College of Physicians and Surgeons of Mumbai

Syllabus for CPS-PG-Course

FCPS (PATHO) : FELLOWSHIP IN PATHOLOGY

College of Physicians and Surgeons of Mumbai

CPS House, Dr. E. Borges Marg, Parel, Mumbai – 400012.

FCPS (PATHO) : FELLOWSHIP IN PATHOLOGY

SYLLABUS

GOAL:

The goal of postgraduate medical education shall be to produce competent specialist.

(I) who shall recognize the health needs of the community and carry out professional Obligation ethically and in keeping with the objectives of the national health policy;

(ii) Who shall have mastered most of the competencies, retaining to the specialty that are required to be practiced at the secondary and tertiary levels of the healthcare delivery system.

(iii) Who shall be aware of contemporary advances and developments in the discipline concerned?

(iv) Who shall have acquired a spirit of scientific inquiry and oriented to the principles of research methodology and epidemiology; and

(v) Who shall have acquired the basic skills in teaching of the medical and paramedical professionals?

OBJECTIVES:

At the end of the course a candidate must be able to

(i) Understand and explain about the factors in causation ofdisease.

(ii) Understand processes involved in the gross and microscopic changes of organs and tissues and explain these changes.

(iii) Understand and explain the basis of evolution of clinical signs andsymptoms.

(iv) Should be able to perform procedures designated for laboratory detection of diseases. Should be able to process and accurately interpret the representative materials obtained from the patients in order to arrive at a correct diagnosis.

(v) Should be able to recognize and report morphological changes in cells, tissues and organs.

(vi) Should be able to plan, perform and report specific research projects.

(vii) Should be able to perform clinical autopsy and present CPC (Clinico-Pathological Correlation)

(viii) Should be able to perform and report in the field of Transfusion medicine.

METHODS OF TRAINING

Duration of course: FCPS (3 years); DPB (2 years). 1. on job training

- Histopathology including techniques and reporting
- Cytology including FNAC, fluid cytology, exfoliative cytology- techniques and Reporting
- Haematology including blood banking and transfusion medicine- techniques and Reporting

- Clinical pathology- techniques and reporting
- Museum techniques
- Autopsy techniques and interpretation
- Serology- techniques and reporting
- - Handling of hazardous material
- Handling, maintenance and calibration of instruments used in laboratory
- Undergraduate teaching 2. P.G.

Teaching sessions

- Journal review
- Subject seminar
- Grossing discussions for autopsies and surgical material
- Slide seminar including histopathology, haematology, and cytopathology
- Clinical case- group discussion
- Interdepartmental seminars

Post graduate students should be encouraged to attend CME, Workshops, Conferences & present papers.

TEACHING /LEARNING CONTENT

A. THEORY

I BASIC SCIENCES

1. Anatomy/ Histology of all structures in human body/organs
2. Physiology and biochemistry-Basic aspects of various metabolism and functioning of endocrines
3. Genetics- Fundamental / Applied aspects
4. Biostatistics
5. Biomedical ethics- Ethical issues related to Medical practice and research

II PATHOLOGY

1. Historical aspects
2. General pathology
3. Systemic pathology
4. Haematology

5. Blood banking and Transfusion Medicine
6. Cytopathology
7. Clinical Pathology
8. Medical autopsy: Techniques and interpretation
9. Recent advances in all fields, related to Pathology
10. Organization of laboratory including quality control

III CLINICAL BIOCHEMISTRY:

Routine biochemical investigations and various organ function tests i.e. LFT, RFT et

PRACTICAL

Proficiency of technological methods should include the following:

1. Theoretical knowledge:-

1. Gross pathology and histopathology
2. Haematology
3. Cytopathology
4. Clinical pathology and Blood banking

2. Laboratory services.

1. Clinical chemistry
2. Serology

3. Techniques to understand and interpret data.

1. Immunopathology
2. Histochemistry
3. Immunohistochemistry
4. Cytogenetics
5. Molecular biology
6. Medical statistics

CYTOLOGY

1. Fine needle aspiration cytology – Staining & interpretation.
2. Cytology of body fluids – Staining and Interpretation

HISTOPATHOLOGY

1. Histopathologic techniques including section cutting
2. Haematoxylin and Eosin stain and special stains which include PAS stain,Acian blue stain, Recticulin stain, Masson's Trichrome and Perl's stain.

3. Principles of immunohistochemistry andimmunofluorscence.

HEMATOLOGY

1. Anticoagulants
2. Preparation of Leishman's stain and reagents for blood counts.
3. Hands on experience in different methods of Hemoglobin estimation
4. RBC, WBC, Platelets and Peripheral smear and Bone marrow.
5. Preparation and interpretation of Peripheral smear and Bone marrow.
6. Hemolytic workup incl. sickle cell preparation, Hb F & electrophoresisetc.
7. Cytochemistry –Peroxides/Sudan black B, PAS, LAP NSE and Perl's stain.6
8. Quality Control and use of automated cell counters.
9. Cleaning of Glass ware.

BLOOD BANK

1. Blood grouping and typing
2. Cross matching
3. Comb's tests
4. Donor screening and blood collection
5. Testing for STS, HIV, Hepatitis B & C
6. Rh antibody titration
7. Cold agglutinin titre
8. Quality control

CLINICAL BIOCHEMISTRY

Basic Biochemistry applied to biochemical investigations: Handling of Photo colorimeter, Spectrophotometer PH

– meter, Flame photometer, Semi Autoanalyser and Autoanalyser Electrophoresis, Carrying out biochemical investigations like blood sugar, urea, creatinine, proteins, bilirubin, SGOT, SGPT, Allkaline Phosphatase etc.

Theory

- **General Pathology:**
- Cellular adaptation cell injury and cell death
- Acute and chronic inflammation
- **Tissue renewal and repair: Regeneration healing and fibrosis.**

- Hemodynamic disorders, thrombo embolic disease and shock**.**
- **Genetic Disorders:** Principles of genetics, normal karyotyping, Mutations, Mendelian disorders, disorders with multifactoral inheritance**,** cytogenetic disorders involving autosomes and sex chromosomes.**,** Single gene disorders with nonclassic inheritance.**,** Diagnosis of genetic disorders involving molecular and genetic techniques.
- **Neoplasia:** Definition, nomenclature and biology of tumor growth. Molecular basis of cancer with special reference to carcinogenic agents and molecular basis of multistep carcinogenesis**,** Epidemiology and clinical features of tumors.**,** Grading, staging and laboratory diagnosis of cancer.
- **Infectious Diseases:** General principles of microbial pathogenesis, bacterial, fungal, parasitic and viral infections.
- **Environmental and nutritional pathology:** Common environmental and occupational exposures leading on to disease. Nutritional deficiencies and obesity related disorders.
- **Disease of Infancy and Childhood:** Congenital anomalies, birth injuries, diseases of neonates, inborn errors of metabolism, tumor and tumor like lesions of infancy and childhood.

Systemic Pathology:

- **Blood vessels, lymphatic and veins**: Normal morphology, congenital anomalies, atherosclerosis, hypertensive vascular disease. Inflammatory and neoplastic diseases of all thevessels**.**
- **Heart:** Normal morphology, its blood supply and effect of aging on heart. Ischemic, hypertensive, valvular, congenital heart diseases and cardiomegaly, pericardial diseases. Tumors of the heart**.**
- **Lungs:** Congenital anomalies, Obstructive and restrictive pulmonary diseases., Diseases of vascular origin., Infections and tumors of lung, Lung transplantation, Diseases ofpleura**.**
- **Head and Neck: Oral cavity:** - inflammatory disease and tumors, Diseases of teeth and supporting structures., Upper airways and ear – congenital anomalies, infections and tumors, Salivary glands – Infections autoimmune disorders and tumors. Thymus – Developmental autoimmune and inflammatory disorder and tumors.
- **Gastro Intestinal Tract**: Disease Esophagus, stomach, small and large intestines, appendix and anal canal. Diseases of the peritoneum
- **Liver**: Normal morphology with general features of hepatic disease including LFTs. Infectious, autoimmune drug induced, metabolic and circulatory disorders of liver. Hepatic diseases associated with pregnancy, neonate's organ and bone marrow transplantation, Liver

transplantation, Nodules and tumors of liver.

- **Biliary tract**: Congenital anomalies, injuries, Gallstones, cholecystitis and tumors of gall bladder and extra hepatic bile ducts**.**
- **Pancreas**: Congenital anomalies, pancreatitis and neoplasms ofpancreas**.**
- **Kidney:** Clinical manifestations of renal diseases .Congenital anomalies**.** Diseases affecting glomeruli, tubules, interstitium and blood vessels. Cystic diseases of kidney. Tumors of kidney.
- **Lower urinary tract and male genital system**: Congenital anomalies, inflammation and tumors of ureter, urethra, penis, testis and epididymis. Inflammation, enlargement and tumors of prostate.
- **Female genital tract:** Embryology, Anatomy, Physiology and histology of female genital tract. Congenital anomalies, inflammation and tumors of vulva, vagina, cervix, uterus, fallopian tubes and ovaries. Gestational and placental disorders.
- **Breast:** Inflammations, benign epithelial lesions and tumors of the breast. Diseases of male breast.
- **The Endocrine System:** Normal hormonal levels and functions of all the endocrine glands. Hypo and hyperactivity of glands of endocrine system i.e. pituitary, thyroid, parathyroid, pancreas, adrenals and pineal gland. Autoimmune diseases, inflammations and tumors affecting these glands.
- **Skin:** Disorders of pigmentation and melanocytes, Inflammatory, vesiculobullous and infectious disease, Tumors of the epidermis, dermisand skin appendage.

Musculoskeletal system:

- **Bones:** Modeling, growth and development, genetic and acquired abnormalities in bone cells, matrix and structure, features necrosis and infections of bones, tumors and tumor like lesions. Joints: Arthritis, tumor and tumor like lesions. Soft tissue, Tumors and tumor like lesions, Peripheral nerves and skeletal muscles, General reactions of motor units.
- **Central Nervous System:** Degenerative, metabolic, toxic, demyelinating, infectious, cereberovascular malformations and traumatic injuries of skeletal muscle bundles.Tumors
- **Eye:** Infections, inflammatory, congenital diseases and neoplasms of orbit, eyelid, conjunctiva sclera, uvea, cornea, retina and optic nerves.
- **General Cytology:** Origin & principles with stress on basic structure of a mammalian cell. Recognition and classification of different cell types. Fundamental concepts of neoplasia – Benign & malignant.
- **Cytology of:** Female Genital Tract, Respiratory tract, GIT, kidney & lower urinary tract, Breast

cytology, Cytology of thyroid, lymph nodes, neck masses. of Skin, Bone & Soft tissue Cytology of common lesions

- Cytology of Liver, Spleen, Pancreas, Retroperitoneum, Abdominal lumps
- Cytology of neoplastic and non-neoplastic lesions
- Cytology of Testis & Prostate
- Cytology of all effusions & fluids in absence as well as presence of cancer**.**
- **Haematology:** Clinical Correlation, Signs & Symptoms, General & Systemic examination) with various haematological disorders.
- Biology of stem cell & disorder of Hematopoiesis.
- Erythroid maturation, differentiation andabnormality.
- Pathobiology of human erythrocyte & Hemoglobin. Anemias
- WBC disorders, complement and immunoglobinbiology
- Hematological malignancies
- Hematopoietic stem cell transfusion
- Immunodeficiency state, Genetic disorders haematological Malignancies and Non-haematological disorders. Practical aspect of umbilical cord stem cells transplantation. Peripheral stem cell collection. Role of stem cell in tissue repair. Complications of Haematopoietic stem cell transplant. Gene transfer for haematologial disorders.
- Haemostasis & Thrombosis.
- Human blood group antigen and antibody
- Haematological manifestations of various diseases like liver disorders, renal disorders, infections, cancers, AIDS and Parasitic diseases.
- Hematological problem in surgical patients.
- Spleen and its disorders.
- Cytokines with details about their properties and functions.
- Disorders of the immune system.
- Amyloidosis including pathogenesis, special stains & clinicalcorrelation.

Transplant rejection in detail

A) PRACTICAL

- Histopathology
- Cytopathology
- Haematology
- Clinical Pathology

- Immunopathology

1. Agglutination Reactions- Principle, Techniques & practical Applications
2. All tests based on ELISA – Principle, Techniques & practical Applications
3. Protein electrophoresis – Principle, Technique & practical applications
4. Immunoelectrophoresis
5. Detailed knowledge of ANA & ANCA profile
6. Immunohistochemistry Principle, Techniques & Practical Applications
7. Immunoflourescence – Principle, Techniques & Practical Applications
8. RIA (Radio immunoassay) Principle, Techniques & Practical Applications
9. PCR- Principle, Techniques & Practical Applications
10. FISH, CISH, SKY -Principle Techniques & Practical Applications
11. Flow Cytometry- Principle, Techniques & Practical Applications
12. Blot techniques – Principle, Techniques & Practical Applications

GENERAL MICROBIOLOGY

1. History and pioneers in Microbiology
2. Microscopy
3. Morphology of bacteria and other micro-organisms.
4. Nomenclature and classification of microbes.
5. Growth and nutrition of bacteria.
6. Bacterial metabolism.
7. Sterilization and disinfection.
8. Biomedical waste disposal
9. Bacterial toxins.
10. Bacterial antagonism: Bacteriocins.
11. Bacterial genetics, gene cloning.
12. Antibacterial substances used in treatment of infections and drug resistance in bacteria.
13. Bacterial ecology-normal flora of human body, hospital environment, air, water and milk
14. Host parasite relationship.
15. Quality control and Quality Assurance in Microbiology.
16. Laboratory Bio safety
17. Health care associated infections- prevention and control

MMUNOLOGY AND APPLIED ASPECTS

1. The normal immune system.
2. Innate immunity.
3. Antigens.
4. Immunoglobulins.
5. Complement.
6. Antigen and antibody reactions.
7. Hypersensitivity.
8. Cell medicated immunity.
9. Immunodeficiency.
10. Autoimmunity.
11. Immune tolerance.
12. Transplantation immunity.
13. Tumour immunity.
14. Prophylaxis and immunotherapy
15. Measurement of immunity.
16. Immunity and immunopathogenesis of specific infectiousdiseases
17. Molecular Biology Techniques. For e.g. PCR, DNA probes.

B) PRACTICAL

Proficiency of technological methods should include the following:

1. Fields in which high degree of professional competence and theorotical knowledge isexpected:-
   a) Gross pathology and histopathology
   b) Haematology
   c) Cytopathology
   d) Clinical pathology and Blood banking
2. Fields in which student is expected to achieve reasonable working knowledge and skills to be able to run laboratory services independently
   a) Clinical chemistry
   b) Serology
3. Fields in which student is expected to achieve general acquaintance of techniques to understand and interpret data
   a) Immunopathology
   b) Histochemistry

c) Immunohistochemistry

d) Cytogenetics

e) Molecular biology

f) Medical statistics

POSTING SCHEDULE:

Posting	FCPS (Pathology)
Histopathology and Autopsy	15 months
Clinical pathology	15 month
Haematology	
Cytopathology	
Blood Bank	
Biochemistry	1 month
Serology	15 days
Museum	15 days
Revision in all sections	4 months
TOTAL	**36 months**

RECOMMENDED MINIMUM TEXT BOOKS AND JOURNALS BOOKS:

1. Cotran, Kumar, Collins. Robin's Pathologic Basis of Disease, published by W.B. Saunders & Company.
2. Ivan Damjanov, James Linder. Anderson's Pathology, published by C.V. Mosby Company.
3. J. B. Walter, M.S. Israel. General Pathology, published by Churchill Livingstone.
4. Emeritus W.ST. Symmers Systemic Pathology, published by Churchill Livingstone.
5. Juan Rosai, Ackerman's Surgical Pathology, published by C.V.Mosby Company.
6. Leopold G Koss, Diagnostic cytology and its histopathologic basis published by J.B. Lippincott Company.
7. Marluce Bibbo, Comprehensive cytopathology, published by W.B Saunders Company
8. Winnifred Grey, Diagnostic cytopathology, published by Churchill Livingstone
9. Orell, Sterrett- Walters and Whittaker, Fine Needle Aspiration Cytology (Manual & Atlas), published by Churchill Livingstone
10. Greer J.P, Foerster J,Jukens J et. al Wintrobe's Clinical Haematology, published by Lippincott Williams and Wilkins
11. Firkin F , Chesterman C, Penington D, de Gruchy's Clinical Haematology in Medical Practice, published by Blackwell Sciences
12. Henry J.B Clinical Diagnostics and Management by Laboratory Methods. published by W.B. Saunders & Company.
13. Lewis S.M, Bain D.J, Bates I, Dacie & Lewis Practical Haematology published by Churchill Livingstone.
14. Hoffbrand A.V, Catovsky D, Tuddenham G.D, Postgraduate Haematology – published by Blackwell publishing

15 R.Anantnarayan , C.K.Paniker, Textbook of Microbiology , published by Orient Longman.

16. Harshmohan ,Textbook of pathology , published by Jaypee.
17. Parasitology (Protozoology & Helminthology.) in relation to clinical medicine – K.D.Chatterjee – published by Chatterjee Medical Publication.
18. Sudha R.Kini ,Colour Atlas of differential diagnosis in exfoliative and aspiration cytopathology, published by Lippincott, Williams & Wilkins.
19. Praful B. Godkar ,Clinical Biochemistry – Principles & practice ,published by Bhalani Publishing House, Bombay.
20. Theory & practice of Histological Techniques edited by John.D.Bancroftpublished by Chruchill Livingstone.
21. Enzinger & Weiss, Soft Tissue Tumours, Published by B.I.Publications (India.) C.V.Mosby company.
22. Elder D.E, Lever's Histopathology of the skin – Published by J.B.Lippincott Company.
23. Novak & Woodruff Edited, Novak's Gyanaecologic and Obsteric Pathology, published by – Kiaku Shoin/Saunders.
24. Christopher D.M. Fletcher, Diagnostic Histopathology of Tumours Vol.1 & 2- published by Chruchill Livingstone.
25. Recent advances in Histopathology, Haematology, Blood coagulation etc.
26. AFIP, Atlas of tumour pathology.
27. Interpretation of Breast Biopsies -Carter
28. Day D.W, Jass J.R, Price A.B, Morson and Dawson's Gastrointestinal Patholgy, published by Blackwell publishing.
29. Ellison D, LoveS, Chimelli L et. al, Neuropathology , published by Mosby
30. Epstein Prostate Biopsy Interpretation, published by Lippincott-Raven
31. Fogo A.B,Kashgarian M, Diagnostic Atlas of Renal Pathology, published by Elseiver Saunders
32. Foster C.R, Pathology of the Urinary Bladder, published by Saunders
33. Fox H, Wells M ,Haines & Taylor - Obstetric and Gynaecological Pathology, published by Chruchill Livingstone
34. Ioachim H.L,Lymphnode Pathology, published by Lippincott
35. Kilpatrick, Renner, Diagnostic Musculoskeletal Surgical Pathology, Clinicoradiologic & cytologic correlations,published by Saunders
36. Kurman R.J, Blaustein's pathology of the female genital tract, published by Springer
37. LeslieK.O,Wick M.R, Practical pulmonary pathology; a Diagnostic approach, published by Churchill Livingstone
38. MacSween, Butt, Portman et al,Pathology of the liver- published by Churchill Livingstone
39. Mills S.E, Sternberg's diagnostic surgical pathology, published by Lippincott Williams and Wilkins
40. Montgomery E.A, Biopsy interpretation of the Gastrointestinal Tract Mucosa, published by Lippincott

Williams and Wilkins

41. Odze R.D, Surgical pathology of the GI Tract, Liver, Biliary Tract and Pancreas, published by Saunders
42. Owen D, Pathology of the Gall Bladder , Biliary Tract, and Pancreas, published by Saunders
43. Pilch B.Z, Head and Neck surgical pathology, published by Lippincott Williams and Wilkins
44. Rosen P,Pathology of Breast, published by Lippincott Williams and Wilkins
45. Silverberg S.G, Atlas of Breast pathology, published by Saunders
46. Weedon ,Skin Pathology, published by Churchill Livingstone
47. Wickremsinghe, Blood and Bone marrow pathology, published by Churchill Livingstone
48. Atkinson B, Atlas of diagnostic pathology, published by Saunders
49. Cibas E.S, Cytology:Diagnostic principles and clinical correlates, published by Saunders
50. Geiinger, Modern cytopathology
51. Naib Z.M,Cytopathology, published by Little Brown andcompany
52. Meisels A, Morin C, Cytopathology of the uterine Cervix, published by ASCP Press 53.Miettinen M,Diagnostic soft tissue pathology, published by Churchill Livingstone
54. Chandler F.W,Pathologic diagnosis of fungal infection,published by ASCPPress
55. Collins R.D, Paediatric Haematopathology, published by Churchill Livingstone
56. Hoffman , Benz, Shattil,Haematology :Basic principles and practice, published by Churchill Livingstone
57. Naeim F, Atlas of bone marrow and blood pathology, published by W. B Saunders
58. Tkachuk D.C,Atlas of clinical haematology, published by Saunders
59. WHO Classification of tumours, published by IARC Press.
60. Mollison P.L, Blood transfusion in clinical medicine, published by Oxford, ELBS& Blackwell Scientific Publication
61. Chitale A, Pathology of urinary & male genital system for urologists, general surgeons & Pathologists published by B.I. Publications
62. Saran R.K., Transfusion medicine technical manual, published by WHO

JOURNALS:

1. British Journal of Haematology, published by Blackwell Sciences.
2. CANCER, International journal of American Cancer Society, published by John Wile & Sons Inc.
3. Journal of Clinical Pathology, published by B.M.J.
4. Haematology/Oncology Clinics of North America, published by W.B. Saunders& Company.
5. American Journal of Surgical Pathology, published by Lippincott & Raven
6. Indian Journal of Pathology & Microbiology, published by IAPM.
7. Indian Journal of Cancer, published by Indian Cancer Society.
8. Indian Journal of Cytology, published by IAC.
9. LANCET published by Elsevier

10. I.C.M.R. Bulletin, published by ICMR
11. Histopathology, journal of the British Division of the International Academy of Pathology- Published by Blackwell Science
12. Acta Cytologica,The Journal of Clinical Cytology and Cytopathology
13. Archives of Pathology and Laboratory Medicine-Published by American Medical Association
14. Human Pathology- Published by W.B. Saunders & Company.
15. American Journal of Clinical Pathology published by ASCP
16. Indian Journal of Cytology
17. WHO Bulletin published by WHO
18. Modern Pathology

ADDITIONAL READINGS:

1. Compendium of recommendations of various committees on health and development (1943 to 1975) DGHS, 1985 Central Bureau of Health Intelligence, DGHS, Ministry of Health & Family Welfare, Govt. of India, Nirman Bhavan, New Delhi-335.
2. National Health Policy, Ministry of Health & Family Welfare, Govt. of India, Nirman Bhavan, New Delhi-335. 1983.
3. ICMR, Policy, Statement of ethical considerations involved in research on Human subjects, 1982 ICMR, New Delhi.
4. Code of Medical Ethics framed under Section- 33 of Indian Medical Council Act , 1956 .MCI, Kotla road, New Delhi.
5. Santosh Kumar,The elements of Research ,writing and editing 1994,Dept. of Urology, JIPMER,Pondicherry
6. Srinivas D.K et al, Medical Education Principles and Practices,1995.National Teacher Training Centres, JIPMER, Pondicherry
7. Francis C.M Medical Ethics, J.P.Publication,Banglore 1993
8. Indian National Science Academy, Guidelines for care and use of animals in scientific Research, New Delhi,1994
9. International Committee of Medical Journal Editors, Uniform Requirements for Manuscripts submitted to biomedical journal. N. Engl J Med 1991;424-8
10. Kirkwood B.R. Essentials of Medical Statistics, 1st ed. Oxford Blackwell Scientific Publications 1988
11. Mahajan B.K.Methods in Biostatistics for medical students,5th ed New Delhi, Jaypee Brothers Medical Publishers,1989
12. Raveendran B. Gitanjali, A Practical Approach to PG dissertation, New Delhi.J.P Publications 1998.

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EXAMINATION PATTERN

Theory Examination

Paper – 01	Paper – 02	Paper – 03	Paper 04
PATHOLOGY	PATHOLOGY	PATHOLOGY	PATHOLOGY
Section I	**Section I**	**Section I**	**Section I**
Q.1. 10 Marks	Q.1. 10 Marks	Q.1. 10 Marks	Q.1. 10 Marks
Q.2. 10 Marks	Q.2. 10 Marks	Q.2. 10 Marks	Q.2. 10 Marks
Q.3. 10 Marks	Q.3. 10 Marks	Q.3. 10 Marks	Q.3. 10 Marks
Q.4. 10 Marks	Q.4. 10 Marks	Q.4. 10 Marks	Q.4. 10 Marks
Q.5. 10 Marks	Q.5. 10 Marks	Q.5. 10 Marks	Q.5. 10 Marks
Total 50 Marks	**Total 50 Marks**	**Total 50 Marks**	**Total 50 Marks**
Section II	**Section II**	**Section II**	**Section II**
Q.1. 10 Marks	Q.1. 10 Marks	Q.1. 10 Marks	Q.1. 10 Marks
Q.2. 10 Marks	Q.2. 10 Marks	Q.2. 10 Marks	Q.2. 10 Marks
Q.3. 10 Marks	Q.3. 10 Marks	Q.3. 10 Marks	Q.3. 10 Marks
Q.4. 10 Marks	Q.4. 10 Marks	Q.4. 10 Marks	Q.4. 10 Marks
Q.5. 10 Marks	Q.5. 10 Marks	Q.5. 10 Marks	Q.5. 10 Marks
Total 50 Marks	**Total 50 Marks**	**Total 50 Marks**	**Total 50 Marks**
Section I+II = 100 Marks	Section I+II = 100 Marks	Section I+II = 100 Marks	Section I+II = 100 Marks
Total Theory = 400 Marks Passing = 200 (i.e. 50%) Marks aggregate in Theory			

Practical Examination

Paper 05	**MORBID ANATOMY** Histopathology Slides, Histopathology techniques, Grossing, Autopsy & viva	100
Paper 06	**CLINICAL PATHOLOGY** Haematology, haemat.+ Cyto,Slides Urine Examinations, Bio-Chemistry , Micro, Spots & Viva	100
Total Marks	**(Aggregate marks for passing is 50% out of total.)**	**200**