PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA)

(Estd. under the Panjab University Act VII of 1947-enacted by the Govt. of India)

FACULTY OF MEDICAL SCIENCES

OUTLINES OF TESTS SYLLABI AND COURSES OF READING

FOR

DOCTOR OF MEDICINE

IN

(BIOCHEMISTRY)

CURRICULUM FOR M.D.(BIOCHEMISTRY)

PROGRAMME OBJECTIVES: A resident on completion of his/her course in MD Biochemistry should

1. Have a thorough understanding of the concepts and principles of Biochemistry and Cell Biology.
2. Be able to apply the same to explain and interpret the Molecular and Metabolic

POSTGRADUATE TRAINING

METHODOLOGY

Active learning should be the mainstay of the program. The following methods will be used to facilitate learning and training of MD students.

1) **Post graduate lectures, tutorials, seminars:** To update on various aspects of basic and clinical biochemistry, immunolgy & impact of molecular biology on advances in medicines.
2) **Journal club:** To develop (a) skills of analysis, evaluation and presentation of research papers (b) familiarity with approaches and methodologies of research and (c) to update on new development / emerging trends in biochemistry.
3) **Practical exercises:** To equip them with knowledge and skils to learn techniques at the bench level.
4) **Thesis:** Each PG student will carry out research work under the supervision of faculty member of the Department of Biochemistry.
5) **Teaching:** Participation in UG laboratory practical teaching and problem based learning tutorials as a team with faculty and senior residents of the department to develop skills of self directed learning, effective communication, leadership, organizing group discussions, working in group, facilitate students learning as a teacher and to gain in depth learning and problem solving skills.
6) **Specialized training in clinical Biochemistry:** Posting in the clinical biochemistry laboratory and other specialized laboratories of the institution to learn sample collection quality control methods, setting up of a clinical biochemistry laboratory, specialized assays, statistical analysis of data.
7) **Horizontal and vertical integration of the subject with the other preclinical, paraclinical and clinical departments:** It should be encouraged by participation in integrated joint teaching sessions, joint seminars, participation in clinical rounds for discussing cases of interest etc. This may also be achieved by framing appropriate problem based modules for small group discussion in collaboration with different departments

CURRICULUM

The curriculum will be spread over three years and includes the following components:

1. Organized teaching sessions (Theory and Practical) as per the syllabus (attached). These include following sessions.
   - i) Lectures -5 hours per week
   - ii) Practicals -25 hours per week
   - iii) CPC and clinical meeting -4 hours per week

2. Posting of residents for training in different areas of biochemistry and clinical laboratories/specialties.

Separation & Instrumentation techniques	2 months
Routine Clinical Biochemistry	6 months

ASSESSMENT

1.	Sessional examination:	Formal written tests and viva are organized at the end of each session.
2.	Periodical examination:	Students will be given class tests after a series of lectures .
3.	Final M.D. examination:-	This is conducted as per the pattern in the institute on the following lines.

Examiners: Two internal and two external examiners

Postgraduate Examination

The postgraduate examination shall be in 3 parts.

1. **Thesis:** Each student will prepare a thesis under the direct supervision of a faculty member of the biochemistry department and submit at least 6 months before the date of commencement of the theory examination.
2. **Theory examination** comprising of four papers of three hours duration each and covering the course content as detailed below.
3. **Practical and Viva – voce examination** spread over two days

Theory examination

There should be 4 theory papers with the broad subdivision of topics as mentioned below.

PAPER I - Biomolecules, Cell biology, Principles of Biophysics and Physical chemistry, Biostatistics / Research methodology and Biochemical techniques, Quality control in labs.

PAPER II - Enzymes, Biological oxidation , Intermediary metabolism and regulation, Inborn errors of metabolism, Nutrition (Vitamins & Minerals), Endocrinology.

PAPER III - Molecular Biology, Immunology, Cancer – molecular and genetic aspects, Environmental biochemistry.

PAPER IV - Biochemistry of different body systems / organs in health and disease (Molecular medicine), Clinical Biochemistry, Recent advances.

Detailed Course content

PAPER – I

Biomolecules

Molecular hierarchy in the living system (primordial – macromolecular – supra-molecular structures), chemical bonds and molecular interactions. Properties of water. Concept of an acid, a base, pH, pK, buffer and buffering capacity. Classification, structure and functions of amino acids, Structural organization of proteins, relationship with their functions. Conjugated

PAPER II

Enzymes

Introduction, classification, Coenzymes, cofactors, isoenzymes general and kinetic properties, principles of enzyme assay, Mechanism of enzyme action, regulation of enzyme activity, allosteric enzymes.

Clinical correlations:

1. Drugs as enzyme inhibitors in antibacterial anti – viral and antitumor therapy.
2. Diagnostic and therapeutic significance of enzymes and isoenzymes in disease states including cancers

Biological oxidation and thermodynamics

Basic concepts of thermodynamics and its laws as applied to living systems, exergonic endergonic, energy transfer and coupled reactions, ATP, high and low energy compounds, redox potential, classification and Role of oxidoreductases, cytochromes, cytochrome P450 system, Free radicals formation and scavenging. Anti-oxidants – role in diseases.

Respiratory chain and oxidative phosphorylation, its components & complexes, flow of electrons in respiratory chain, ATP synthesis and control, site specific inhibitors, uncouplers, ionophores, biological uncouplers.

Clinical correlations:

1. Cyanide poisoning
2. Hypoxic injury

Metabolism

Overview, including methods of studying metabolism

Metabolism of carbohydrates: Digestion and absorption, glycolysis, TCA cycle – regulation, Glycogen metabolism and its regulation, Cori cycle, gluconeogenesis and control of blood glucose, metabolism of fructose, galactose, metabolism of ethanol. Significance of pentose phosphate pathway and uronic acid pathway.

Clinical correlations:

1. Glycogen storage diseases
2. Essential fructosuria; galactosemia
3. Lactic acidosis
4. G6PD deficiency
5. Alcoholism – Methanol poisoning
6. Diabetes mellitus – detailed biochemical aspects of etiopathology, symptomatology,

3. Hemolytic disease of the new born
4. Metabolism of Xenobiotics and Cytochrome P450 system

Endocrine biochemistry: Classification and general mechanism of action of hormones. Biogenesis, secretion, control, transport and mode of action of following – hypothalamic peptides, adenohypophyseal and neurohypophyseal hormones, thyroid parathyroid hormones, calcitonin pancreatic hormones, adenocortical and medullary hormones, gonadal hormones, gastrointestinal hormones, opioid peptides, endorphins.

Biochemical aspects of diagnosis and treatment of endocrinal disorders;

Biochemistry of conception, reproduction and contraception.

Endocrine interrelationship and their involvement in metabolic regulation

Neuromodulators and their mechanism of action, physiological significance.

Human nutrition: General aspects:

Principal food components, general nutritional requirements, energy requirements, biological value of proteins, specific dynamic action, balanced diet, diet formulation in health and disease, mixed diet, nutritional supplements, food toxins and additives, parenteral nutrition, disorders of nutrition, obesity, protein and protei

PAPER IV

1.Fluid and electrolyte balance and Acid-Base balance: regulation and disturbances

2. Heamtopoietic disorders

Iron deficneicny and other hypoproliferative anaemias – iron metabolism, laboratory tests of iron status, iron therapy, anaemia of chronic disease, anaemia of renal disease Hemoglobinopathies-sickle cell anaemia, methaemoglobinemias, thalassemia syndromes Megaloblastic anaemias RBC membrane and metabolism. Hemolytic anaemias-inherited defects in RBC memberane and enzymes-G6PD deficiency, immunologic causes of hemolysis. ABO blood group system-Plasma cell disorders multiple myeloma.

3. **Hemostasis and thrombosis**

Biochemical mechanisms, related laboratory tests, antiplatlet / anticoagulant /fibrinolytic therapy

4. **Cardiovascular system**

Atherosclerosis – pathogenesis, risk factors, its prevention and treatment. Heart failure, acute coronary syndrome, cardiac biomarkers, cardiomyopathy-etiology. Hypertension – essential and secondary, genetics, laboratory evaluation, approach to therapy.

5. **Respiratory system:**

Gaseous exchange in lungs – physiological features and disturbances, arterial blood gases. Pathogenesis of asthma, cystic fibrosis, emphysema, α1- antitrypsin inhibitor deficiency

6. **N-9.23319(a)-2..428 Tf 8.64 0 Tdoi.9149(e)18.-10.6383(a)..r(c)18.469(t)-19.8715(o)-1 -17.r(c)18.92 Td**

8. **Liver –** liver function tests, hyperbilirubinemias, viral hepatitis, serologic / virologic markers, alcoholic liver disease, fatty liver, chronic liver disease, cirrhosis and its complications, pathogenesis of ascites, hepatic enc

use of reference values, preanalytical variables, clinical laboratory informatics, quality management Clinical relevance of different analytes – amino acids / peptides / proteins, plasma proteins, enzymes, clinical enzymology, tumour markers carbohydrates, lipids / lipoproteins / apolipoproteins, cardiovascular risk factors, electrolytes and bilirubin, porphyrins and their disorders,

Therapeutic drug monitoring.

Pituitary, adrenal and thyroid function, tests

Reproduction related disorders – infertility,

Pregnancy – maternal and fetal health

Inborn errors of metabolism,

Clinical toxicology

Molecular diagnostics

PRACTICALS

The duration of the Practical Examinations will be of 2 days, one day mainly for the practical exercises, and the second day for the oral, viva and thesis presentation.

The Practical Examinations will have the following components:

A. Practical comprising of 3 exercises (To be given as comprehensive one long and two short clinical case exercises)
B. Spots and interpretation of data (clinical and experimental)
C. Thesis presentation of about 15 mins duration
D. Micro teaching, about 20 mins durations
E. Viva-voce or the oral session
F. The practical records of the student are also to be assessed.

Students should maintain lab records of all the practicals, which would be assessed during the examination. The department should co-ordinate with other departments, if required, for demonstration / carrying out of some specific selected techniques

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FOR

DOCTOR OF MEDICINE

IN

(DERMATOLOGY, VENEREOLOGY AND LEPROLOGY)

CURRICULUM FOR MD – 3 years

At the end of this training candidate should be able to

1. Diagnose and manage independently most of the common skin diseases, sexually transmitted diseases and leprosy.
2. Manage independently and efficiently all medical emergencies related with skin, leprosy and sexually transmitted diseases (STDs).
3. Adopt preventive measures at individual and community levels against communicable skin diseases, STDs in particular and leprosy.

. Teach requisite knowledge and laboratory skills to other medical/ paramedical team members.

. Adopt a compassionate attitude towards the patients (and their families)

The first year junior residents shall be posted exclusively indoors for initial six months. For the remaining 2 ½ years the students will rotate through indoor, outdoor, side laboratory, minor OT, special clinics, i.e. leprosy, STD, psoriasis, contact dermatitis, urticaria, pigmentary and pediatric dermatology clinic. During indoor postings 2nd and 3rd year residents will give cover to first year residents and have active involvement in the diagnosis, investigations and treatment of the admitted patients. Outside the department postings will be made for a period of months as under (out of 2 ½ years mentioned above).The postings in allied specialities shall be done at the end of 2nd year and beginning of 3rd year. Night duties up to total of 2 months during the whole course of study shall be done by all postgraduates.

The detailed schedule shall be as under:

Ward/Indoors	-	6 months
Skin OPD(New patients)	-	6 months
Skin OPD (Old patients)	-	3 months
Minor OT	-	3 months
Dermatosurgery	-	3 months
Side laboratory	-	1 month
Special Clinics (Leprosy, STD, Psoriasis, Pediatric dermatology, Pigmentary, Allergy etc)	-	9 months

i) Anatomy	-	2 weeks
ii) Pathology/ Haematology	-	weeks
iii) Microbiology	-	2 weeks
iv) Internal Medicine/ Neurology	-	weeks

v) Genera2338 ())-7. 2 ((g)-18. 677(m)2 . 89-g9936 8.)-1Tm (T)9.6772 (w) 1.1 81(e)--18. 6

Each student is expected to write thesis under the

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The examination shall be held in the months of May and December or on such dates as may be decided by the Dean of the Institute and it shall be open to all candidates who have successfully completed the prescribed course of study. The examination shall consist of

1.Theory papers (each of 3 hours duration) and of 100 marks each

Title of the paper

- Basic sciences, anatomy, physiology, biochemistry, pathology, etc in relation to the specialty.
- Principles of dermatology, diagnosis and therapeutics and dermatosurgery
- STDs and Leprology
- Dermatology in internal medicine, including applied clinical aspects, therapeutics, pathology, immunopathology, bacteriology etc.

All papers would have following format:

short notes 10 (ten) covering the prescribed course (10 marks each)

All questions have to be attempted with no choice.

Biostatistics: test shall be conducted at the end of the course in biostatistics and securing pass marks is essential.

Teaching programme ***weekly***

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Practical and for clinical examination

The main subjects to be covered are Dermatology, Venereology and Leprology. In Dermatology, the syllabus consists of : history taking, types of skin lesions, distribution patterns, structure and development of skin including its physiology and biochemistry; the disorders of keratinization and appendages , genodermatoses, vesiculobullous disorders, dermatitis, disorders of pigmentation, connective tissue disorders, immunological disorders, neoplastic disorders bacterial, viral and fungal

1. Archives of Dermatology
2. British Journal of Dermatology
3. Contact Dermatitis
. Dermatologic Surgery
. Clinics in Dermatology
6. Dermatology Clinics
7. Dermatology
8. Journal of Dermatology
9. Indian Journal of Leprosy
10. International J. of Leprosy
11. Leprosy review
12. Int. Journal of STD and AIDS
13. Sexually Transmitted Infections
1 . Journal of American Academy of Dermatology
1 . Pediatric Dermatology
16. International Journal of Dermatology
17. Seminars in Cutaneous Medicine and Surgery
18. Pigment Cell Research
19. American Journal of Dermatopathology
20. Drugs in Dermatology
21. Drugs
22. Lancet
23. New England Journal of Medicine
2 . British Medical Journal.
2 . Clinical and experimental dermatology
26. Dermatology online

Some journals are available in the library and some are available to the departmental internet.

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Psoriasis	H.H. Roenigk	Marcel Dekker
Fischer's Contact Dermatitis	Rietschel Fowler	Lippincott Williams and Wilkins

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1. Students for Postgraduate medical courses shall be selected strictly on the basis of their academic merit.
2. For determining the academic merit, the university/institution may adopt any one of the following procedures:-
   a) On the basis of merit as determined by the competitive test conducted by the State Government or by the competent authority appointed by the State Government or by the university/group of universities in the same state; or
   b) On the basis of merit as determined by a centralized competitive test held at the national level.

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The period of training for the award of various postgraduate degrees or diplomas shall be as follows:

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The period of training for obtaining the (p)-1.2863 (t)-0.6 d ng fo6TJ /R219(s)18.7077( )- .98029(p)-1.2863 (l)(2)(21

(ii) Out of these one shall be of Basic Medical Sciences and one shall be of recent advances.

(iii) The theory examinations shall be held sufficiently earlier than the Clinical and Practical examination, so that the answer books can be assessed and evaluated before the start of the Clinical/Practical and Oral examination.

(i) Clinical examination for the subjects in Clinic

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FACULTY OF MEDICAL SCIENCES

OUTLINES OF TESTS SYLLABI AND COURSES OF READING

FOR

MASTER OF SURGERY

IN

(GENERAL SURGERY)

Contents

I. AIMS AND OBJECTIVES

The main objective is to train candidates not only in the practice of surgery but also in the applied basic medical sciences, various surgical specialities and research methodology with emphasis on the specific surgical diseases prevalent in the community/country.

Stress will be laid on practical training in the out-patients, wards and the operating rooms with active participation of the trainees in day to day management of patients.

A gradually increasing responsibility will be given in the overall patient care to the residents depending upon their experience and performance.

To initiate them into basic research methodology th

II. DURATION

The duration of training will be 3 years, to be followed by the Final examination in General Surgery leading to the degree of MS (General Surgery)

III. TRAINING PROGRAMME

The postgraduate student rotates through all the cl

IV. TEACHING AND LEARNING ACTIVITIES

- Most of the teaching will be conducted within the u

VI. CONTENT OF TRAINING

General Objectives of Training

Trainees should develop:-

1. Clinical and operative competence in both, common emergency and elective general surgery. Additionally they require knowledge and some experience across a wide range of surgery to ensure appropriate referral.

2. The competence to be responsible for both the emergency admissions in General Surgery and elective referrals.

3. Appropriate skills in General Surgery including Laparoscopic surgery

4. A knowledge of the basic sciences related to General Surgery including relevant applied anatomy.

5.

VII. SYLLABUS

The following pages comprise modules of desirable theoretical knowledge and operative skills, which provide the syllabus for training in General Surgery and its sub-specialties.

Trainees, as part of their general surgical training, must acquire competence in the scheduled operations and also experience of other procedures from the sub-specialty departments.

The knowledge required includes the basic sciences as relevant to each topic. These Basic Sciences include applied anatomy, physiology, biochemistry, microbiology and pathology as relevant to surgery in general in addition to knowledge of surgery.

Training will be divided inudsilsn ed er9( )l10.15(i)22.6804892(e)-24.08p149(n)31.9Vnnnd [(e)-26.5957(a)18.469(c

- Scars and contracture.
- Wound dehiscence.
- Dressings.
- Cysts/Ulcer/Sinus/fistula

Module 3. Peri-operative Management

Pre-operative Management

- Assessment of fitness for anaesthesia and surgery.
- Tests of respiratory, cardiac and renal function.
- Management of associated medical conditions, eg: diabetes; respiratory disease; cardiovascular disease; malnutrition; anaemia; steroid, anticoagulant, immunosuppressant and other drug therapy.

Post-operative Complications

- Post-operative complications - prevention, monitoring, recognition, management.
- Ventilatory support - indications.

Post-operative Sequelae

- Pain control.
- Immune response to trauma, infections and tissue transplantation.
- Pathophysiology of the body's response to trauma.
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- Local and regional anaesthesia.
- Care and monitoring of the anaesthetised patient.

Module 4. Infections

- Pathophysiology of the body's response to infection.
- The sources of surgical infection - prevention and control.
- Surgically important micro-organisms.
- Principles of asepsis and antisepsis.
- Surgical sepsis and its prevention.
- Aseptic techniques.
- Skin preparation.
- Antibiotic prophylaxis.
- Sterilization and disinfection
- Acute Abscesses, Cellulitis,
- Tetanus, Gas gangrene, Carbuncle, Erysipelas
- Chronic specific infections with particular emphasis to Tuberculosis
- Actinomycosis
- Leprosy, Syphilis, Gonorrhea
- Viral Hepatitis
- AIDS

Module 5. Blood / Fluid Balance / Nutrition

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Module 6. Operation Theatre

- OT Layout
- Surgical technique and technology.
- Diathermy - principles and precautions.
- Lasers - principles and precautions.
- Explosion hazards relating to general anaesthesia and endoscopic surgery.
- Tourniquets - uses and precautions.
- Surgery in hepatitis and HIV carriers (special precautions).

Module 7. Introduction to Operative Procedures

- Excision of cysts and benign tumours of skin and subcutaneous tissue.
- Principles of techniques of biopsy.
- Suture and ligature materials.
- Drainage of superficial abscesses.
- Basic principles of anastomosis.

Module 8. Trauma

Initial Assessment and Resuscitation after Trauma

- Clinical assessment of the injured patient.
- Maintenance of airway and ventilation.
- Haemorrhage and shock.

Chest, Abdomen and Pelvis

- Cardiorespiratory physiology as applied to trauma.
- Penetrating chest injuries and pneumothorax.
- Rib fractures and flail chest.
- Abdominal and pelvic injuries.

Central Nervous System Trauma

- Central nervous system: anatomy and physiology relevant to clinical examination of the central nervous system; understanding of its functional disorders particularly those caused by cranial or spinal trauma; and interpretation of special investigations.
- Intracranial haemorrhage.
- Head injuries, general principles of management.
- Surgical aspects of meningitis.
- Spinal cord injury and compression.
- Paraplegia and quadriplegia - principles of management.

Special Problems

- Pre-hospital care.
- Triage.
- Trauma scoring systems.
- Traumatic wounds - principles of management.
- Gunshot and blast wounds.
- Skin loss - grafts and flaps.
- Burns.
- Facial and orbital injuries.
- Mechanism & Pattern of injury
- ATLS & Emerging new concepts in Trauma Surgery

Principles of Limb Injury

- Peripheral nervous system - anatomy and physiology.
- Traumatic oedema, compartment and crush syndromes, fat embolism.
- Brachial plexus injury.
- General principles in Orthopaedic trauma
- General principles in fracture healing

Module 9. Intensive Care

Principles of ICU

- Indications for admission.
- Organization and staffing.
- Scoring.
- Costs.

Cardiovascular

- The surgical anatomy and applied physiology of the heart relevant to clinical cases.
- Physiology and pharmacological control of cardiac output, blood flow,blood pressure, and coronary circulation.
- Cardiac arrest, resuscitation.
- Monitoring of cardiac function in the critically ill patient, central venous pressure, pulmonary wedge pressure, tamponade, cardiac O/P measurements.
- The management of haemorrhage and shock.
- Pulmonary oedema.
- Cardiopulmonary bypass - general principles, cardiac support.

Multisystem Failure

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- The interpretation of special investigations; lung function tests, arterial blood gases, radiology.
- The understanding of disorders of respiratory function caused by trauma, acute surgical illness and surgical intervention.
- Respiratory failure.
- Complications of thoracic operations.
- Adult respiratory distress syndrome.
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- The principles of carcinogenesis and the pathogenesis of cancer relevant to the clinical features,special investigations, staging and the principles of treatment of the common cancers.
- Principles of molecular biology of cancer, carcinog

Module 11. Locomotor System

Musculo-skeletal anatomy and physiology relevant to clinical examination of the locomotor system and to the understanding of disordered locomotor function, with emphasis on the effects of acute musculoskeletal trauma.

Effects of Trauma and Lower Limb

- Effects of acute musculo-skeletal trauma.
- Common fractures and joint injuries.
- Degenerative and rheumatoid arthritis (including principles of joint replacement).
- Common disorders of the lower limb.
- Amputations and prosthesis.

Infections and Upper Limb

- Common soft tissue injuries and disorders.
- Infections of bones and joints (including implants and prostheses).
- Pain in the neck, shoulder and arm.
- Common disorders of the hand, including hand injuries and infections.

Bone Disease and Spine

- Common disorders of infancy and childhood.
- Low back pain and sciatica.
- Metabolic bone disease (osteoporosis, osteomalacia).
- Surgical aspects of paralytic disorders and nerve injuries.

Module 12. Vascular

The surgical anatomy and applied physiology of blood vessels relevant to clinical examination, the interpretation of special investigations and the understanding of the role of

- Arteriography
- Continuous wave Doppler / Duplex ultrasound

Venous & Lymphatic diseases

- Vascular trauma and peripheral veins.
- Varicose veins / Venous hypertension, post-phlebitic leg, venous ulceration.
- Deep venous thrombosis and its complications.
- Chronic ulceration of the leg.
- Thrombosis and embolism.
-

Neck and Endocrine Glands

The surgical anatomy and applied physiology of the endocrine glands relevant to clinical examination, the interpretation of special investigations, the understanding of disordered function and the principles of the surgical treatment of common disorders of the endocrine glands.

- Common neck swellings.
- Counselling and screening in familial disease
- Anaesthetic and pharmacological problems
- Radio-immuno assays
- Imaging techniques
- Cervical Lymphadenitis & its management
- Branchial sinus, fistula, cystic hygroma
- Cervical rib and scalene syndrome
- Primary tumours of neck & secondaries

Salivary Glands

- Salivary Glands ; Anatomy & Physiology
- Salivary Glands ; Developmental Disorders & infections
- Salivary Glands ; Neoplasms

Diseases of thyroid

- Anatomy and physiology
- Embryology: Thyroglossal cyst
- Investigations & hypothyroidism
- Hyperthyroidism & features & Management

Module 15. Abdomen

The surgical anatomy of the abdomen and its viscera and the applied physiology of the alimentary system relevant to clinical examination, the interpretation of common special investigations, the understanding of disorders of function, and the treatment of abdominal disease and injury.

15.1 *Abdominal Wall*

- Anterior abdominal wall, anatomy, incisions, laparoscopic access.
- Anatomy of the groin, groin and other ventral hernias, acute and elective; clinical features of hernias; complications of hernias.

15.2 *Acute Abdominal Conditions*

- Peritonitis; intra-abdominal abscesses.
- Common acute abdominal emergencies.
- Intestinal obstruction; paralytic ileus.
- Intestinal fistulae.
- Investigation of abdominal pain.
- Investigation of abdominal masses.
- Gynaecological causes of acute abdominal pain.
- Pelvic inflammatory disease.
- Assessment of the acute abdomen
- Appendicitis and right iliac fossa pain
- Peritonitis
- Acute intestinal obstruction / pseudo-obstruction

- Biliary tract emergencies
- Acute pancreatitis
- Strangulated hernia
- Intestinal ischaemia
- Swallowed foreign bodies
- Gastrointestinal bleeding
- Toxic megacolon
-

- Gastro-oesophageal reflux and its complications
- Peptic ulceration and its complications
- Principles of screening for cancer
- The use and limitations of multimodality treatment for upper GI cancer
- Oesophageal motility disorders/Achalasia cardiac
- Hiatus hernia
- GERD

15.5 *Stomach/Duodenum*

- Anatomy, Physiology, Symptoms & Investigations
- Acute peptic ulcers & Paediatric disorders
- Surgical management of ulcer disease & complication of surgery.
- Complications & sequelae of ulcer disease (perforation, Hemetemesis & Melena
- Chronic complications - Pyloric stenosis, gastric outlet obstruction , hourglass stomach/tea pot stomach
- Carcinoma stomach – Pathology & clinical features, management
- Other gastric & duodenal neoplasms (benign & malignant)
- Morbid obesity, trichobezoars, volvulus & duodenal diverticulae

15.6 *Small Bowel and Colorectal Disorders*

- Peritonitis
- Intestinal obstruction, pseudo-obstruction
- Intestinal ischaemia
- Neoplasms of large and small bowel
- Inflammatory bowel disease

- Diverticular disease
- Irritable bowel syndrome
- Haemorrhoids, Anal fissure and rectal prolapse
- Acute appendicitis/RIF pain
- Large bowel and rectal injuries
- Screening for colorectal cancer
- Genetics of colorectal cancer
- Place of radiotherapy and chemotherapy in treatment
- Faecal incontinence
- Chronic constipation
- Intestinal fistulae
- Colonic bleeding
- Radiation enterocolitis

15.7 *Liver*

- Anatomy, Physiology of Liver investigation of liver
- Hepatic failure cirrhosis & encephalopathy
- Hepatic trauma
-

- Cholecystitis
- Cholecystostomy
- Choledocholithiasis & its management
- Biliary strictures, cholangitis & fistulae
- Carcinoma gall bladder & Cholangio carcinoma

15.9 *Pancreas*

- Anatomy, Physiology Investigations & congenital anomalies
- Pancreatic trauma
- Classification of pancreatitis
-

Module 16. Laparoscopic Surgery

- Laparoscopic anatomy of the abdomen
- Informed consent for laparo-scopic procedures
- Pre and post operative management of laparoscopic cases
- Technology of video imaging, cameras, insufflator etc.
- Laparoscopic instruments, clips, staplers and port(p)lacement

- Uretheral stricture – causes, C/F & management
- Phimosis, Paraphimosis, Ca penis, C/F & management
- Testis undescended
-

- Intestinal malrotation
- Associated anomalies
- Paediatric oncology
- Management of less complex abdominal trauma
- Hydrocephalus

17.3 *Neurosurgery*

- Cranial, spinal and peripheral nerve tumours
- Head Injury
- Spinal and peripheral nerve injuries
- Hydrocephalus
- Cerebrovascular Accidents
- Infections
- Recent advances
- Spine and related disorders
- Maxillofacial injuries

17.4 *Cardiac and Thoracic Surgery*

- Myocardial revascularisation
- Valvular Disorders
- Peripheral vascular disease
- Renovascular disease
- Secondary Hypertension
- Inflammatory Lung Disease
-

- Tissue typing
- The HLA system
- Bladder dysfunction
-

- Insertion of CVP line, arterial li1915(o)-31c*-24.085542aefnete

- Breast Lump Excision
- Microdochectomy
- Hemithyroidectomy
- Laparotomy
- Diagnostic laparoscopy
- Thoracotomy
- Cystogastrostomy
- Suprapubic cystostomy
- Hemicolectomy
- Gastrostomy and feeding jejunostomy
- Nephrectomy
- Pyelolithotomy
- Ureterolithotomy
- Orchidopexy
- Skin grafting
- Varicose vein surgery
- Vein harvesting
- Lumbar Sympathectomy
- Small bowel resection
- Femoral herniorrhaphy
- Umbilical and para umbilical hernia repair
- Incisional and para-stomal hernia repair

Emergency

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- Closure of Hartmann’s
- Prolapse surgery
- Incontinence surgery

  =Sphincter repair
- Recto-vaginal fistula
- Ileo-anal and colonic pouch
- Colo-anal anastomosis
- Operation for intestinal fistula
- Complex fistula-in-ano
- Posterior approach to rectum
- Splenectomy
- Oesophageal dilatation
- Operations for upper GI bleeding
- Exploration of common bile duct
- Biliary bypass
- Formation of Roux-en-Y loop
- Oesophagectomy/total gastrectomy
- Pancreatectomy
- Liver resection
- Oesophagectomy
- Total and subtotal gastrectomy
- Heller’s myotomy
- Long oesophageal myotomy
- Pharyngeal pouch
- Repair of biliary stricture

- Whipple's procedure
- Pancreatectomy (distal and total)
- Drainage of infected pancreatitis
- Drainage of pancreatic pseudo-cyst
- Hydatid disease
- Porto-systemic shunt

X. Final Examination

The final examination of the candidate will be held at the end of the training period as below.

Part 1 Theory examination (Total = 400)

Paper		Title	Marks
Paper 1	:	Basic sciences as applied to Surgery including surgical pathology	100
Paper 2	:	Principles and practice of Surgery	100
Paper 3	:	Operative Surgery	100
Paper 4	:	Recent advances in Surgery	100

Part 2 Practical / Viva voce (Total 400)

- There shall be a Chairman of the Board of paper – setters who shall be an external examiner and shall moderate the question papers.
- There will be 2 internal and 2 external examiners.
- Out of internal examiners, one examiner shall be a professor and Head of Department or Head of Department.
- Each, in addition to conducting the practical/viva voce will also check one part of the theory paper
- Practical/viva voce will be conducted under the following heads –
    - **Long case** - 150 marks
    - **Short case** (Three) - 150 marks (50 marks each)
    - **Table vivas**

X-rays	-	25 marks
Instruments	-	25 marks

Specimens & surgical anatomy - 25 marks

Operative surgery - 25 marks

- **Logbook** : Must for eligibility to sit in the examination

- Pass marks 50% (Theory 200/400 and Practical 200/400)
- The candidate will have to obtain pass marks in each (i.e. theory and practical) individually to be declared successful in the examination.

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