



SHRI
DHARMASTHALA
MANJUNATHESHWARA
UNIVERSITY

Ordinance Governing
Competency Based Postgraduate Training Programme
for DM Nephrology
Curriculum 2023-24

SHRI DHARMASTHALA MANJUNATHESHWARA UNIVERSITY

(A State Private University established under the Shri Dharmasthala Manjunatheshwara University
Act No 19 of 2018 of Government of Karnataka and Notification No. ED 261 URC 2018 dated 19th December 2018)

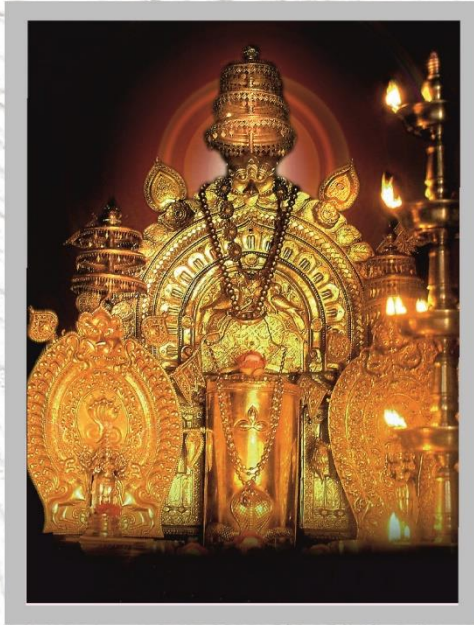
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|| Om Shri Manjunathaya Namaha ||



Shree Kshethra Dharmasthala

Edition Year : 2023-24

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THE LOGO

Poojya Dr D. Veerendra Heggade, Hon'ble Chancellor of the University, while searching for an appropriate Logo for the University, saw a photograph picked from Temple Architecture showing Wings of a Bird, sculpted in Indian style and wanted it to be incorporated in the logo for the University, as the Wings symbolize 'Spreading of Knowledge beyond Boundaries'. Further it was felt that the Central theme of the logo should be 'Rudra' (The Linga) with wings on each side. In this way, the logo of the University was conceptualized.

Hence:

1. The central part represents **Rudra** who Demolishes Darkness.
2. The Three **horizontal lines on The Linga** stand for Samyak Darshan (Right Belief), Samyak Gyan (Right Knowledge) and Samyak Charitra (Right Conduct).
3. The **Wings** symbolize spreading of Knowledge across the boundaries.
4. Base line "**Truth Liberates**" highlights the Purpose of Education: to liberate oneself unconditionally. It shows that it is not discipline, nor knowledge nor the efforts to freedom that liberate but Truth is what liberates you from all your conditioning and ignorance.

The overall significance of Shri Dharmasthala Manjunatheshwara University's Logo is:

Darkness of ignorance is destroyed by the flow of knowledge to bring Liberty to everyone, by realizing the truth. And, it should spread globally without the



SHRI
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VISION

Shri Dharmasthala Manjunatheshwara University will set the highest standards of teaching and learning by awakening the intelligence of the students and nurturing the creativity hidden in them by creating an environment where the ancient wisdom blends with modern science, to transform them into whole human beings to face the challenges.

MISSION

- ▶ To ensure that the journey of education is inspiring, pleasant and enjoyable.
- ▶ Attract the best of teachers and students.
- ▶ Achieve high principles of trust, love and spirituality in the students.
- ▶ Create a collaborative, diverse and exclusive community.
- ▶ Transform the student of today to be a leader of tomorrow and a better human being.
- ▶ Produce passionate teachers.
- ▶ Evolve innovative teaching techniques.
- ▶ Create a peaceful environment.
- ▶ Prepare the student to face the social challenges.
- ▶ Create a University of which the Nation is proud of.
- ▶ Be an effective partner in Nation Building.
- ▶ Create an Eco-friendly University.
- ▶ Create a University based on the principles of beauty, love and justice.

||Om Shanti! Om Shanti! Om Shanti||



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UNIVERSITY

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SDMU/ACD/F-4/Notfn.-339/681/2023

Date: 01.12.2023

NOTIFICATION

Ordinance Governing Curricula of Superspeciality programs

Ref: 1. Minutes of the 8th Meeting of Academic Council held on 10/11/2023

In exercise of the powers conferred under Statutes 1.4 (Powers and functions - Section ix & x) of Shri Dharmasthala Manjunatheshwara University, the Academic Council is pleased to approve & notify the ordinance governing the Curricula of the Superspeciality programs as below:

Sl. No.	Program	Intake
1	M.Ch. Plastic Surgery	03
2	M.Ch. Pediatric Surgery	02
3	DM Nephrology	03

The ordinance shall be effective for the students joining the course.

Dr. Chidendra M. Shettar *M.S. (Ortho.), FRCS (GLASG).*

REGISTRAR
REGISTRAR

Shri Dharmasthala Manjunatheshwara
University, Dharwad

To: The Principal, SDM College of Medical Sciences & Hospital

Copy for information to:

1. Hon'ble Chancellor, Shri Dharmasthala Manjunatheshwara University
2. Vice Chancellor, Shri Dharmasthala Manjunatheshwara University
3. Director Administration, Shri Dharmasthala Manjunatheshwara University
4. Pro Vice-Chancellor (Academics), Shri Dharmasthala Manjunatheshwara University
5. Controller of Examinations, Shri Dharmasthala Manjunatheshwara University
6. Chairperson, Board of Studies - Superspeciality
7. University Records file



SDM COLLEGE OF MEDICAL SCIENCES AND HOSPITAL,
DHARWAD



A constituent Unit of



**SHRI
DHARMASTHALA
MANJUNATHESHWARA
UNIVERSITY**

CURRICULUM OF
DM NEPHROLOGY

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1. DM NEPHROLOGY

A. GOALS

The goal of DM Nephrology is to produce a competent Nephrologist who:

- Has acquired the competence pertaining to Nephrology that is required to be practiced in the community and at all levels of health care system
- Has acquired the skills to manage the patient effectively pertaining to nephrology
- Has acquired skill in effectively communicating with patient and his attendants.
- Has the desired skills to independently manage emergency cases Is aware of the latest developments in the field of nephrology oriented to principles of research methodology
- Has acquired skills in educating medical and paramedical professionals.

B. OBJECTIVES

At the end of the DM Nephrology, the student should be able to

- Practice the speciality of nephrology in keeping with the principles of professional ethics
- Recognize and identify the various renal problems
- Institute diagnostic, therapeutic, rehabilitative and preventive measures to provide holistic care to the patient
- Take detailed history, perform full physical examination and make clinical diagnosis, perform relevant investigative and therapeutic procedures
- Interpret important imaging and laboratory results
- Independently perform basic surgical procedures
- Manage emergency efficiently
- Demonstrate empathy and humane approach towards patients and their families.
- Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education to patients, families and communities,
- Develop skills as a self-directed learner, recognize continuing educational needs, use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based medicine, facilitate learning of medical/nursing students, practicing physicians, paramedical health workers and other providers as a teacher/trainer
- Organize and supervise the desired managerial and leadership skills

2.COURSE OVERVIEW

Durationofthe Course

The period of certified study and training for the Post-Graduate DM Nephrology shall be 03 Academic years.

CommencementofAcademicSession

The academic session for the Post-Graduate shall commence from the month of September / October of the Academic Year.

Date of Examination

The candidates admitted up to 31st October of the academic year shall be registered for that academic year and shall take up their Final Third Year regular examination in September / October of the due year and repeat examination in February/March of the academic year after completion of three (3) years.

Numberof Examinations

The University shall conduct not more than two examinations in a year, for any subject, with an interval of not less than four (4) and not more than six (6) months between the two examinations.

Attendance

All students joining the postgraduate training programme shall work as full time residents during the period of training, attending not less than 80% (eighty percent) of the training during each calendar year, and will be given full time responsibility, assignments and participation in all facets of the educational process.

The period of training for obtaining the degree shall be three completed years including the period of examination.

3. COURSE CONTENT

TRAINING METHODS AND AREAS OF TRAINING

- i. The candidates will work in the department under the guidance of Assistant Professors, Associate Professors and Professors. They will be trained in the decision making process both in clinical and investigative aspects of nephrology. The candidates shall work taking up the responsibility of investigative and therapeutic management of patients under the guidance of senior teachers in nephrology.
- ii. The candidates will attend nephrology out patient department and Renal transplant OPD.
The candidates will write case sheets of the new patients and discuss the problems of old patients with Associate Professor and Professor of Nephrology.
- iii. Training in renal biopsy and interpretation of biopsy and other invasive procedures will be given.
- iv. The candidate shall maintain log book and monthly review by the professor or associate professor.

DIALYSIS

(a) HEMODIALYSIS

The candidates will be posted in Hemodialysis units on rotation where he or she will be trained in both technical and clinical aspects of Hemodialysis including double lumen venous catheterization, permcath insertion. Dialyser reuse etc.

They will also be trained in SLED, SCUF and Continuous Renal Replacement Therapy (CRRT) – mode of dialytic therapy in critically ill patients.

The candidates will also be trained during this period in plasmapheresis and Hemoperfusion.

(b) PERITONEAL DIALYSIS

All candidates will be trained to perform acute intermittent peritoneal dialysis including its benefits and complications. Apart from that they will be trained in the management Continuous Ambulatory Peritoneal Dialysis (CAPD) and CCPD patients

RENAL TRANSPLANTATION

The candidates will be trained in the workup of living kidney donors and recipients and prepare recipients for Renal Transplantation, manage them post operatively in the immediate and long term follow up.

They will also be trained in wait listing the appropriate End Stage Kidney Disease (ESKD) patients without living donors, preparing them for Renal Transplantation as and when the cadaver renal donor is available and managing them post operatively.

	8.30 AM-9.30 AM	9.30 AM-1.00 PM	2.00 PM-5.00 PM
Monday		Ward rounds and bedside discussion	Interventions/Procedures
Tuesday	Inter departmental Meeting*	Ward rounds and bed side discussion	Interventions/Procedures
Wednesday	Subject Seminar	Ward rounds and bed side discussion	Interventions/Procedures
Thursday	Renal Histopath discussion	Nephrology Grand Rounds	Interventions/Procedures
Friday	Journal Discussion	Ward rounds and bed side discussion	Interventions/Procedures
Saturday	Clinical case Discussion	Ward rounds and bed side discussion	Interventions/Procedures

Sl. No	TEACHING EXERCISE	FREQUENCY	DURATION
1	Nephrology Grand Rounds	Once in 2 weeks	2 Hours
2	Clinical Bed side discussions	Four times a week	2 Hours
3	Seminars	Once in 2 weeks	2 Hours
4	Journal Club	Once in a week	1 Hour
5	Renal Histopathology discussion	Once in 2 weeks	1 Hour
6	Nephrology case discussion	Once in 2 weeks	2 Hours
7	Renal Radiology meet	Once in 2 month	1 Hour
8	Clinical case discussions	Once in a week	1 Hour

4. SYLLABUS

ASSESSMENT OF RENAL DISEASE

History and clinical examination of patients with renal disease

Urinalysis and microscopy

Clinical assessment of renal function

Renal function in the newborn infant

The aging kidney

Imaging in renal disease

Renal biopsy

Immunological investigation of renal disease

BASICS

Embryology of the kidney

Anatomy of the kidney

Renal circulation

Biostatistics

Research Methodologies

Solute transport / Both organic and in organic

Renal Acidification

Urine Concentration & Dilution

Role of kidney in blood pressure regulation

Endocrine and Autocrine function of the kidney

PHARMACOLOGY AND DRUG

Handling of drugs in kidney disease
Drug-induced nephropathies
Clinical use of diuretics
Systemic cancer therapies and the kidney

FLUID AND ELECTROLYTE DISORDERS

Hypo-/hypernatremia: disorders of water
balance Hypo-/hyperkalemia
Hypo-/hypercalcemia
Hypo-/hyperphosphatemia
Hypo-/hypermagnesemia
Clinical acid-base disorders

EPIDEMIOLOGY AND RISK FACTORS

Epidemiology of kidney disease
Kidney disease in Indian subcontinents
Risk factors of CKD
Nephron endowment
Aging and kidney disease

PEDIATRIC NEPHROLOGY

Malformation of the kidney
Fluid, Electrolyte, Acid base disturbance
Disease of kidney and Urinary tract
Dialysis in Children
Pediatric Transplantation

GLOMERULAR DISEASE

Proteinuria and/or hematuria

Nephrotic syndrome

Minimal change disease

Focal segmental glomerulosclerosis

Immunoglobulin A nephropathy and Henoch-Schönlein purpura

Membranous nephropathy

Mesangiocapillary glomerulonephritis

Acute endocapillary glomerulonephritis

Crescentic glomerulonephritis

Antiglomerular basement membrane (Goodpasture's) disease

Infection-related glomerulonephritis
Malignancy-associated glomerular disease

Glomerular disease in the tropics

THE KIDNEY IN SYSTEMIC DISEASE

Diabetes mellitus

Amyloid and immunotactoid glomerulopathy

Plasma cell dyscrasias

Sarcoidosis

Systemic vasculitis

Mixed cryoglobulinemia and Hepatitis C infection

Systemic lupus erythematosus

Scleroderma-systemic sclerosis

Rheumatoid arthritis, connective tissue disease, and Sjögren's syndrome

Sickle cell neuropathy

Cancer and the kidney

TUBULAR DISEASE

Isolated defects of tubular function

Fanconi syndrome

Renal tubular acidosis

Hypokalemic tubular disorders

Nephrogenic diabetes insipidus

CHRONIC INTERSTITIAL DISEASE

Analgesic nephropathy

Nonsteroidal anti-inflammatory drugs and the kidney

Nephrotoxic metals

Balkan nephropathy

Aristolochic acid nephropathy („Chinese herb nephropathy“) and other rare causes of chronic interstitial nephritis

URINARY TRACT INFECTION

Lower and upper urinary tract infection in adults

Urinary tract infection in children

Renal tuberculosis or other mycobacterial infections

Fungal infections and the kidney

RENAL STONE DISEASE

Medical management of stone disease

Surgical management of stone disease

Nephrocalcinosis

Renal stone disease in children

ACUTE KIDNEY INJURY (AKI)

Clinical approach to AKI

Renal replacement therapies in AKI

Dialysis and hemoperfusion treatment of acute poisoning

Glomerulonephritis, Vasculitis, and Nephritic syndrome

Acute tubulointerstitial nephritis

Hemolytic uremic syndrome and thrombotic thrombocytopenic purpura

Hepatorenal syndrome

Ischemic AKI

Pigment-induced AKI

AKI in tropical countries

AKI in infants and children

AKI in pregnancy

AKI in the elderly

CHRONIC KIDNEY DISEASE (CKD)

Assessment of CKD

Endocrine disorders in CKD

Sexual disorders in CKD

Hypertension in CKD

Cardiovascular risk factors in CKD

Gastrointestinal disorders in CKD

Liver disorder in CKD

Hematological disorders in CKD

Skeletal disorders in CKD

β 2-Microglobulin amyloidosis in CKD

Immune function in CKD

Coagulation disorders in CKD

Dermatologic disorders in CKD

Neuropsychiatric disorders in CKD

SPECIAL PROBLEMS IN CKD

CKD in children

CKD in the elderly

CKD in diabetic patients

CKD in pregnancy

DIALYSIS

Dialysis strategies

Vascular access

Hemodialysis, hemofiltration and hemodiafiltration

Peritoneal dialysis

Adequacy of dialysis

Medical management of the dialysis patient

Psychological aspects of treatment for renal failure

RENAL TRANSPLANTATION

Donor & Recipient issues

Transplantation immunobiology

Medical & surgical complications following transplantation

Early management of transplant recipients

Immunosuppressant for renal transplantation

INHERITED RENAL DISEASE

Investigation of inherited renal disease
Autosomal dominant polycystic kidney disease
Nephronophthisis
Alport's syndrome
Primary hyperoxalurias

STRUCTURAL AND CONGENITAL ABNORMALITIES

Renal dysplasia
Vesicoureteric reflux and reflux nephropathy
Urinary tract obstruction
Congenital abnormalities of the urinary tract
Medullary sponge kidney

DURATION OF THE COURSE: – 3 YEARS:

Suggested period of postings:

- | | |
|--------------------|-------------|
| 1. Nephrology Ward | - 12 Months |
| 2. Dialysis Unit | - 6 Months |
| 3. Transplantation | - 6 Months |
| 4. OPD | - 6 Months |
| 5. Consultation: | - 6 Months |

5. MAINTENANCE OF LOG BOOK

Logbook(Performancerecordbook):

Maintenance of performance record Log book is mandatory. Certified and assessed copy should be made available at the time of practical examination for review by examiners,

Log book should be made contain:

1. Certificate duly signed by teacher, Head of department, Head of Institute stating Dr..... has worked in department from.....to.....for a period of 3 years. This performance record book contains authentic record of work done and assessment for last 3 years.
2. Record of training:
 - Name of the trainee.
 - Name of the Hospital.
 - Training period.
 - Name of teacher.
3. Posting.
4. Working schedule.
5. Teaching programme.

6. Presentation at Journal club: Date, Article Name, Assessment
7. Seminars: Date, Topic / Subject, Assessment.
8. Case presentation: Date, Teacher's Signature.
9. Death Audit / C PC: Date, Case discussed, Assessment. & Signature.
10. Procedures: Date, Name of patient, Type, Complications observed.
11. Teaching activity: Date, Topic, Class.
12. Participation in Research Activity: name of project, Duration.
13. Conference / Workshop attended paper presentation / Publications.

6. DISSERTATION

Every student registered as post graduate shall carry out work on an assigned research project under the guidance of a recognized post graduate teacher, the result of which shall be written up and submitted in the form of a Dissertation. Students are encouraged to publish their research work in various national and international journals

Work for writing the Dissertation is aimed at contributing to the development of a spirit of enquiry, besides exposing the students to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature. Dissertation shall be submitted at least six months before the theoretical and clinical / practical examination.

The Dissertation shall be a bound volume of a minimum of 50 pages and not exceeding 75 pages of typed matter (Double line spacing and on one side only) excluding certification, acknowledgements, annexure and bibliography.

Thesis should consist of

- (a) Introduction
- (b) Review of literature
- (c) Aims and objectives
- (d) Material and methods
- (e) Result
- (f) Discussion
- (g) Summary and conclusion
- (h) Tables
- (i) Annexure
- (j) Bibliography
- (k) Ethics committee clearance certificate

Six copies of Dissertation shall be submitted six months prior to the commencement of the theory examinations on the date prescribed by the Controller of Examinations of this University. The Dissertation should be approved by the Professor of that branch and the same has to be forwarded to the Controller of Examinations, by the Head of the Department through the Dean of the college.

Two copies in addition are to be submitted as an electronic version of the entire Dissertation in a standard C.D. format by mentioning the details and technicalities used in the C.D. format

The Dissertation shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and clinical; and on the acceptance of the Dissertation by two examiners, the candidate shall be allowed to appear for the final examination.

PROCEDURE FOR DEFAULTERS:

Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default, the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

EVALUATION OF DISSERTATION :

No marks will be given

ACCEPTED / NOT ACCEPTED

7. SCHEME OF EXAMINATION

INTERNAL ASSESSMENT:

Student have to appear for internal examination every 1 year

1. Theory - Marks 100
2. Practical - Marks 100

Student will also be assessed based on the daily interaction between the faculty members and post graduates.

FINAL EXAMINATION

Consists of theory, clinical and oral examination.

(a) THEORY:

(i) 4 papers

Paper I: Basic Sciences as applied to Nephrology

Paper II: Clinical Nephrology

Paper III: Dialysis and Transplantation

Paper IV: Recent Advances

Duration: 3 Hours

Marks for each paper: 100

(ii) Type of questions

02 Essay for 20 marks each = 40

10 Short for 06 marks each = 60

Total = 100

(b) CLINICAL AND ORAL EXAM

There should not be more than 3 candidates per day. There will be 2 external and 2 internal examiners.

(c) PATTERN OF EXAMINATION

(i) Clinical

- 1 long case - 1 hour
- 2 Short Cases 30minutes each.
- Ward Rounds (4 cases)

(ii) Oral Examination

- Viva
- 2 Histopathology slides
- 2 Radio imaging / nuclear imaging projections

(d) TOTAL MARKS

(i) Theory

- Paper I - 100 Marks
- Paper II - 100 Marks
- Paper III - 100 arks
- Paper IV 100 Marks
- Total - 400 Marks

(Minimum marks required to pass theory exam = 200 marks out of 400 candidate is required to score minimum 40% in individual paper to be considered as pass)

(ii) Clinical Examination

Theory	Clinical/Practical	ORAL	Grand Total
400	200	100	700

i. Long case: Should assess the students' ability to diagnose a complex condition, order and interpret relevant investigations and plan the reconstruction of a composite defect.

ii. Short cases: 2: Each case would assess one or more aspects of one of areas of reconstruction.

iii. Ward rounds: 4 cases: Assess the students' ability to counsel a patient or relatives about a procedure, possible complications, expected results and post-operative management. It could also assess his ability to anticipate complications, prevent them and manage them should they occur.

(iii) Oral

Viva	- 50 Marks
2 Histopathology slides	- 25 Marks
2 Radio imaging projections	- 25 Marks
Total	- 100 Marks

Clinical and Oral total - 300

Minimum marks required to pass in clinical /practical and viva voce exam = 200

MARKS QUALIFYING FOR A PASS		
	Maximum Marks	Qualifying for a pass 50% Marks
Theory	400	200
Clinical and Viva Voce	300	150

A student shall secure not less than 50% marks in each head of passing, which shall include 1.Theory 2. Practical including clinical and viva voce examination.

* “The postgraduate medical students are required to pass theory and practical examinations separately. An examinee should obtain minimum 40% marks in each theory paper and not less than 50% marks cumulatively in all the four papers for Degree examination to be cleared as “Passed” at the said Degree examination”

8. EXAMINATION AND EVALUATION

(I) EXAMINERS

- All the Post Graduate Examiners shall be recognized Post Graduate Teachers holding recognized Post Graduate qualifications in the subject concerned.
- For all Post Graduate Examinations, the minimum number of Examiners shall be four, out of which at least two (50%) shall be External Examiners, who shall be invited from other recognized universities from within the State one examiner and one more examiner outside state and two will be internal examiners for D.M.
- Under exceptional circumstances, examinations may be held with 3 (three) examiners provided two of them are external and National Medical council is intimated the justification of such action prior to publication of result for approval. Under no circumstances, result shall be published in such cases without the approval of National Medical council.

- (d) In the event of there being more than one centre in one city, the external examiners at all the centers in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Supervisor to coordinate the examination on its behalf.
- (e) The guidelines regarding appointment of examiners are as follows:-
1. No person shall be appointed as an examiner in any subject unless he/she fulfills the minimum requirements for recognition as a Post Graduate teacher as laid down by the National Medical council and has teaching experience of 8 (Eight) years as a Lecturer / Assistant Professor out of which he/she has not less than 5 (Five) years teaching experience after obtaining Post Graduate degree. For external examiners, he/she should have minimum three years' experience of examinership for Post Graduate diploma in the concerned subject. Out of internal examiners, one examiner shall be a Professor or Head of Department
 2. There shall be at least four examiners in each subject at an examination out of which at least 50% (Fifty percent) shall be external examiners. The external examiner who fulfills the condition laid down in clause – 1 above shall ordinarily be invited from another recognized university, from outside the State: provided that in exceptional circumstances examinations may be held with 3 (three) examiners if two of them are external and National Medical council is intimated with the justification of such examination and the result shall be published in such a case with the approval of National Medical council
 3. An external examiner may be ordinarily been appointed for not more than three years consecutively. Thereafter he/she may be reappointed after an interval of two years.
 4. The internal examiner in a subject shall not accept external examinership for a college from which external examiner is appointed in his subject.
 5. The same set of examiners shall ordinarily be responsible for the written, practical or part of examination.
 6. In the event of there being more than one centre in one city, the external examiners at all the centers in the city shall be the same.
 7. There shall be a Chairman of the Board of paper – setters who shall be an external examiner and shall moderate the question papers.
 8. Where there is more than one centre of examination, there shall be Co-ordinator appointed by the University who shall supervise and Co-ordinate the examination on behalf of the University with independent authority
 9. The Head of the Department of the institution concerned shall ordinarily be one of the internal examiners and second internal examiner shall rotate after every two year.

(2) Number of candidates

The maximum number of candidates to be examined in Clinical / practical and Oral on any day shall not exceed three for D.M. degree examination.

3) Number of examinations

The university shall conduct not more than two examinations in a year, for any subject, with an interval of not less than 4 and not more than 6 months between the examinations.

II. Doctor of Medicine (D.M.) Nephrology

The examination shall consist of: Theory and Clinical/Practical and Oral.

(a) Theory

There shall be four theory papers; one paper out of these shall be on Basic Medical Sciences, and another paper on Recent Advances. The theory examination will 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.

(b) Clinical / Practical and Oral

Practical examination shall consist of carrying out special investigative techniques for Diagnosis and Therapy. Oral examination shall be comprehensive to test the candidate's overall knowledge of the subject.

A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory (2) Practical including clinical and viva voce examination.

9. MODEL QUESTION PAPER

D.M NEPHROLOGY

Paper I

Basic Sciences : Principles of Nephrology

Time : Three Hours

Maximum Marks : 100

Attempt all questions All questions carry equal marks (10 marks each)

Draw diagrams wherever necessary

- Q.1. How do you investigate a patient suspected to have renal tubular acidosis, outline the management of type 1 renal tubular acidosis?
- Q.2. Role of protein restriction in dietary management of chronic kidney disease stage IV, write out the diet for a 55 year old male with stage 4 chronic kidney disease, who is not a diabetic
- Q.3. What is tubular maximum, define renal glycosuria and its clinical implications?
- Q.4. Factors affecting glomerular filtration rate, what are the methods available to estimate it?
- Q.5. Mode of action and indications for the use of Metolazone.
- Q.6. Genetics of polycystic kidney disease and the implications of this.
- Q.7. Indications for the combined use of angiotensin converting enzyme inhibitors and angiotensin receptor blockers advantage or not.
- Q.8. What are the prognostic factors in a case of IgA nephropathy?
- Q.9. Role of fish oil in management of renal diseases.
- Q.10. What is the fractional excretion of sodium, its diagnostic significance?

Paper II

Clinical Nephrology including Paediatric Nephrology

Time : Three Hours

Maximum Marks : 100

Attempt all questions All questions carry equal marks (10 marks each)
Draw diagrams wherever necessary

- Q.1. What is pseudo hyperkalemia? What are the manifestations of acute hyperkalemia and how do you treat this?
- Q.2. How would you investigate a case suspected to have diabetes Insipidus? What is the differential diagnosis?
- Q.3. What is the current opinion on the role of Dopamine in acute kidney Injury?
- Q.4. What are the RIFLE and AKIN classification? What is the difference between the two and advantages of each?
- Q.5. Describe the kidney lesions seen with malarial infection.
- Q.6. What is the abnormal serology and pathology seen in the kidney in Wegners Granulomatosis? How is the condition treated?
- Q.7. What is Shohl's solution? What is its composition and indications for its use?
- Q.8. What are direct renin inhibitors? What is the advantage of using it over converting enzyme inhibitors or angiotensin receptor blockers?
- Q.9. What is e GFR? What is its importance? What are the common methods of estimating? E GFR?
- Q.10. What is Masugis nephritis? How is it produced and what is the human equivalent?

Paper III

DIALYSIS AND TRANSPLANTATION

Time: 3 hours

Maximum: 100 marks

Attempt all questions All questions carry equal marks (10 marks each)
Draw diagrams wherever necessary

1. What are the pulmonary renal syndromes? How do you investigate these? Mention the management of any of the conditions.
2. Hepatitis C virus infection associated kidney disease. Add a brief note on pre kidney transplant management of a case with this infection.
3. Use of citrate for hemodialysis. What are the indications and precautions? How is it done?
4. Wilhelm Kolff and his contributions to care of patients with kidney disease.
5. Use of plasma exchange in nephrology.
6. Hanta virus and renal lesions associated with this infection.
7. Renal lesions seen with Mycobacterium leprae infection.
8. What are the variants of focal segmental glomerulosclerosis? Discuss the prognosis after kidney transplant in a patient with this condition.
9. Classification of vasculitis. What are the Clinical features, laboratory investigations and treatment of Churg Strauss disease?
10. How do you evaluate a highly sensitized recipient for a kidney Transplant? Add a note on pre surgery treatment and postoperative follow up.

Paper – IV RECENT ADVANCES

Time: 3 hours

Maximum: 100 marks

Attempt all questions All questions carry equal marks (10 marks each)
Draw diagrams wherever necessary

1. What is a marginal kidney donor? How do you manage the recipient of a kidney from such a donor?
2. Indications for the use of mTOR inhibitors post kidney transplant, side effects and management of a patient on mTOR.
3. Use of stem cell therapy in Nephrology.
4. Usefulness of allograft biopsy in the management of a kidney transplant recipient.
5. What is Microinflammation? What is the evidence for its role in chronic kidney disease?
6. Use of Bortezomib in Nephrology.
7. Renal involvement with snake envenomation, lesions, treatment and outcome.
8. Variants of minimal change nephropathy, management of a steroid dependent child with this condition.
9. Enumerate podocyte disorders and write briefly on the Finnish type of congenital nephritic syndrome.
10. Indications for combined kidney pancreas transplantation and the monitoring of such a recipient.

RECOMMENDED BOOKS : Recent editions

1. Diagnostic Atlas of Renal Pathology, Fogo, Agnes B 7th ED. Elsevier, 2005
2. Clinical Dialysis, Nissenson, Allen R, 4th ED. Mc Graw Hill, 2005
3. Hypertension companion to Brenner & Rectors the Kidney, Oparil, Suzanne, 2nd Ed. Elsevier, 2005
4. Nephrology Secrets, Brown, David E, 2nd ED. Elsevier, 2003
5. Disease of the Kidney & Urinary tract , Schrier, Robert W, 8th ED. Vol I, Lippincott, 2007
6. Disease of the Kidney & Urinary tract , Schrier, Robert W, 8th ED. Vol II, Lippincott, 2007
7. Disease of the Kidney & Urinary tract , Schrier, Robert W, 8th ED. Vol III, Lippincott, 2007
8. Comprehensive Clinical Nephrology, Feehally, John, 3rd ED. Mosby 2007.
9. Renal Diseases Prevention and Management: A physicians perspective, Feehally, John , Jaypee Brothers, 2008.
10. Seldin and Giebischs the Kidney: Physiology and Pathophysiology, Alpern, Robert. J, Vol I 4th ED. Academic Publisher, 2008
11. Seldin and Giebischs the Kidney: Physiology and Pathophysiology, Alpern, Robert. J, Vol II 4th ED. Academic Publisher, 2008
12. Comprehensive Pediatrics Nephrology, Geary, Denis. F (ED), 1st ED. Elsevier 2008.
13. Evidence-Based Nephrology, Molony, and Donald. A, John wiley, 2009
14. Handbook of Dialysis, Daugirdas, John. T, 4th ED. Lippincott, 2009
15. Manual of Nephrology, Schrier, Robert. W, 7th ED. Lippincott, 2009
16. Oxford Handbook of Dialysis, Levy, Jeremy, 2nd ED. Oxford, 2007
17. Ganongs Review of Medical Physiology, Barrett, Kim. E (Etal), 24rd ED. Mc Graw Hill, 2012
18. Renal Disease Techniques and Protocols, Goligorsky, Michael. S, Humana Press, 2003

19. Renal and Electrolyte Disorders, Schrier, Robert. W, 7th ED. Lippincott, 2010
20. Acid-Base Disorder and their Treatment, Gennari, John F (Et al), Taylor & Francis, 2005
21. Primer on Kidney Diseases, Greenberg, Arthur, 5th ED. Saunders, 2009
23. The Kidney, Brenner & Rector - 8th ED. Saunders, 2008
24. Critical Care Nephrology, C. Ronco – 2nd ED. Saunders, 2009.
25. Oxford desk Reference Nephrology, Jonathan Barratt, Kevin Harris, Peter Topham, 1st Indian ED, 2009.

JOURNALS

International

1. Transplantation
2. Kidney International
3. Hemodialysis International
4. Clinical Journal of the American Society of Nephrology
5. Nature reviews Nephrology

Indian

1. Indian Journal of Nephrology

Online Journals

1. BMC Nephrology
2. Clinical and Experimental Nephrology
3. International Urology and Nephrology
4. NDT
5. Journal of American society of Nephrology
6. Kidney international
7. Journal of American society of Hypertension
8. Journal of Cardiothoracic- Renal research
9. Indian Journal of Transplantation
10. Pediatric Nephrology



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