

# **P.G. COURSES IN PATHOLOGY**

## **M.D. PATHOLOGY**

### **OBJECTIVES**

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

1. Understand and explain factors, about the in causation of disease.
2. Understand processes involved in the gross and microscopic changes of organs and tissues and explain these changes.
3. Understand and explain the basis of evolution of clinical signs and symptoms.
4. Perform laboratory procedures
5. Recognise and report morphological changes in cells, tissues and organs.
6. Identify, plan, perform and report specific research projects.
7. Perform clinical autopsy.
8. Plan and teach pathology for Laboratory Technology, Nursing, Dental and Medical students.

### **COURSE CONTENTS**

#### **I BASIC SCIENCES**

1. Anatomy: Histology - of all structures in the human body/organ
2. Physiology and Biochemistry: basic aspects of various metabolisms & functioning of endocrines
3. Genetics: Fundamental/Applied aspects
4. Biostatistics
5. Bio-medical ethics: Ethical issues related to medical practice and research involving human subjects and animals.

#### **II Pathology:**

- historical aspects
- general pathology including immunopathology
- clinical pathology
- systemic pathology

- haematopathology
- blood banking, transfusion medicine, immunohaematology
- cytopathology
- genetic disorders : molecular pathology
- recent advances in all fields
- organization of laboratory including quality control

#### **METHOD OF TRAINING :**

- |                |   |                                  |            |
|----------------|---|----------------------------------|------------|
| Basic sciences | - | posting to different departments | - 3 months |
|                | - | genetics - seminar/self learning |            |

#### **ii. On job training**

- a)
  - histopathology
  - cytology including FNAC, fluid cytology exfoliative cytology
  - haematology including blood banking, and transfusion medicine
  - clinical pathology
  - museum techniques
- b) - autopsy - techniques and interpretation
- c)
  - microbiology
  - basic techniques
  - serology
  - Bio medical waste management: Potential risks, handling of hazardous material, laboratory waste management
- d) - undergraduate teaching
- e) - CPC

#### **iii) Group Teaching Sessions :**

- Biopsy/Slide review once a week
- Journal review — once a month

- Subject seminar presentation once in three months (by each student on a given topic)
- Grossing sessions - Regularly
- Group discussion of clinical cases / laboratory techniques
- Training in answering model questions - one essay type question every month
- To present / participate in CME Programmes.

## **POSTING TO OTHER DEPARTMENTS**

### **1. Biochemistry - 1 Month**

Knowledge of procedures of common estimations

Knowledge of Handling of equipment - Colorimeter, Flame photometer, Spectrophotometer, PH Meter, Semi Auto analyser, Electrophoresis

**2. Microbiology - 1 Month:** Basic Techniques - common stains, sterilization and disinfection, serology/ELISA and Parasitology - Stool examination

**3. Autopsy Room- 1 Month:** Techniques and interpretation, Embalming and body preservation

**4. Blood Bank - 1 Month:** All procedures in detail

**5. Pathology museum - 15 days:** Preservation, preparation and mounting of specimens

**6. External Posting - 1 Month** (Eg. Neuro Pathology, Oncopathology)

## **MONITORING OF PROGRESS OF STUDIES**

- a. As per the guidelines given in sl. no. 8 of chapter 1 and Chapter IV
- b. Maintain a detailed work diary. Work diary checked monthly by head of department

## **DISSERTATION**

- a. Every candidate is required to carry out work on a selected research project under the guidance of a recognised postgraduate teacher. The results of such work shall be submitted in the form of a dissertation
- b. The dissertation is aimed to train the candidate in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of relevant literature, getting acquainted with recent advances, designing of research study, collection of data, critical analysis of results and drawing conclusions.

- c. For details regarding registration of dissertation topic, please see Chapter I, Sl.No.9
- d. The dissertation is to be submitted at least six months before the final examination as notified by the university to the Registrar (Evaluation).
- e. The dissertation shall be valued by three examiners. Prior acceptance of the dissertation shall be a precondition for a candidate to appear for the final examination

## SCHEME OF EXAMINATION

### A. THEORY :

There shall be four question papers, each of three hours duration. Each paper shall consist of two long essay questions each question carrying 20 marks and 6 short essay questions each carrying 10 marks. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers \*.

Paper I -	General Pathology including Immunopathology	- 100 Marks
Paper II -	Haematology/Clinical Pathology/Cyto pathology, Blood banking Transfusion Medicine and Immunohematology	- 100 Marks
Paper III -	Systemic Pathology Cardio vascular system, Respiratory system, Gastro intestinal System including Liver & Biliary tract, Pancreas, Renal system Male and female genital system and Breast.	- 100 Marks
Paper IV -	Systemic Pathology Central and Peripheral nervous system, endocrine system, musculo-skeletal system, Reticulo-endothelial System (Lymph nodes, Spleen and Thymus), Dermatopathology and Ophthalmic pathology, Bone, Joints and soft tissues.	- 100 Marks

\* The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

### B. PRACTICAL : Total 200 Marks Duration – 2 days.

#### DAY 1 :

- a. Autopsy / Reconstructed autopsy (organ systems) and discussions on it 20 Marks.
- b. Gross and morbid anatomy. 15 Specimens x 2 marks 30 Marks.
- c. Haematology and Cytology slides. 8+7 x 2 marks 30 Marks.

- d. Blood bank and haematology techniques / discussion 15 Marks.
- e. Histopathology techniques : 30 Marks.
1. H & E stains : Discussion on histopathological techniques (10 Marks.)
  2. One Special staining - Discussion on technique and interpretation. (5 Marks.)
  3. Cytology staining - Discussion on technique and interpretation. (5 Marks.)
  4. One Slide of IHC with history. Discussion & interpretation. (5 Marks.)
  5. Intraoperative consultation : Frozen section / imprint slide (5 Marks.)
- f. Topic allotment for Pedagogy exercise.

## DAY : 2.

- a. Histopathology slides. 20 slides x 2.5 50 Marks.
- b. Clinical pathology & Haematology case history given.  
Discussion & interpretation. 25 Marks.

## C. VIVA -VOCE: Total 100 Marks

- 1) Viva-Voce Examination: (80 Marks)

Students will be examined by all the examiners together about students comprehension, analytical approach, expression and interpretation of data. Student shall also be given case reports, charts for interpretation. It includes discussion on dissertation.

- 2) Pedagogy Exercise: (20 Marks)

A topic be given to each candidate along with the Practical Examination on the first day. Student is asked to make a presentation on the topic on the second day for 8 to 10 minutes.

## D.

Maximum marks for	Theory	Practicals	Viva-voce	Total
M.D (Pathology)	400	200	100	700

15 Marks.

30 Marks.

(10 Marks.)

(5 Marks.)

(5 Marks.)

(5 Marks.)

(5 Marks.)

50 Marks.

25 Marks.

comprehension,  
also be given case

on the first day.  
8 to 10 minutes.

	Total
	700

## RECOMMENDED TEXT BOOKS AND JOURNALS:

1. **Kumar, Robbins, Pathologic Basic Of Disease**, Published by W.B.Saunders & Company. Also available in PRISM Indian Edition
2. **M. Kissane Edited, Anderson's Pathology**, Published by C.V.Mosby Company
3. **Ge. Isaacson and Wright Edited, Oxford Text Book Of Pathology Vol. 1, 2a, 2b**, Published by Oxford University Press
4. **Walter, M.S.Israel, General Pathology**, Published by Churchill Livingstone
5. **Meritus Editor: W.st. Symmers, Systemic Pathology 16 Volumes**, Published by Churchill Livingstone
6. **Edited by Jaun Rosai, Ackerman's Surgical Pathology**, Published by C.V. Mosby company
7. **Walter F Coalson, Surgical Pathology**, Published by Lippincott
8. **Enzinger and Weiss, Soft Tissue Tumours**, Published by B.I.Publications (India) C.V.Mosby company
9. **W.F Lever - GS Lever, Histopathology Of The Skin**, Published: J.B. Lippincott Company
10. **David J.B.Ashley EVAN'S Edited, Histological Appearances Of Tumours**, Published by Churchill Livingstone
11. **Novak & Woodruff Edited, Novak's Gynecologic And Obstetric Pathology**, Published by - Kiaku Shoin/ Saunders
12. **Leopold G Koss, Diagnostic Cytology And Its Histopathologic Basis**, Published by J.G.Lippincott Company
13. **Marluce Bibbo, Comprehensive Cytopathology** Published by W.B. Saunders and Company
14. **Winnifred Grey, Edited, Diagnostic Cytopathology**, Published by Churchill Livingstone
15. **Orell, Sterrett, Walters & Whittaker, Fine Needle Aspiration Cytology (Manual & Atlas)**, Published by Churchill Livingstone
16. **Daniel M Knowles, Edited, Neoplastic Haematopathology**, Published by Williams & Wilkins
17. **Maxwell M Wintrobe, Clinical Haematology**, Published by K. M. Varghese & Company
18. **De Gruchy's, Edited by Firkin, Chesterman, Penington, & Rush, Clinical Haematology In Medical Practice**, Published by Oxford University Press
19. **Prema V Iyer & Robert Rowland, Ophthalmic Pathology**, Published by Churchill Livingstone

20. Todd, Sanford, Davidson, Edited, **Clinical Diagnostis And Management By Laboratory Methods**, Published by W.B.Saunders and Company
21. Shameem Sharif, Edited, **Surgical Pathology And Laboratory Techniques**, Published by Prism publications
22. Christopher D.M.Fletche, Edited, **Diagnostic Histopathology Of Tumours Vol. 1 & 2**,Published by Churchill Livingstone
23. Shameem Shariff, **Laboratory Techniques in Surgical Pathology**, Prism publications.
24. Human Pathology, Published by W. B. Saunders Company

### **JOURNALS:**

1. British Journal of Haematology Published by Blackwell Science
2. CANCER, International journal of the American cancer society, Published by John Wiley and sons, Inc.
3. Journal of Clinical Pathology, Publishing Group BMJ
4. Hematology /Oncology Clinics of North America, Published by W.B.Saunders and company
5. Histopathology, Journal of the British Division of the international academy of pathology Published by Blackwell Science
6. The American journal of Surgical Pathology, Published by Lippincott – Raven
7. ACTA Cytologica, The journal of clinical cytology and cytopathology
8. Archives of pathology and Laboratory medicine, Published by the American Medical Association
9. The Indian Journal of Pathology & Microbiology, Published by IAPM
10. The Indian Journal of Cancer, Published by Indian Cancer Society

### **ADDITIONAL READING**

1. Compendium of recommendations of various committees on Health and Development (1943-1975). DGHS, 1985 Central Bureau of Health Intelligence, Directorate General of Health Services, min. of Health and Family Welfare, Govt. of India, Nirman Bhawan, New Delhi. P - 335.
2. National Health Policy, Min. of Health & Family Welfare, Nirman Bhawan, New Delhi, 1983

3y Laboratory

Published by

rs Vol. 1 &

blications.

John Wiley

d company

pathology

Medical

at (1943-  
f Health  
Delhi. P

v Delhi,

Santosh Kumar, The elements of Research, writing and editing 1994, Dept. of Urology, JIPMER, Pondicherry

Srinivasa D K etal, Medical Education Principles and Practice, 1995. National Teacher Training Centre, JIPMER, Pondicherry

Indian Council of Medical Research, "Policy Statement of Ethical considerations involved in Research on Human Subjects", 1982, I.C.M.R, New Delhi.

Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road, New Delhi.

Francis C M, Medical Ethics, J P Publications, Bangalore, II edn., 2004.

Indian National Science Academy, Guidelines for care and use of animals in Scientific Research, New Delhi, 1994.

International Committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journals, N Engl J Med 1991; 424-8

Kirkwood B R, Essentials of Medical Statistics , 1<sup>st</sup> Ed., Oxford: Blackwell Scientific Publications 1988.

Mahajan B K, Methods in Bio statistics for medical students, 5<sup>th</sup> Ed. New Delhi, Jaypee Brothers Medical Publishers, 1989.

Raveendran and B Gitanjali, A Practical approach to PG dissertation, New Delhi, J P Publications, 1998.



# **SRI SIDDHARTHA UNIVERSITY**

## **M.D. Degree Examination – Model Question Paper**

[Time: 3 Hours]  
100]

[Max. Marks:

### **PATHOLOGY GENERAL PATHOLOGY PAPER – I**

### **Q.P. CODE :**

Your answers should be specific to the questions asked.  
Draw neat labeled diagrams wherever necessary. Answer all questions

#### **LONG ESSAY**

**2 X 20 = 40 Marks**

1. Discuss the role of ALCOHOL in the causation of human disease
2. Classify and discuss about EMBRYONAL tumors of childhood

#### **SHORT ESSAY**

**6 X 10 = 60 Marks**

3. Describe 'High risk' Autopsy
4. Quality assurance in clinical chemistry
5. Tumor marker
6. Chlamydial diseases
7. DIGITAL IMAGING in pathology
8. Utility of PCR in diagnostic pathology

\* \* \* \* \*

# **SRI SIDDHARTHA UNIVERSITY**

## **M.D. Degree Examination – Model Question Paper**

[Time: 3 Hours]

[Max. Marks: 100]

### **PATHOLOGY HAEMATOLOGY, CLINICAL PATHOLOGY AND CYTOLOGY PAPER – II**

### **Q.P. CODE :**

Your answers should be specific to the questions asked.  
Draw neat labeled diagrams wherever necessary. Answer all questions

#### **LONG ESSAY**

**2 X 20 = 40 Marks**

1. Discuss the various aspects of whole blood processing for the purpose of transfusion
2. Cytological features of effusions in the presence and absence of cancers

#### **SHORT ESSAY**

**6 X 10 = 60 Marks**

3. Liquid- based cytology in the screening programme against cervical cancer
4. Polycythaemias
5. Role of fine needle aspiration cytology in diagnosis of salivary neoplasms
6. Non thrombocytopenic vascular purpuras
7. Routine and special stains useful in cytology
8. Protocol for instrument evaluation in a clinical laboratory

\* \* \* \* \*

# **SRI SIDDHARTHA UNIVERSITY**

## **M.D. Degree Examination – Model Question Paper**

[Time: 3 Hours]

[Max. Marks: 100]

### **PATHOLOGY SYSTEMATIC PATHOLOGY - PAPER – III**

### **Q.P. CODE :**

Your answers should be specific to the questions asked.  
Draw neat labeled diagrams wherever necessary. Answer all questions

#### **LONG ESSAY**

**2 X 20 = 40 Marks**

1. Discuss the recent concepts in the etiopathogenesis, pathology and complications of atherosclerosis
2. Discuss the classification and morphology of sex cord stromal tumours of the ovary. Add a note on the role of immunohistochemistry in the diagnosis and prognosis of ovarian tumours

#### **SHORT ESSAY**

**6 X 10 = 60 Marks**

3. Applications of immunohistochemistry in prostate biopsy
4. Primary malignant lymphoma of stomach
5. Cystic pancreatic neoplasms
6. Barrett's oesophagus
7. Solitary fibrous tumour of the pleura
8. Metaplasias in female genital tract

\* \* \* \* \*

# **SRI SIDDHARTHA UNIVERSITY**

**M.D. Degree Examination – May 2010**

[Time: 3 Hours]

[Max. Marks: 100]

## **PATHOLOGY SYSTEMATIC PATHOLOGY - PAPER – IV**

### **Q.P. CODE :**

Your answers should be specific to the questions asked.  
Draw neat labeled diagrams wherever necessary. Answer all questions

#### **LONG ESSAY**

**2 X 20 = 40 Marks**

1. Classify bullous lesions of the skin. Describe in detail the morphology and immunofluorescence findings of these lesions
2. Discuss the role of liver biopsy in the diagnosis of chronic hepatitis

#### **SHORT ESSAY**

**6 X 10 = 60 Marks**

3. Myofibroblastic lesions
4. Anaplastic large cell lymphoma
5. WHO classification of meningiomas
6. Aneurysmal bone cyst
7. Duchenne muscular dystrophy
8. Parathyroid adenoma

\* \* \* \* \*