MUST BE GIVEN TO THE SURVIVOR/ VICTIM FREE OF COST IMMEDIATELY

(43)

Resolution No. 4.5.2.1 of BOM-55/2018: Resolved to introduce training in 'Research Methodology' for 3rd Semester MBBS students entering in 3rd Semester from September 2018 onwards. It was further resolved that responsibility of this training will be with Pharmacology department.

Resolution No. 4.5.2.3 of BOM-55/2018: Resolved to provide the printed standard format of the Medico-legal examination (Age,Alcoholic,Weapon,Injury,Death,Potency,Sickness,Fitness) to 2nd MBBS students during practical examination in formative and summative assessments. **[Annexure-34-A,B,C,D,E,F,G,H]**

Recd. on 18/11/2018

Examination for Determination/Estimation of Age

Annexure - 34-A

To,

The _____

Reference : Your Letter No. _____ Dated _____

Name : _____

Age stated : _____ ; Sex : _____ ; Occupation : _____

Marital status : _____

Address : _____

Brought by Police Constable : _____ No. : _____ ; P.S. _____

Identified by : _____

Date and Time of Examination : _____

Place of Examination : _____

Consent : _____

_____

Signature of Examinee

(If minor below 12 yrs. consent of Parents/Guardian)

Examined in presence of : _____

(If female)

(Signature of female attendant)

Identification marks :

1. _____

2. _____

Birth Date : _____ Education : _____

Physical Examination :

1. Height : _____ cm 2. Weight : _____ kg

3. Chest girth at the level of nipple : _____ cm

4. Abdominal girth at the level of navel : _____ cm

5. General build and appearance : _____

6. Hairs : Pubic : _____, Axillary : _____, Facial : _____, Scalp : _____

7. Development of breasts : _____

8. Development of genitals : _____

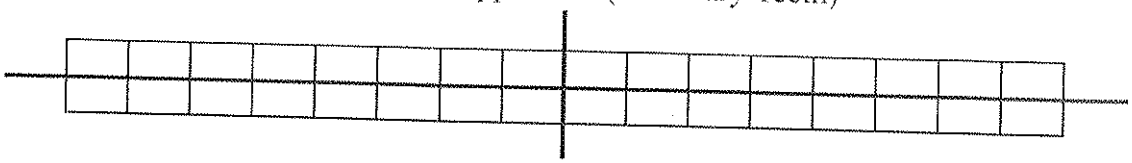
9. Onset of Puberty :

Voice : _____ Adam's apple : _____

Date of menarche : _____ Regularity of menses : _____

10. Dental Status :

Upper Jaw (Maxillary Teeth)



Lower Jaw (Mandibular Teeth)

11. Advised X-ray :

a.

b.

c.

'X-ray' plate No.: a._____ b._____ c._____

Dated :

Provisional Age Certificate

On clinical examination of the individual, age is about _____ years. However, the final opinion regarding the age should be collected from this office after submission of the Radiological report and the birth certificate.

Signature

(Dr.)

Designation & Seal

Place : _____

Date : _____

Age Certificate

To

The _____

Reference : Age estimation of_____, Dated _____

Sir,

I, Dr. _____, after going through the findings

of_____

Physical examination report No. _____, Dated _____

'X' ray plate No. _____, Dated_____

Radiological Examination report No_____, Dated_____

and the Date of Birth Certificate No._____, Dated_____

produced before me,

I am of the opinion that the individual's age is about _____ years

Signature

(Dr.)

Designation & Seal

Place : _____

Date : _____

Examination / Certification of Alcoholic

A Model Scheme of Examination

Annexure-34-B

To,

The Investigating Officer P.S.

Reference : Your letter No. Dated :

I am forwarding herewith the result of my examination of

Name : Son / daughter / wife / widow of

Age : Sex : M/F Weight :

Address :

Consent for examination :

Signature / Thumb impression of Examinee

Identification Marks :

1.

2.

Brought by P.C. Name : No. P.S.

Date and time of examination :

Place of examination :

History :

a. Alleged case -

b. Related to alcohol -

c. Illness -

General behaviour :

Clothing :

Attitude :

Memory : Mental alertness :

Pulse : Respiration :

Temperature : Blood pressure :

Skin :

Smell of alcohol, if any :

Lips :

Tongue :

Eye :

Pupils :

Conjunctiva :

Muscle co-ordination :

Gait :

Speech :

Handwriting

Reflexes :

Systemic examination :

Respiratory System :

Cardio-vascular System :

Gastro-intestinal Tract :

Laboratory investigations :

a. Blood (5 to 10 ml venous blood) **Preservative :**

b. Urine (10 to 20 ml - 2 samples) **Preservative :**

c. Expired air :

Diagnosis :

Opinion : I am of the opinion that -

1. The above person has consumed alcohol and is under its influence.
2. The above person has consumed alcohol and is not under its influence.
3. The above person has not consumed alcohol.

Place :

Date :

Time :

Signature

(Dr.)

Designation & Seal

Form 'A'

(See Rule No. 3)

(Certificate by Registered Medical Practitioner showing whether a person examined by him has or has not consumed an intoxicant)

Serial No. _____ Name & location of the Dispensary or Hospital

Certified that Shri / Smt / Kum. _____ Resident of _____

was brought to this Hospital / Dispensary by _____

(Here state the Name & Designation of the Officer)

on _____ at _____ A.M. / P.M. & was examined by me on _____ at _____ A.M. / P.M.

A clinical examination of the above person disclosed the following :

Age: _____ Years, Weight : _____ kg, Height : _____ cm

Breath : Smelling / Not smelling of Alcohol / Ganja / Bhang.

Speech : Incoherent / Normal

Gait : Unsteady / steady

Pupils Dilated / Normal

Additional remarks, if any :

I find that the above named person _____

_____ HAS CONSUMED _____ Alcohol / Ganja / Bhang

HAS NOT CONSUMED ANY INTOXICANT

I also find that he / she is not under the influence of alcohol.

(N.B. : Blood from the body of the above named was / was not collected by me for chemical examination)

"Certified that the procedure laid down under the rule (4) of Bombay Prohibition Medical Examination and Blood Test Rule 1959 has been followed."

Date : Signature

Time : _____ A.M. / P.M. Designation

Signature / Thumb impression of the Person examined.

Marks of identification of the person examined in case he refuses to give his signature or thumb impression

Form "B"

No. _____

From,
The Casualty Medical Officer, / Assistant Professor in Forensic Medicine
MGM Medical College and Hospital,
Aurangabad

To,
The Director
Forensic Science Laboratory & Chemical Analyser
Govt. of Maharashtra, Mumbai

Date :

Sir / Madam,

I am forwarding herewith a parcel by post / with Shri _____ of _____ containing _____ ml. of Blood and / or Urine sample collected by me on _____ at _____ A.M. / P.M. from the body of Shri / Shrimati / Kumari _____ of _____ who was produced before me for medical examination and/or collection of Blood and / or Urine from his / her body by _____ and request to test the Blood and / or Urine and issue a certificate (in duplicate) regarding the result of the tests.

"Certified that the procedure laid down under the rule (4) of Bombay Prohibition Medical Examination Blood Test Rule 1959 has been followed".

Yours faithfully,

(Dr.)
Casualty Medical Officer
Assistant Professor in Forensic Medicine
MGM Medical College and Hospital,
Aurangabad

Facsimile of the Seal or
Monogram used for Sealing the
Phial containing Blood and/or Urine

Examination of the Weapon

Annexure-34C

To

The Investigating Officer,

Police Station _____

Reference : Your letter No. _____ Dated _____

Sir,

With reference to the above letter, I am sending the report about weapon sent sealed in connection with the injuries of _____

Name of weapon : _____ Kind of weapon : _____

Type of weapon : _____

Description of the weapon :

Blade : Is of _____, Texture : _____

Length : _____, Breadth : _____, Thickness : _____

Edges / Margins : _____, Point : _____

Stains / Foreign body, if any : _____

Joint : Type : _____, Hilt : Size : _____

Handle : Is of _____, Texture : _____

Length : _____, Breadth / Circumference : _____

Stains / Foreign body, if any : _____

(Advised to send it to C.A. for further detail examination)

Injuries possible :

Injuries impossible :

Identification marks if any on the weapon.

(Put the signature on the weapon)

The weapon packed, sealed and handed over to P.C._____ No. _____ P.S. _____

Place : _____

Date & Time : _____

Receipt of weapon & report

Signature

(Dr.)

Designation & Seal

Examination / Certification of the Injured (Injury Report/Certificate)

Annexure-34-D

To

The Investigating Officer.

Police Station _____

Reference : Your Letter No. _____ Dated _____

Sir,

I am forwarding herewith the report of examination of :

Name of Injured : _____ Son/Wife/Daughter/Widow of _____

Surname _____ resident of _____

Age: _____ Sex _____ Occupation _____

Brought by PC _____ No. _____ P.S. _____

Consent for examination :

Signature of Witness Signature of Examinee

Identification marks:

1.

2.

History :

Sr. No.	Type of injury	Size of injury	Situation over the body	Nature of injury	Probable weapon	Age of injury	Advice

Remark

Place :

Date :

Signature

(Dr)

Receipt

Designation & Seal

Form No. 4

(For hospital in patient death, not to be used for still birth)

Annexure-34-E

MEDICAL CERTIFICATE OF CAUSE OF DEATH

(To be sent to Registrar of Births and Deaths along with Death Report form no. 2)

Name of Hospital : _____

I do hereby certify that the person whose particulars are given below died in Hospital in Ward No. _____

on _____ at _____ A.M. / P.M.

Name of the deceased :

Address of normal Residence :

For use by statistical office

Sex	Age in yrs..	Date of Birth	Marital status S, M, W or D	Occupation	Religion	Age at Death				Detailed list code
						If under 1 year Months	Days	If under 24 hours Hrs.	Min.	

Cause of Death — Interval between onset and death approx

1. Immediate Cause :
State the disease, injury or complication which caused death, not the mode of dying such as heart failure, asthenia, etc.

a) _____

Due to :

or as a consequence of

Antecedent cause :
Morbid condition, if any, giving rise to the above cause, stating underlying condition last.

b) _____

Due to :

or as a consequence of

c) _____

2. Other significant conditions contributing to death, but not related to the disease or condition causing it

_____

Natural / Accident / Suicide / Homicide (specify) : How did the injury occur?

IF DECEASED WAS A FEMALE

Was the death associated with pregnancy? **Yes/No**

Was there a delivery? **Yes/No**

Name or rubber-stamp of institution : Serial Number of institution Date of report

Date and Time :

Signature and address of

(Dr.)

Designation & Seal

(To be detached and handed over to the relative of the deceased)

Certified that Shri / Smt/Kum._____S/W/D of Shri _____ Resident of _____

_____ was admitted to the hospital and expired on _____ at _____ a.m./p.m.

Date Time :

Signature

(Dr.)

Designation & Seal

EXAMINATION OFA CASE FOR DETERMINATION OF POTENCY

FM No/ /20

Date : / / / 20

Annexure-34-F

To,

_____

_____

Reference : Your letter / order no. _____ Dated -_____

Name of the individual-_____

Age as stated: _____, Sex: _____ Marital status (If married, duration) _____

Address : _____

_____

Occupation : _____

Brouught by (Name, signature & designation) _____

Date, place & time of examination :_____

Light arrangement - _____

Consent :

Q - Are you willing to be examined by me / us to opine in relation to your potency ? The examination will include physical examination, laboratory investigations and psychological assessment. The examination by dept of Urology would also include administration of drugs to evaluate your potency. You have right to refuse but this refusal may go against you in the court of law.

Answer given - Yes / No

Name, signature of the person giving consent with Date -

Witness to the consent - Name, signature & Date -

Identification marks-

1.

2.

History

1. Do you have erectile dysfunction ? - Yes / No

   If yes

   a. Since how long have you noticed the erectile dysfunction?

   b. Did the problem being abruptly or insidiously?

c. Do you have inability to achieve or maintain an erection or both ?

d. Are you able to penetrate or not ?

e. Whether partial penetration or ejaculation before penetration ?

f. Do you ever get normal or near normal erection (During masturbation with other partner, early morning)

2. H/o any major illness - HT / DM / TB / Vascular disease / Endocrinal diseases etc.
3. H/o STD -
4. H/o mental illness -
5. Any stress-
6. Family environment-
7. Any history of medication / for what ailment / duration of medication
8. H/o Drug abuse - Nicotine / Ganja /Alcohol / other
9. H/o any head injury / spinal injury / any operation on genitals -
10. H/o aversion dislike / dejection / for any particular sex partner

Obsevations

General examination

General built and appearance : _____

Weight : kg Height : cm

Teeth : Total No. :

Secondary sexual characters :

Beard : Moustache :

Axillary hairs : Pubic hairs :

Breast development / Gynaecomastia if any :

Any marks of injury / scar on the body :

Local examination : (Along with Urology department) done in ward no_____

a. Penis :

Circumcised / Non-Circumcised :

Stretched penile length -

Length when erect -

Circumference (flaccid & erect) :

Disease / deformity / injury (if any) :

Sensation over glans penis :

Foreskin (Retractable / Non-retractable) :

Dorsal penile pulsation :

Any Discharge :

Smegma :

Hygine :

b. Scrotum :
Pendulous or not :
Developmental defects :
Deformities :
Cremasteric reflex :

c. Testes :
Whether present in scrotum or not :
Size :
Consistency :

d. Prostate (Per rectal examination) :

e. Bulbocavernous reflex :

£ Any evidence of S.T.D

g. Effect of administration of _____ in _____ dose _____ After _____ minutes
Result :

SYSTEMIC EXAMINATION

- C.N.S. :
- R. S. :
- C. V. S. Pulse : BP:

  Femoral artery :

  Dorsalispedis artery :
- G.I.T. :

Laboratory Investigations (If required)

1. CBC :
2. Hb :
3. BSL (Fasting & PP) :
4. Sr. FSH :
5. Sr. LH :
6. Sr. testosterone & Oestrogen :
7. Sr. prolactin :
8. VDRL :
9. USG/Colour doppler :
10. TFT (TSH, T3, T4) :
11. LFT :
12. HbA1C :

Opinion : After detailed examination i.e. based on physical examination, psychiatric evaluation and examination by urologist, we are of the following opinion". There is nothing to suggest that the above examined person is incapable to perform sexual intercourse ". / The person is in capable of performing sexual intercourse due to.....

Place : _____

Date _____

Signature

Name & Qualification :

Designation

Registration No. :

MEDICAL SICKNESS / UNDER TREATMENT CERTIFICATE

Annexure-34-G

Signature of the applicant _____
(Government servant / Private)

I Dr._____ after careful personal examination of the case hereby certify that Mr. / Mrs./ Ms._____ _____ whose signature is given above was suffering from _____ and was under my treatment for the same as Outdoor / indoor patient. And I consider that a period of absence from duty of _____ _____ with effect from _____ is absolutely necessary for restoration of his / her health

He / She was advised rest for a period of _____ days

Identification marks:

1)

2)

Hospital No.

Date:

Authorised Medical Attendant
Seal & Reg. No.

MEDICAL FITNESS CERTIFICATE

Signature of the applicant _____
(Government servant / Private)

I Dr._____ after careful personal examination of the case hereby certify that Mr. / Mrs. / Ms._____ _____ whose signature is given above was suffering from _____ and was under my treatment for the same. He / She was advised rest for a period of _____days.

He / She recovered completely from the illness and he/she is fit to resume his / her duty with effect from_____

Identification marks:

1)

2)

Hospital No.

Date:

Authorised Medical Attendant
Seal & Reg. No.

Certificate of Physical Fitness

Annexure-34-H

This is to Certify that I have examined Shri / Smt / Kum. _____ _____ who signed below in my presence and who is a candidate for employment for the post of _____ in the department / office _____ at _____ I could not discover that he / she has any disease (communicable or otherwise) constitutional weakness or bodily infirmity, except _____. I do consider / do not consider this is a disqualification for such an employment.

He / she _____ age is according to his / her own statement _____ years and by appearance about _____ years.

Identification marks:

1)

2)

Signature of the applicant : _____

(Government servant / Private)

Hospital No.

Date:

Authorised Medical Attendant

Seal & Reg. No.