

**NEPHROLOGY**

**PAPER – I**

**Time : 3 hours**  
**Max. Marks : 100**

**NEPH/D/10/20/1**

**Attempt all questions in order.**  
**Each question carries 10 marks**

**Write short notes on:**

1. Podocytes in health and disease.
2. Mechanism of cytogenesis in ADPKD.
3. Megalin and Cubilin.
4. Pathogenesis of pre-eclampsia.
5. Status of new biomarkers in AKI.
6. Familial hypokalemic alkalosis syndrome.
7. Role of FGF 23 and Klotho in Ca/P balance in CKD.
8. Membrane attack complex.
9. Juxtaglomerular apparatus
10. Relevance and methods of testing Donor specific antibodies.

**NEPHROLOGY**

**PAPER – II \***

**Time : 3 hours**  
**Max. Marks : 100**

**NEPH/D/10/20/II**

**Attempt all questions in order.**  
**Each question carries 10 marks**

**Write short notes on:**

1. Definition and management of Myeloma kidney
2. Newer dialysis fluids for CAPD patients
3. Collapsing glomerulonephritis.
4. Induction therapies for renal transplant recipient.
5. Define scleroderma crisis and its management
6. Define catastrophic APLA syndrome and discuss its management.
7. Discuss differential diagnosis in a patient with jaundice, fever and AKI
8. PCM in dialysis patients and its management.
9. How to prevent renal damage in CKD patient?
10. Slow low efficiency dialysis.

FINAL EXAM  
DECEMBER 2010

NATIONAL BOARD OF EXAMINATIONS

**NEPHROLOGY**

**PAPER – III**

Time : 3 hours  
Max. Marks : 100

NEPH/D/10/20/III

Attempt all questions in order.  
Each question carries 10 marks

**Write short notes on:**

1. CMV prophylaxis in a renal transplant recipient -current concepts.
2. Nephrogenic systemic fibrosis
3. Classification and management of cardio-renal syndrome.
4. Advantages and disadvantages of Mass screening of CKD.
5. Campath as induction agent.
6. Long acting ESAs
7. Treatment of ANCA associated vasculitides.
8. Evaluation of hydrothorax in CAPD patient.
9. Aquaporins and role of V<sub>2</sub>R antagonist in treating hyponatremia.
10. Newer modalities in management of lupus nephritis.

**NEPHROLOGY**

PAPER- I

NEPHRO/D/11/20/1

Time : 3 hours  
Max. Marks : 100

Attempt all questions in order.  
Each question carries 10 marks.

1. Discuss the mechanism of 1, 25 dihydroxy Vitamin D resistance in renal failure and its implications. (10)
2. Discuss the mechanism of sodium re-absorption in :-
  - a. Proximal tubules (4)
  - b. Loop of Henle (2)
  - c. Distal collecting duct (4)
3. Define transplant tolerance. Describe three mechanisms leading to transplant tolerance. (3+7)
4. Discuss the physiology of aquaporin 1 receptors. Write the distribution of aquaporin receptors in kidney. (6+4)
5. Discuss the changes in kidney and urinary tract during pregnancy:
  - a. Anatomic changes (3)
  - b. Renal hemodynamics (3)
  - c. Changes in acid-base metabolism (3)
  - d. Time taken to reverse these changes after pregnancy (1)
6.
  - a. Define nephrogenic diabetes insipidus. (2)
  - b. List four causes of nephrogenic diabetes insipidus. (4)
  - c. Write treatment of nephrogenic diabetes insipidus. (4)
7. Discuss the embryogenesis of human kidney. (10)
8.
  - a. Illustrate the structure of glomerular filtration barrier. (3)
  - b. Enumerate the function of glomerular filtration barrier. (1)
  - c. List 5 diseases associated with hereditary defect in podocytes and briefly discuss them. (6)
9.
  - a. Discuss shortcomings of KDOQI Classification of Chronic Kidney Disease (CKD). (5)
  - b. Discuss daily hemo-dialysis in CKD. (5)
10.
  - a. What is peritoneal equilibration test? (3)
  - b. What is modified peritoneal equilibration test? (3)
  - c. Write usefulness of PET for patients undergoing peritoneal dialysis. (4)

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NEPHROLOGY

PAPER- II

Time : 3 hours  
Max. Marks : 100

NEPHRO/D/11/20/II

Attempt all questions in order.  
Each question carries 10 marks.

1. a. What are the complications of central venous catheterization for hemodialysis? (4)  
b. Describe measures to prevent catheter related infection. (6)
2. a. Discuss the diagnosis of peritoneal dialysis related peritonitis. (3)  
b. What are the risk factors for peritonitis? (4)  
c. List settings when CAPD catheter needs to be removed. (3)
3. a. Enumerate the risk factors for transmission of HCV infection in dialysis patient. (2)  
b. How can you prevent HCV infection transmission in dialysis unit? (3)  
c. Discuss management of HCV infection in a patient with chronic kidney disease stage IV on dialysis. (5)
4. Discuss membranous glomerulonephritis:  
a. Etiopathogenesis (5)  
b. Management of lupus membranes nephropathy (5)
5. a. What is dialysis disequilibrium syndrome? (2)  
b. Discuss its pathogenesis. (4)  
c. How to prevent and manage dialysis disequilibrium syndrome? (4)
6. Discuss risk factors, clinical features, evaluation and management of Polyoma Virus nephropathy. (2+2+3+3)
7. Discuss snake bite induced acute kidney injury under following headings:  
a. Pathogenesis (4)  
b. Clinical features; and (3)  
c. Management (3)
8. Discuss:-  
a. Fibrillary glomerulonephritis (5)  
b. Collapsing glomerulonephritis (5)
9. a. Classify Hemolytic Uremic Syndrome. (3)  
b. Discuss the pathogenesis of Hemolytic Uremic Syndrome. (4)  
c. Discuss the management of atypical Hemolytic Uremic Syndrome. (3)
10. Discuss contrast associated nephropathy and its preventive strategies. (10)

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**NEPHROLOGY**

**PAPER- III**

Time : 3 hours

NEPHRO/D/11/20/III

Max. Marks : 100

Attempt all questions in order.

Each question carries 10 marks.

1. a. List cross match methods used in renal transplantation. (3)  
b. Discuss their clinical usefulness. (3)  
c. Discuss management of a patient with positive cross match. (4)
2. Discuss role of mTOR inhibitors in renal transplant:  
a. Mechanism of action (2)  
b. When a patient should be initiated on mTOR inhibitors? (4)  
c. Write definitive indications for indicating mTOR inhibitors. (4)
3. a. Enumerate renal involvement in HIV. (4)  
b. Discuss HIV associated nephropathy. (4)  
c. Discuss other glomerular involvement in HIV positive patients. (2)
4. Discuss Fabry's disease under following heads:  
a. Pathogenesis (3)  
b. Clinical features (2)  
c. Diagnosis (2)  
d. Management (3)
5. a. Define Calcimimetic agents. (3)  
b. Write classification of Calcimimetic agents. (3)  
c. Define role of calcimimetics in chronic kidney disease. (4)
6. a. Discuss renal transplantation in HIV positive patient. (5)  
b. Discuss post transplant lympho-proliferative disorder:  
i) Risk factors (2)  
ii) Treatment (3)
7. a. What is the concept of Biocompatibility? (2)  
b. Compare various dialysis membranes in terms of Biocompatibility. (3)  
c. Discuss extra corporeal therapies for Myeloma. (5)
8. a. What is Bone Morphogenic Protein-7(BMP-7)? (2)  
b. Discuss role of BMP-7 in renal growth and tubular maturation. (5)  
c. Discuss potential role of BMP-7 in treatment of renal diseases. (3)
9. a. HEPCIDIN: Role in anemia of CKD (3)  
b. Discuss newer molecules for anemia management, their mode of action and advantages. (7)
10. a. Define active stone former. (2)  
b. Write causes of active stone former. (3)  
c. How to investigate active stone formers? (3)  
d. Write management of active stone formers. (2)

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[LB 012]

AUGUST 2012  
D.M – NEPHROLOGY  
Paper – IV RECENT ADVANCES  
Q.P. Code: 161204

Sub. Code: 1204

Time: 3 hours  
(180 Min)

Maximum: 100 marks

Answer ALL questions in the same order.

I. Elaborate on:

	Pages (Max.)	Time (Max.)	Marks (Max.)
1. What is a marginal kidney donor? How do you manage the recipient of a kidney from such a donor?	16	35	15
2. Indications for the use of mTOR inhibitors post kidney transplant, side effects and management of a patient on mTOR.	16	35	15

II. Write notes on:

1. Use of stem cell therapy in Nephrology.	4	10	7
2. Usefulness of allograft biopsy in the management of a kidney transplant recipient.	4	10	7
3. Indications, procedure, advantages and disadvantages of automated Peritoneal Dialysis.	4	10	7
4. What is Microinflammation? What is the evidence for its role in chronic kidney disease?	4	10	7
5. Use of Bortezomib in Nephrology.	4	10	7
6. Renal involvement with snake envenomation, lesions, treatment and outcome.	4	10	7
7. Variants of minimal change nephropathy, management of a steroid dependent child with this condition.	4	10	7
8. Enumerate podocyte disorders and write briefly on the Finnish type of congenital nephritic syndrome.	4	10	7
9. The role of therapeutic drug monitoring in the management of a kidney transplant recipient.	4	10	7
10. Indications for combined kidney pancreas transplantation and the monitoring of such a recipient.	4	10	7

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Rajiv Gandhi University of Health Sciences

D.M. Degree Examination – July 2012

Nephrology 1

[Time: 3 Hours]

[Max. Marks: 100]

**NEPHROLOGY**

**BASIC SCIENCES PERTAINING TO NEPHROLOGY- PAPER I**

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

**LONG ESSAY (These questions carry 20 marks each)**

**2 X 20 = 40 Marks**

1. Potassium Homeostasis and discuss inherited disorders of potassium homeostasis
2. Regulation of Acid-Base homeostasis – Role of kidney

**SHORT ESSAY (These questions carry 10 marks each)**

**6 X 10 = 60 Marks**

3. Malignant hypercalcemia
4. ESA
5. Hypomagnesemia
6. ProRenin
7. Underflow theory of Edema
8. Mallory bodies

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# Rajiv Gandhi University of Health Sciences

D.M. Degree Examination – July 2012

Time: 3 Hours]

[Max. Marks: 100]

## **NEPHROLOGY**

### **CLINICAL NEPHROLOGY - PAPER II**

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

#### **LONG ESSAY (These questions carry 20 marks each)**

**2 X 20 = 40 Marks**

1. Renal Biopsy – Historic perspective and current objectives
2. Secondary Membranoproliferative Glomerulonephritis

#### **SHORT ESSAY (These questions carry 10 marks each)**

**6 X 10 = 60 Marks**

3. Histological variants of FSGS
4. HIVAN
5. DTPA scan
6. PAN
7. Acute interstitial Nephritis
8. Radiocontrast induced renal damage

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**Rajiv Gandhi University of Health Sciences**  
**D.M. Degree Examination – July 2012**

Time: 3 Hours]

[Max. Marks: 100]

**NEPHROLOGY**

**DIALYSIS AND TRANSPLANTATION - PAPER III**

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

**LONG ESSAY (These questions carry 20 marks each)**

**2 X 20 = 40 Marks**

1. BANFF' CLASSIFICATION
2. Acute Rejection – Diagnosis and management

**SHORT ESSAY (These questions carry 10 marks each)**

**6 X 10 = 60 Marks**

3. Myeloma kidney
4. Dry weight
5. High flux dialysis
6. PET test
7. Vascular access failure
8. Renal involvement in Cryoglobulinemia

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**Rajiv Gandhi University of Health Sciences**  
**D.M. Degree Examination – July 2012**

[Time: 3 Hours]

[Max. Marks: 100]

**NEPHROLOGY**

**RECENT ADVANCES IN NEPHROLOGY - PAPER IV**

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

**LONG ESSAY (These questions carry 20 marks each)**

**2 X 20 = 40 Marks**

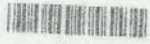
1. Monoclonal antibodies – methodology of nomenclature and clinical application in renal medicine
2. Xenotransplantation

**SHORT ESSAY (These questions carry 10 marks each)**

**6 X 10 = 60 Marks**

3. DNA fingerprinting
4. Crossmatch for renal transplant
5. Recurrent FSGS
6. NODAT
7. HIVAN
8. Fibrillary glomerulonephritis

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(Page : 1)

3065  
2614

Reg. No. : 3065

Name : .....

D.M. (Nephrology) Degree Examination, June 2012  
(2004 Scheme)  
Paper - I : BASIC SCIENCES AS APPLIED TO NEPHROLOGY

Time : 3 Hours

Max. Marks : 100

*Instruction : All questions carry 10 marks.*

1. Hemolytic uremic syndrome.
2. Epithelial mesenchymal transition and renal fibrosis.
3. Mechanisms of hyperkalemic renal tubular acidosis.
4. Normal anion gap metabolic acidosis.
5. Pseudohypoaldosteronism.
6. Dent's disease.
7. Pre-eclampsia and future renal risk.
8. Genotype-phenotype correlation in autosomal dominant polycystic kidney disease.
9. Hypercalcemia and its management in chronic kidney disease.
10. Vitamin D receptor activator use in chronic kidney disease.

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100



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2615

Reg. No. : 3065

Name : .....

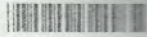
**D.M. (Nephrology) Degree Examination, June 2012  
(2004 Scheme)  
Paper – II : CLINICAL NEPHROLOGY, PATHOLOGY AND  
PATHOPHYSIOLOGY**

Time : 3 Hours

Total Marks : 100

*Instruction : All questions carry 10 marks.*

1. Hemoglobin cycling.
2. Cerebral salt wasting.
3. Henoch Schonlein purpura nephritis.
4. Lithium toxicity.
5. Granulomatous interstitial nephritis.
6. Evidence based blood pressure management in chronic kidney disease.
7. Extra-renal manifestations of Alport Syndrome.
8. Prevention and treatment of catheter related bacteremia.
9. Management of a patient with failing graft.
10. ABO-incompatible renal transplantation.



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2616

Reg. No. : 3065 .....

Name : .....

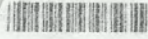
**D.M. (Nephrology) Degree Examination, June 2012**  
**(2004 Scheme)**  
**Paper – III : INVESTIGATIONS IN NEPHROLOGY**

Time : 3 Hours

Max. Marks : 100

*Instruction : All questions carry 10 marks.*

1. Differential diagnosis of polyuria.
  2. Assessment of dry weight in hemodialysis.
  3. Evaluation of arteriovenous fistula.
  4. Albuminuria assays.
  5. Effect of age on renal structure and function.
  6. Evaluation of hematuria.
  7. Evaluation of a light microscopically normal glomerulus.
  8. Antiphospholipid antibody syndrome.
  9. Nutritional assessment of a dialysis patient.
  10. Culture techniques to enhance diagnostic yield in peritonitis in peritoneal dialysis patients.
-



(Page : 1)

2617

Reg. No. : .....3065.....

Name : .....

**DM (Nephrology) Degree Examination, June 2012**  
**(2004 Scheme)**  
**Paper – IV : RECENT ADVANCES IN NEPHROLOGY**

Time : 3 Hours

Max. Marks : 100

**Instruction : All questions carry 10 marks.**

1. Type 2 membranoproliferative glomerulonephritis.
  2. Use of plasma exchange in crescentic glomerulonephritis.
  3. Use and safety of intravenous iron in patients with kidney disease.
  4. Tubular reabsorption of proteins.
  5. Medical therapy in autosomal dominant polycystic kidney disease
  6. New dialysis solutions in peritoneal dialysis.
  7. Protocol biopsies in kidney transplantation
  8. Bortezomib in kidney transplantation.
  9. Bone disease in renal transplant recipients
  10. Strategies for preserving residual renal function in dialysis patients.
-

QP Code:101504

Reg.No.:105040002.....

**D.M. (Nephrology) Degree Examinations- September 2013**

**Paper I – Basic Sciences**

Time: 3 hrs

Max marks:100

- *Answer all questions*
- *Draw diagrams wherever necessary*

Essay:

(20)

1. Discuss the role of tubulo-glomerular feedback in health and disease

Short essays:

(8x10=80)

2. Diagnostic importance of C3 measurement
  3. Prostaglandins and kidney
  4. Middle molecular toxins
  5. Systolic hypertension
  6. Panel reactive antibody
  7. Renal ischemia-reperfusion injury
  8. Anion gap
  9. Kf of hemodialyser
- \*\*\*\*\*



QP Code:102504

Reg.No.:...105040008.....

**D.M. (Nephrology) Degree Examinations- September 2013**

**Paper II – Clinical Nephrology**

Time: 3 hrs

Max marks:100

- *Answer all questions*
- *Draw diagrams wherever necessary*

Essay:

(20)

1. Discuss the pathogenesis of crescentic glomerulonephritis in detail.

Short essays:

(8x10=80)

2. Parenteral nutrition in acute kidney injury
3. A-V Fistula first as vascular access for dialysis
4. Continuous renal replacement therapy (CRRT) for acute kidney injury
5. Induction immuno suppression in pediatric kidney transplantation
6. Role of intravenous immunoglobulin (IV IG) in transplant rejection
7. Paired kidney donation in renal transplantation
8. Bio-impedance spectroscopy for nutritional assessment
9. GFR equations for monitoring progression of chronic kidney disease

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QP Code:103504

Reg.No.: J05040002.....

**D.M. (Nephrology) Degree Examinations - September 2013**

**Paper III – Clinical Nephrology**

Time: 3 hrs

Max marks:100

- *Answer all questions*
- *Draw diagrams wherever necessary*

Essay:

(20)

1. Discuss ABO incompatible kidney transplantation

Short essays:

(8x10=80)

2. Interventional nephrology
3. Tolerance in transplantation
4. Bio artificial kidney
5. Slow low efficiency dialysis (SLED) in acute kidney injury
6. Pathogenesis of steroid resistant FSGS (Focal segmental glomerulo sclerosis)
7. Medullary cystic kidney disease
8. Liver support systems for acute and chronic liver failure
9. Nutritional supplements for end stage renal failure

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QP Code:104504

Reg.No.: 104504UP / 105040000

**D.M. (Nephrology) Degree Examinations - September 2013**

**Paper IV – Recent Advances in Nephrology**

Time: 3 hrs

Max marks:100

- *Answer all questions*
- *Draw diagrams wherever necessary*

**Essay:**

(20)

1. Define 'brain death'. Discuss organization of deceased donor renal transplant programme. Highlight the differences from live donor transplant.

**Short essays:**

(8x10=80)

2. Phospholipase A2 receptor antibody
3. IgA dominant post infectious glomerulonephritis
4. Renal sympathetic ablation
5. Pre transplant preparation of ABO incompatible renal transplant recipient
6. Collagenofibrotic glomerulopathy
7. Bile cast nephropathy
8. Endocrine derangements in CKD
9. CD 80 podocytopathy

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**NEPHROLOGY**

**PAPER - I**

NEPHRO/D/13/20/I

Time : 3 hours

Max. Marks : 100

**Important instructions:**

- Attempt all questions in order.
- Each question carries 10 marks.
- Read the question carefully and answer to the point neatly and legibly.
- Do not leave any blank pages between two answers.
- Indicate the question number correctly for the answer in the margin space.
- Answer all the parts of a single question together.
- Start the answer to a question on a fresh page or leave adequate space between two answers.
- Draw table/diagrams/flowcharts wherever appropriate.

Write short note on:

1. Peritoneal membrane is a semi permeable membrane. Discuss its:- 4+3+3
  - a) Structure
  - b) Blood supply
  - c) Role of lymphatics in peritoneal dialysis
2.
  - a) What is complement system? 1+5+4
  - b) Discuss the three complement pathways.
  - c) Enumerate four renal diseases associated with genetic dysfunction of complement pathways.
3.
  - a) Discuss the anatomy of podocyte. 4+3+3
  - b) Discuss pathobiology of podocyte injury.
  - c) What are the therapeutic implications of podocyte injury?
4. Discuss pathogenesis, preventive and therapeutic strategy of Adynamic Bone disease. 4+3+3
5.
  - a) Discuss glomerular diseases associated with HIV. 3+3+4
  - b) Outline treatment strategy of HIV associated nephropathy.
  - c) Discuss renal transplantation for a patient with chronic kidney disease stage 5 with HIV infection.
6.
  - a) Discuss genetics, pathogenesis and pathology of Alport's Syndrome. 7+3
  - b) Discuss Apolipoprotein L1.
7.
  - a) Discuss renin angiotensin aldosterone system. 3+4+3
  - b) What is its role in chronic kidney disease?
  - c) What are the implications of its blockade?
8. Discuss post transplant malignancies under the following heads: 4+2+4
  - a) Incidence
  - b) Risk factors
  - c) Management of lympho proliferative disorder

P.T.O.

**NEPHROLOGY**

**PAPER - I**

9. a) What is the target in anemia management of chronic kidney disease? 2+4+4  
b) What is the rationale behind this target?  
c) What is the role of hepcidin in anemia of chronic kidney disease?
10. What changes the renal system undergoes during pregnancy in term of: 3+3+4  
a) Anatomical changes  
b) Functional changes; and  
c) Their clinical significance

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**NEPHROLOGY**

PAPER - II

NEPHRO/D/13/20/II

Time : 3 hours  
Max. Marks : 100

**Important instructions:**

- Attempt all questions in order.
- Each question carries 10 marks.
- Read the question carefully and answer to the point neatly and legibly.
- Do not leave any blank pages between two answers.
- Indicate the question number correctly for the answer in the margin space.
- Answer all the parts of a single question together.
- Start the answer to a question on a fresh page or leave adequate space between two answers.
- Draw table/diagrams/flowcharts wherever appropriate.

1. a) Classify diuretics according to their mechanism of action. 3+4+3  
b) Enumerate diuretic use in non-edematous states.  
c) Discuss urea transport inhibitors.
2. a) Discuss the predictors of progression of diabetic nephropathy. 3+3+4  
b) What are SGLT-2 inhibitors and their adverse effects?  
c) Write histological classification of diabetic nephropathy and its relation with prognosis.
3. a) Discuss management of Hepatitis C infection in patients on hemodialysis. 5+5  
b) Discuss etiology and prevention of sudden cardiac death in dialysis patients.
4. a) Discuss handling of bicarbonate by nephron. 3+7  
b) Discuss the present status of sodium bicarbonate in chronic kidney disease.
5. a) What is belatacept? 3+7  
b) What is the current data regarding the use of belatacept in renal transplant
6. a) Discuss clinical features and etiology of peritonitis in peritoneal dialysis patient. 6+(2+2)  
b) Define relapsing and refractory peritonitis.
7. a) Discuss management of snake bite induced acute kidney injury. 6+4  
b) Discuss plant toxins causing acute kidney injury.
8. a) Discuss the pathogenesis of membranous glomerulonephritis. 5+5  
b) Discuss newer treatment strategies for membranous glomerulonephritis.
9. a) Discuss the diagnostic criteria of antibody mediated rejection. 3+4+3  
b) Write a protocol for management of antibody mediated rejection.  
c) Discuss solid phase assay for HLA antibody detection
10. a) What are renal manifestations of sickle cell disease? 5+5  
b) Discuss renal transplantation in patient with sickle cell nephropathy.

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**NEPHROLOGY**

**PAPER - III**

NEPHRO/D/13/20/III

Time : 3 hours  
Max. Marks : 100

**Important instructions:**

- Attempt all questions in order.
- Each question carries 10 marks.
- Read the question carefully and answer to the point neatly and legibly.
- Do not leave any blank pages between two answers.
- Indicate the question number correctly for the answer in the margin space.
- Answer all the parts of a single question together.
- Start the answer to a question on a fresh page or leave adequate space between two answers.
- Draw table/diagrams/flowcharts wherever appropriate.

1. a) Classify Amyloidosis. 4+2+4  
b) Enumerate diagnostic methods for detecting Amyloidosis.  
c) Discuss the typing of amyloidosis.
2. a) Discuss ABO incompatible renal transplant. 5+3+2  
b) How are the results of ABO incompatible transplant different from that of ABO compatible renal transplant?  
c) Discuss accommodation and microchimerism.
3. Discuss vaccination protocol pre and post renal transplantation. 10
4. a) Discuss protein energy wasting in chronic kidney disease. 5+5  
b) Outline the strategies to prevent and treat it.
5. Discuss renal diseases in solid organ transplant recipients. 10
6. a) What is nuclear factor erythroid 2 related factor 2? 2+5+3  
b) Discuss role of impaired Nrf-2 in Pathogenesis of CKD.  
c) Discuss role of Bardoxolone in diabetic nephropathy.
7. a) Discuss adequacy of hemodialysis. 4+4+2  
b) Discuss methods to measure adequacy and their pitfalls.  
c) Discuss clinical implications of measuring adequacy.
8. Discuss management of a pregnant lady: 5+5  
a) On hemodialysis  
b) With renal transplant
9. Discuss newer hemodialysis technique under the following heads: 4+3+3  
a) Hemodiafiltration  
b) Wearable artificial kidney  
c) Regional citrate anticoagulation
10. Discuss the pathogenesis and management of ANCA positive crescentic glomerulonephritis. 10

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D.M. DEGREE EXAMINATION – NOVEMBER, 2013

SPECIALITY :: NEPHROLOGY

PAPER - I

*BASIC SCIENCES AND APPLIED NEPHROLOGY*

Time : 3 Hours

Max. Marks : 100

**ANSWER ALL QUESTIONS**

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- 1) Discuss renal acid handling and pathomechanism of renal tubular acidosis. 30
- 2) Discuss the role of 'Klotho – FGF 23 complex' in health and chronic kidney disease. 30

WRITE SHORT NOTES ON:

4x10=40

- 3) Name the special stains used in nephropathology and their application
- 4) Algorithmic work - up of polyuria
- 5) Glomerular filtration barrier
- 6) Cerebral salt wasting syndrome

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D.M. DEGREE EXAMINATION – NOVEMBER, 2013

SPECIALITY :: NEPHROLOGY

PAPER - III

*CLINICAL NEPHROLOGY, DIALYSIS AND KIDNEY  
TRANSPLANTATION-II*

Time : 3 Hours

Max. Marks : 100

ANSWER ALL QUESTIONS

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- 1) Evaluation and management of a patient with HIV/AIDS presenting with nephrotic syndrome. 30
- 2) Evaluation and management of a renal transplant recipient presenting with graft dysfunction at one year post transplantation. 30

WRITE SHORT NOTES ON:

4x10=40

- 3) Dialysis dysequilibrium syndrome
- 4) Warfarin nephropathy
- 5) Adaptive FSGS (Focal and Segmental Glomerulosclerosis)
- 6) Cisplatin nephrotoxicity

D.M. DEGREE EXAMINATION – NOVEMBER, 2013

SPECIALITY:: NEPHROLOGY

PAPER - IV

*ADVANCES IN NEPHROLOGY*

Time : 3 Hours

Max. Marks : 100

**ANSWER ALL QUESTIONS**

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- 1) Discuss the plan, procedure, protocol and challenges in ABO incompatible renal transplantation 30
- 2) Discuss the pathogenesis, pathology and management of glomerulopathies associated with dysregulation of alternate complement pathway. 30

**WRITE SHORT NOTES ON:**

4x10=40

- 3) Newer dialysis solutions for CAPD
- 4) Urinary biomarkers for diagnosis of acute rejection
- 5) High flux hemodialysis
- 6) Bile cast nephropathy

D.M. DEGREE EXAMINATION – NOVEMBER, 2013

SPECIALITY :: NEPHROLOGY

PAPER - II

*CLINICAL NEPHROLOGY, DIALYSIS AND KIDNEY TRANSPLANTATION-I*

Time : 3 Hours

Max. Marks : 100

**ANSWER ALL QUESTIONS**

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- 1) Discuss the spectrum of renal diseases in an Oncology unit. 30
  
- 2) Discuss the pathophysiology and management of sepsis related acute kidney injury. 30

**WRITE SHORT NOTES ON:**

4x10=40

- 3) IgG4 related renal disease
- 4) Online hemodiafiltration
- 5) Automated peritoneal dialysis (CCPD)
- 6) Transplant glomerulopathy

## DNB – Questions

1. Juxtaglomerular apparatus
2. Glomerular mesangium
3. Glomerular Basement membrane
4. Podocytes
5. Nephronogenesis
6. Renal cell culture
7. Slit diaphragm
8. Adhesion molecules in renal disease
9. Na<sup>+</sup> K<sup>+</sup> ATPase
10. Transport mechanisms in renal tubules
11. Regulation of renal blood flow
12. Determinants of Glomerular filtration
13. Tubulo Glomerular feedback
14. Nitric Oxide
15. Prostaglandins
16. Endothelin
17. Natriuretic peptides
18. Parathyroid hormone
19. Anti diuretic Hormones (Vasopressin)
20. Glomerular hyper filtration
21. Water reabsorption by renal tubules
22. Aquaporins
23. Para cellular transport
24. Renal handling of --- Potassium, Calcium, Phosphate, Uric Acid, Bicarbonate, Magnesium
25. Factors affecting Renal Potassium transport
26. Carbonic anhydrase
27. Ammonium excretion by renal tubules
28. Role of distal nephron in acid base balance
29. Nephrogenic diabetes insipidus
30. Countercurrent mechanism in the kidney
31. Role of renal medulla in concentration of urine
32. Organic anion transport in the kidney
33. Renin Angiotensin system
34. Kallirein kinin system
35. Angiotensin II Receptors
36. Effects of Angiotensin II on the kidney
37. Cyclo oxygenase in the kidney
38. Effects of NSAIDs on the kidney
39. Role of Cyclo oxygenase metabolites in renal diseases
40. Cytochrome P-450 pathway
41. Pathophysiology of oedema formation
42. Adrenomedullin

43. Idiopathic oedema
44. Regulation of plasma osmolality
45. SIADH
46. Vasopressin antagonists (VAPTANS)
47. Regulation of renal acidification
48. Metabolic alkalosis
49. Anion gap
50. Hyperchloremic metabolic acidosis
51. Fanconi's syndrome
52. Pathogenesis of distal RTA, Proximal RTA, Hyperkalemic distal RTA
53. Lactic acidosis
54. Bartter's syndrome
55. Liddle's syndrome
56. Gitelman's syndrome
57. Hyperekalemia
58. Hypomagnesaemia
59. Hypophosphatemia
60. Broad casts in urine
61. Cylinduria
62. Casts in urine
63. Risk factors for chronic renal disease
64. Dyslipidemia in chronic kidney disease
65. Cystatin C
66. Serum Creatinine as a marker of GFR
67. Methods to estimate GFR
68. Polyuria
69. Role of MRI imaging in renal disease
70. Pathophysiology of ATN
71. Apoptosis
72. Renal failure indices
73. Isolated proteinuria
74. Isolated Hematuria
75. Pathogenesis of Proteinuria
76. Experimental models of renal diseases

## Basics

1. Anatomy & physiology of glomerulus
2. autoregulation of renal system
3. aging kidney anatomical & functional change
4. natriuretic peptide system
5. urine examination in renal disease recent advances
6. slit diaphragm & podocytopathies
7. BMP 7
8. Proliferation signal inhibitor
9. Obesity affecting kidneys
10. Cytokines in renal disease
11. Renal innervation & hepatorenal reflux
12. Uropontin
13. Thirst & its regulation
14. Natriuretic peptides
15. Urine formation mechanism
16. Lymphatics in kidney & chyluria
17. Ammoniogenesis
18. Renal embryogenesis
19. Eye & kidney disease
20. smoking on kidneys
21. Polyuria assessment
22. Obesity in renal disease
23. Countercurrent multiplier
24. Renal Bx in high risk Pt
25. JG apparatus
26. Osteopontin
27. Complement in Kidneys
28. principles of drug Rx in renal failure
29. TGF B in renal disease
30. GFR measurements
31. Idiopathic Edema pathogenesis & management
32. Apoptosis in renal disease
33. Endothelins
34. mediators of glomerular injury
35. Renal blood flow measurement
36. Renal handling of Uric acid
37. Kallikrein-kinin in renal disease
38. Hypocomplementemia diagnostic significance
39. Intact nephron theory evidence
40. Biology of peritoneal membrane
41. Juvenile nephron.
42. 11B HSD deficiency
43. determinants of GFR
44. IL 1
45. Pigmenturia

46. glomerulo-tubular balance
47. renal transport in various segments & its regulation
48. Oxidants in glomerular injury
49. tubulo-glomerular feedback
50. ANP
51. IIIA ass. In renal disease
52. Prostaglandins & renal function
53. Renal TB essay
54. Chyluria
55. Masugi Nephritis
56. serum sickness
57. NO & kidney essay
58. HANTA virus
59. Virus & kidney
60. IVIG in renal disease
61. Nephrogenic DI
62. PRCA
63. S creatinine as GFR marker - merits & demerits
64. Formed elements in urine significance
65. Urinary electrolytes in renal disease
66. Microvasculature of Kidney
67. Renin physiology
68. Mesangium structure & function
69. Leprosy renal involvement.
70. Protein intake renal hemodynamics
71. ACE gene polymorphism
72. Occupational renal disease
73. Leukocyte adhesion molecule

## **Acid base and electrolytes**

1. Cerebral salt wasting
2. ABG
3. Mg<sup>2+</sup> & kidney
4. Familial hypophosphatemic rickets
5. Refractory rickets
6. Approach to Hyponatremia
7. SIADH
8. Hereditary RTA
9. Pseudohypoparathyroidism
10. hypomagnesemia
11. Alkali Rx in RTA
12. Met. Alkalosis- etiopathogenesis
13. Idiopathic Hypercalciuria
14. Drugs affecting serum K<sup>+</sup> - mech.
15. hypernatremia
16. Assessment of urinary acidification

17. Hypermnatremia management
18. Hyperchloremic Met Acidosis
19. Nephrogenic DI genetics
20. Gastric Alkalosis
21. Vita D resistance rickets
22. Anion gap
23. RTA essay
24. Type IV RTA
25. Hypokalemia
26. Hypercalcemia
27. primary HPT diagnosis
28. fanconi syn

## Dialysis

1. online hemodiafiltration
2. fungal peritonitis
3. super flux HD membrane
4. Non thrombotic vascular access complication
5. newer PD fluid
6. CAVHD & CVVHD
7. Inadequate HD features & management
8. Hep B & C in ESRD dialysis & Tx
9. UF failure in CAPD
10. sorbents in extracorporeal circulation
11. Water Tx
12. HD adequacy
13. CRRT
14. Venous stenosis in AVF
15. Erectile dysfunction in HD pt
16. DDS
17. PD adequacy
18. CAPD -- long term complication
19. Daily HD
20. Newer PD fluid
21. water Rx
22. Intradialytic hypotension
23. Hypotension in HD
24. water quality in HD
25. HD vs PD in ESRD
26. PD solute transport factors
27. Hep B vaccination strategies to improve seroconversion
28. CAPD metabolic complication
29. Biology of peritoneal membrane
30. Dialyzer reuse
31. Biocompatibility
32. Hemodiafiltration



33. Plasmapheresis in renal disease
34. Dialyzer reaction
35. HD membranes
36. Hemoperfusion for poisoning
37. Reddys system Sorbent regeneration
38. Aluminum in CKD
39. CAPD in India
40. Malnutrition markers in HD
41. Dialysis dose as HD adequacy
42. mortality predictors in HD
43. Aquaporins in PD
44. Temat regulation in HD
45. Daily HD
46. Malnutrition management in HD management
47. catheter survival in CAPD
48. Anticoagulation in HD
49. CAPD in cirrhosis
50. Drug modification in Dialysis
51. Early vs. late dialysis outcome
52. Icodextrin
53. HIT in HD
54. peritonitis in CAPD

## **Transplantation**

1. neurological complication of Tx pt
2. CAN pathogenesis
3. BKV
4. Innate immunity & renal Tx
5. Noninvasive method of diagnosis of AR & CD4 role
6. Polyomavirus
7. Renal Tx in children- complication
8. ABO incompatible Tx
9. PML JC virus
10. PRA in Tx
11. Post Tx HUS
12. Acute graft dysfunction after 6 mon management
13. Graft dysf. Fever & lung infiltrate evaluation
14. steroid resistant AR management
15. New Banff class. protocol 13x
16. Bone disease after Tx
17. Xenotransplant approach
18. CAN - pathogenesis
19. Pediatric Tx
20. pregnancy in Tx
21. Induction of tolerance
22. CNI avoidance protocol

23. Steroid resistant rejection management
24. PTx DM
25. Laparoscopic donor nephrectomy
26. Steroid sparing IS
27. MHC peptide
28. Graft tolerance
29. Sirolimus in TX
30. TAC vs CSA
31. INH prophylaxis in Tx
32. Mab in Tx
33. CMV in Tx
34. Newer IS in Tx
35. long term complication of Tx
36. MMF
37. Late allograft failure causes & management
38. PTx erythrocytosis
39. Renal mucormycosis
40. PTLT
41. Cadaveric renal Tx
42. HLA & role in Tx
43. Non infectious complication of Tx
44. Prophylactic antibiotics in Tx
45. PTx malignancy
46. Blood transfusion in Tx
47. CSA drug interaction
48. CNS complication in Tx -- essay
49. PTx NS
50. FTY - 720
51. SIRO based IS
52. Rx of rejection -- recent advances
53. UTI in Tx
54. 1<sup>st</sup> week graft dysfunction -- discuss essay
55. Total body irradiation
56. AZA in Tx
57. allograft rejection -- mechanism
58. PTx HT
59. CSA induce vascular changes
60. Trojan horse strategy in controlling rejection
61. FNAC in TX
62. Newer IS & role in Tx
63. IS minimizing strategies
64. PTx HT - essay
65. TAC induced DM
66. Positive Cx match
67. PTx anemia
68. Avascular bone disease in Tx

69. CSA toxicity
70. Acquired cystic disease -- evaluation after Tx
71. CSA monitoring
72. hematological complication after Tx
73. Organ preservation
74. IL2R anatagonist
75. PTx hyperlipidemia
76. Presensitizes Tx
77. HIV TX
78. Post Tx HCV -- outcome
79. Immune response to graft

## **GN and Nephrotic syndrome**

1. methods of detecting & measuring proteinuria
2. IgAN -- pathogenesis
3. IgAN -- Rx
4. Fibrillary glomerulopathy
5. Denovo GN
6. Immunoglobulin deposition disease
7. Ig AN -- morphological factors & prognostic markers
8. IgAN -- reversible renal failure pathogenesis & management
9. FSGS -- Rx options
10. serological test in Glomerular disease
11. Measurement of urinary proteins
12. various mediators in immunological renal injury
13. Ig AN
14. Experimental MGN
15. New concept in Immunopathology of GN
16. Gross glom. Hematuria
17. Mab in detection of glomerular disease
18. Mechanism & types of proteinuria -- Rx -- essay
19. thromboembolic manifestation of Neph.sndrome -- pathogenesis
20. RVT in NEP. Syn
21. Chinese herbal nephropathy
22. Immune abnormality in MCD
23. FSGS
24. MGN -- Rx
25. NS -- extrarenal complication
26. Proteinuria -- pathophysiology & significance in renal disease
27. Spot PCR in protein estimation
28. Edema in NS
29. PSGN -- long term prognosis
30. NS -- infective complication
31. Hyperviscosity syndrome
32. Immunotactoid GN
33. FSGS -- regression pathogenesis

34. Proteinuria induced renal injury
35. Amyloidosis – emerging Rx
36. FSGS classification
37. FSGS – essay
38. MPGN – prognostic feature
39. Salt & water in nephritic syn
40. Tamm horsfall protein - relevance
41. IFN in HBV MGN
42. MPGN
43. Genetics in FSGS
44. RA – renal involvement.
45. Hymen nephritis
46. IL in MCD
47. Heparin in therapy of prolif. Glomrular disease

## **CKD**

1. CAD in CKD
2. amyloidosis & bleeding pathophysiology- diagnosis & therapy
3. uraemic toxins
4. oxidative stress in CKD
5. nitric oxide in CKD
6. Balkan nephropathy
7. Uric acid in pathogenesis of kidney disease
8. Renoprotective Rx in CKD
9. HCV & renal disease
10. Novel Eryth. Stimulating agent
11. Lipoprotein glomerulopathy
12. Calciphylaxis
13. IV Iron in anaemia
14. Management of ESRD in children
15. Vascular repair & regulation of kidney disease
16. RRT in HIV
17. SNS in CKD
18. Renal tuberculosis
19. Aldosterone in progression of CKD
20. Risk factors of CAD in CKD
21. Anemia in CKD
22. Amyloidosis – dia. & Rx
23. Ischemic Neph
24. sec. hyperpara in CKD
25. Hyperphosphatemia In CKD - Management
26. Hemostatic disturbance in CKD
27. Vascular calcification
28. HT nephrosclerosis
29. Fe Rx in CKD
30. Reflux neph – dicuss

31. HCV in ESRD -- management
32. HIVAN -- histopathology
33. HIV renal disease
34. HBV & renal disease
35. progression of Renal disease
36. Target Hb in CKD
37. NA regulation by normal & diseased kidneys
38. Long term complication of Dialysis
39. lipid metabolism in CKD
40. Nephrocalcinosis
41. EPO
42. Sorbents in uremia
43. ROD -- essay
44. ACEI in CKD
45. Antibiotics in CKD
46. drug Rx in renal failure
47. Neutrophil in uremia
48. Drug handling by kidney
49. Renal response to nephron loss
50. Uraemic bleeding management
51. Malnutrition- Inflammation- Atherosclerosis (MIA)syndrome in CKD
52. Interstitium role in CKD
53. Chronic malarial nephropathy
54. Residual renal function -- preservation
55. screening of CAD in CKD
56. PTH assay
57. Leptin in CKD
58. Hyperphosphatemia
59. Protein Metabolism in CKD
60. Inflammation. In CKD
61. Homocysteine in CKD
62. Uraemic myopathy
63. Growth failure in CRF
64. Uremic pericarditis

## ARF

1. ATN prevention -- newer strategies
2. recent pathogenesis in crescentic GN
3. Rife ARF criteria & osmotic neph
4. Animal model of preeclampsia
5. 65 old male with anuria
6. Stem cell therapy in ARF
7. ARF -- modern concepts
8. Reperfusion injury
9. Apoptosis in ARF
10. ARF in rhabdomyolysis

11. HRS -- management
12. ROS -- in kidney disease
13. RPGN -- evaluation
14. Contrast nephropathy
15. Sepsis ARF
16. sickle cell in kidney
17. Contrast nephropathy -- prevention
18. Pulmonary renal syn
19. Radiation nephritis
20. Falc. Malaria -- renal involve.
21. Leptospirosis ARF
22. ARF in BM Tx
23. Acute cortical necrosis in Abruptio placenta
24. GFR in post obstructive kidney
25. Adhesion molecules in ARF
26. UKM Coagulation abnormalities in renal lesion in pregnancy
27. ARF nutritional management
28. Aminoglycoside ARF
29. Renal papillary necrosis
30. TTP PSGN -- histology
31. Microbiology of leptospirosis
32. ATIN
33. Toxic immune nephropathy
34. Nephrotoxic serum Nephritis
35. Reperfusion injury
36. Malarial ARF
37. Plant toxin & ARF
38. ischemic ARF -- pathogenesis
39. ARF -- new classification
40. crystal deposit in kidney
41. Cystinuria
42. D- HUS
43. ARF in HIV
44. Rif ARF

## **Inherited renal disorders**

1. Alports syn
2. Genetic & clinical pattern of AD & ARPKD
3. Cilia in pathogenesis of PCKD
4. Fabrys disease -- early diagnosis % Rx
5. primary oxaluria- Tx
6. Primary oxaluria -- genetics
7. Genetics of PKD
8. Congenital anomalies of kidneys, UT & RAS.
9. Inherited nephrotic syndrome
10. Animal model for Alports

11. Fabry's disease
12. Cyst in PKD – pathogenesis
13. Medullary cystic disease
14. Inherited GBM disease – Genetics
15. ADPKD – diagnosis
16. Angiotension & developmental anomalies
17. Cystic disease – classify & discuss ADPKD
18. PKD – extrarenal manifestation
19. classification & genetic basis of inherited renal disease
20. VHL & kidney
21. Barter's syn
22. primary gout & kidney
23. Microchimerism
24. Genetic diagnosis of ADPKD
25. HT in ADPKD

## **Pregnancy related disorders**

1. RAS in pregnancy
2. preeclampsia – newer pathogenesis
3. PIH – pathogenesis
4. PIH – essay
5. Pregnancy in underlying native kidney disease
6. Pregnancy renal alterations

## **HTN**

1. low renin HT
2. AT II receptors
3. HT in renal parenchymal disease
4. aldosterone in CKD
5. vascular calcification
6. Gluc. Remediabale HT
7. type 2 pseudohypoaldosteronism
8. Aldosterone in HT
9. Refractory HT
10. Genetics of primary HT
11. RAS – pathogenesis
12. Pheochromocytoma – diagnosis
13. Role of Kidney in HT
14. Microalbuminuria in ess. HT
15. Anti HT in pregnancy
16. ABPM – role in Rx of HT
17. Young HT – Essay
18. Kidney in HT & pathogenesis of malignant HT
19. Sys. HT – Rx
20. RVHT & ischemic nephropathy

21. Atherosclerotic RAS
22. primary aldosteronism
23. Monogenic HT
24. ACEI for diag. RVHT
25. EaNaC & HT

## Vasculitis

1. pregnancy in SLE
2. ANCA
3. HUS – newer pathogenesis
4. LN – RPS class.
5. Renal invol. In Scleroderma
6. APLA kidney
7. HSP renal invol.
8. Plasmapheresis in TTP
9. SLE – newer Rx
10. Systemic sclerosis – renal invol.
11. Anti GBM disease
12. LN – pathogenesis
13. TBM – pathology
14. HUS – histology
15. Renal Vasculitis – immunology & histology
16. Pathology of Aortoarteritis
17. TTP – management
18. Systemic Amyloidosis classification
19. Lupus anticoagulant
20. Genetic susceptibility in SLE
21. Immune dysregulation in SLE
22. HELLP
23. Familial HUS
24. PAN
25. Wegeners
- 26.

## Drugs

1. ketoanalogue
2. Biphosphonates
3. Calcimimetics
4. Diuretic resistance
5. MMF in glomerular disease
6. Amphotericin Nephrotoxicity
7. Methanol poisoning
8. New vit D analogue
9. ACEI – mechanism in preventing proteinuria
10. Diuretics in Non edema state



11. Endothelin antagonist
12. Lithium nephrotoxicity
13. Aquaretics
14. Diuretic braking phenomenon
15. NSAIDS – pathophysiology
16. ARB in renal disease
17. EPO resistance
18. Calcitriol – discuss
19. MMF
20. Lipid lowering Rx in renal disease & classify drugs
21. Acute salicylate poisoning
22. Drug abuse & renal disease
23. Non calcium vit D analogue
24. Renal histology in Gold & ethylene glycol poisoning
25. Deoxyspergualin
26. Heroin ass. Nephropathy
27. Analgesic neph.
28. Diuretic classify
29. Drug induced nephropathies
30. Adverse effects of diuretics
31. Barbiturate poisoning
32. Diuretics in Neph syn
33. Cisplatin ARF

## **DM**

1. Antiangiogenic Rx & diabetic nephropathy
2. Diabetic Neph - pathogenesis
3. Reversibility of lesion in DN
4. DN - prevention & Rx - essay
5. Renal hypertrophy in DN
6. Non glomerular disease in diabetes
7. T2DM – primary prevention
8. CCB in DN
9. PKC in DN
10. AGE in DN

## **Malignancies**

1. Renal failure in malignancy
2. Recent criteria & Rx for Multiple myeloma
3. Para neoplastic GN
4. renal involvement in lymphoma
5. Light chain Neph

#### **D.M. Degree Examination – Paper IV: Recent advances**

1. Discuss in detail of recent advances in the pathogenesis and mgt of LN
2. Discuss the recent advances in the pathogenesis and mgt of ROD
3. Polyoma virus nephropathy
4. Newer immunosuppressive drugs
5. Tissue engineering a kidney
6. HIV nephropathy
7. Cyber nephrology
8. MARS dialysis therapy
9. Renal nutrition in CF
10. Recent advances in chronic peritoneal dialysis therapy
11. Interventional mgt in nephrology
12. Newer concepts in the mgt of contrast nephropathy
13. Discuss the etiology , clinical presentations and diagnosis of ischemic renal disease
14. Role of dialysis in the mgt of exogenous intoxications
15. MMF
16. Cyclosporine nephrotoxicity
17. Value of ambulatory BP monitoring in the mgt of hypertension
18. Anticoagulation during HD
19. Diagnosis of CAD in ESRD
20. Describe the inheritance , clinical features, renal histology and mgt of alports syndrome
21. Describe the pathogenesis, pathology and mgt of ARF following snake bite
22. Lupus anticoagulant
23. Significance of bacterial colony counts in UTI
24. Mgt of the highly sensitized renal transplant recipient
25. Renal involvement in primary gout
26. Emphsematous pylelonephritis
27. Describe in detail problems encountered and management in a paediatric patient with CRF
28. Discuss treatment strategies and prognostic indices in idiopathic membranous nephropathy
29. Reprocessing in HD
30. Scleroderma and the kidney
31. Renal involvement in Hepatitis C
32. ACE gene polymorphism
33. Dacluzimab
34. Mechanisms responsible for chronic allograft loss
35. Role of nitric oxide in ARF
36. High efficiency dialysers
37. Renal risks of smoking
38. GMCSF
39. Role of apoptosis in renal disease
40. Xenotransplantation
41. Indications and complications of therapeutic plasma exchange
42. Radioisotopes for diagnosis of renal disease
43. Describe Banff 97. Discuss the differences between this and previous Banff
44. Describe in detail HIV nephropathy
45. TRAS
46. TGF b in diabetic nephropathy
47. Assessment of dry weight in dialysis

48. Genetic determinants of HUS
49. Iron therapy in CRF
50. Discuss diagnostic interpretation, course and management of a young boy with haematuria whose renal biopsy shows mesangial proliferative GN
51. Describe in detail hypokalemic nephropathy
52. Mechanism of hyperlipidemia in nephrotic syndrome
53. Diabetes hypertension relation
54. Dietary management of CRF
55. Plant nephrotoxins
56. Metabolic effects of cyclosporine
57. Discuss water treatment for dialysis
58. Discuss renal handling of sodium
59. Role of oxygen free radicals in rejection
60. Captopril renogram in RVH
61. Councilman nephritis
62. Phase contrast microscopy
63. Non invasive methods in diagnosis of amyloidosis
64. Discuss in detail ANCA vasculitis
65. Discuss recent advances in treatment of lupus nephritis
66. Histology of renal malakoplakia
67. Role of PSA
68. Extra renal effects of Cyclosporin A in potassium hemostasis
69. Glomerular cell culture
70. FK 506
71. Discuss in detail idiopathic FSGS
72. Discuss in detail Banff classification
73. ACKD
74. PET
75. Growth in children in CRF
76. PTRR
77. Renal involvement in PAN
78. Discuss in detail membrane bioincompatibility in HD
79. Discuss effects of NSAID on RBF and GFR
80. Gadolinium DTPA MRI in renal transplant
81. Hep B vaccination in CRF
82. Aspirin in prevention of toxemia of pregnancy
83. PDGF
84. Microalbuminuria by dipstick method
85. Pathophysiology of renal hypertrophy. Quote experimental studies
86. Discuss various methods of selective immunosuppression in renal tx
87. IGM syndrome
88. HD associated hypoxemia
89. Cisplatin nephrotoxicity
90. Xanthogranulomatous pyelonephritis
91. Transgenic mice in renal research
92. Discuss CMV in renal allograft recipient
93. Discuss current concepts in pyelonephritis
94. Subclavian vascular access
95. IL 6
96. Anticardiolipin antibody
97. HBsAg induced glomerulopathy
98. Noninvasive methods of diagnosis of renal amyloidosis
99. Discuss pathophysiology and predictors of PIH

100. Describe clinical manifestations and management of primary VUR
101. Lithium nephrotoxicity
102. TB following renal tx
103. Endopeptidase inhibitors - potential clinical uses
104. CAPD in India
105. HD induced hypotension
106. Discuss role of blood transfusion in renal replacement programmes in cyclosporine era
107. Discuss natural history of PSGN
108. Levamisole in MCD
109. Effect of cimetidine on creatinine clearance
110. IJV for HD
111. Intravenous calcitriol bolus therapy
112. Filarial nephropathy
113. Discuss role of cell culture in renal disease
114. Discuss natural history of idiopathic MN
115. Nuclear MR spectroscopy
116. Sodium lithium countertransport
117. Benign familial haematuria
118. Desferoxamine therapy in MHD
119. HD without anticoagulation
120. Investigations in a case of recurrent UTI
121. Cyclosporine nephrotoxicity
122. Investigations of RAS
123. Role of prostaglandins and leukotrienes in normal kidney and various kidney diseases
124. Investigations in recurrent renal calculi
125. Present status of cell mediated immunity in pathogenesis of TIN
126. Discuss current concepts in kidney preservation
127. Discuss investigations and procedures to prepare a sensitized individual for renal tx
128. Describe current information of kidney in AIDS
129. Describe dialysis related amyloidosis
130. Discuss monoclonal antibodies in renal tx
131. Cystinosis
132. Irradiation nephropathy
133. Discuss transplantation in sensitized individual
134. Role of single dose therapy in UTI
135. Slow continuous haemodialysis
136. Describe pathogenesis and renal changes in obstructive uropathy
137. Discuss role of biopsy in renal allografts
138. Search of anti-idiotypic antibodies in renal transplant
139. Role of USG in renal tx
140. Prognosis of a patient with anti-GBM
141. TDM of cyclosporine
142. Natriuretic hormone in conservation of sodium
143. Discuss micropuncture technique and its application in renal physiology
144. Radionuclide investigations in renal tx
145. Bacterial cell wall adhesion in pyelonephritis
146. Lab investigations in RTA
147. Advances in understanding mesangium
148. Sorbents in uremia
149. Recent advances in treatment of transplant rejection

150. Bacterial virulence in UTI
151. Transplant glomerulopathy
152. Discuss in detail fibrillary GN
153. Discuss long term complication of immunosuppression
154. FK 506
155. Potassium channel openers
156. ACKD
157. New contrast media in imaging kidneys
158. CAVHD
159. Describe in detail age related changes in kidneys
160. Discuss old and new concepts in management of anaemia of CRF
161. CAT scan in kidney disease
162. Urinary casts
163. Malignant hypertension
164. CMV in renal tx
165. Graft biopsy
166. Prognostic factors in ARF
167. Discuss in detail renal failure in lymphoma
168. Prostatodynia
169. USG in nephrology
170. Discuss in detail accelerated atherosclerosis in CRF
171. Idiopathic hypocalcemia
172. Beta 2 microglobulin
173. Recent advances in understanding uremia
174. 10 year old allograft with proteinuria
175. Role of anti GBM in pathogenesis of GN
176. Donor specific transfusion
177. Mediators of immune mediated injury
178. Current concepts of HLA antigens
179. Beta 2 microglobulins
180. Aluminium intoxication
181. Drugs and chemicals affecting peritoneal clearance
182. Nephrotoxic nephritis
183. SIADH
184. Urea metabolism in advanced renal failure
185. Determinants of phosphate transport
186. Innervation of the kidney
187. Recent trends in attenuation of renal fibrosis
188. Inhibitors of renal stone formation
189. Factors relating to peritoneal solute transport
190. Discuss role of kidney in hypertension
191. Uremic toxins
192. Diuretic braking phenomenon
193. Renal handling of urate
194. Kallikrein - kinin system in health and disease
195. Low transporter CAPD
196. Preservation of kidney from cadaver donors
197. New concepts in pathogenesis of lupus nephritis
198. Gene therapy in renal disease
199. Adequacy of CAPD
200. Hemostatic defects in CRF
201. Pathogenesis of MCD

**D.M. Degree Examination – Paper III: Nephrology-dialysis and transplantation**

1. Planning and developing a transplant coordination model in your centre. Discuss the legal and ethical issues of cadaver organ donation
2. Discuss the history, principles, complications and recent advances in hemodialysis therapy
3. Phosphatases
4. Vasopressinase inhibitors
5. Glucose toxicity in CAPD
6. PRCA
7. NESP
8. Renal transplantation across blood groups
9. Dialysis for IE of metabolism
10. X linked renal related syndromes
11. Adhesion molecules
12. Transplant tolerance
13. Discuss in details the various form of CRRT
14. Discuss in detail the factors that determine long term allograft survival
15. Discuss the role of paraproteinaemias in the causation of renal diseases and the mechanism involved
16. Discuss the pathogenesis, c/f and mgt of PIH
17. Low turn over bone disease
18. Non-uremic indicators of HD
19. Rifampicin induced ARF
20. ANCA
21. Hypertension due to unilateral renal parenchymal disease
22. Discuss the pathogenesis, c/f, renal histology and long term outcome in IgAN
23. Describe the pathogenesis, c/f, mgt and outcome in HRS
24. Azothioprine related complications in renal transplant recipients
25. EPO hyporesponsiveness
26. Non infectious complications of CAPD
27. ARF in malaria\*
28. Pregnancy in renal transplant recipient
29. Describe the c/f of chronic uremia. Discuss conservative mgt of CRF
30. Discuss the pathogenesis of diabetic nephropathy. Describe the stages of nephropathy in IDDM and NIDDM. Discuss primary and secondary prevention of nephropathy
31. Describe in detail causation, diagnosis and treatment options of renal bone disease
32. Describe in detail problems encountered in organizing cadaver transplant in India
33. Describe genetics pathogenesis, manifestations and diagnosis of ADPKD
34. Role of serology in the diagnosis of glomerular and vascular disease
35. Postpartum ARF
36. Cryoglobulinemic vasculitis
37. Xanthogranulomatous pyelonephritis
38. Etiology, pathogenesis, manifestations, laboratory diagnosis and management of TIN
39. Clinical features, pathogenesis, radiology, management of bone disease in CRF
40. Clinical features, pathogenesis and management of peritonitis in CAPD
41. IL 2R antagonists

42. Hemostatic disturbances in CRF
43. CABP
44. Extra renal manifestations of ADPKD
45. Renal involvement in lymphoma
46. PTDM
47. EPO
48. Metabolic complications of CAPD
49. Renal papillary necrosis
50. Cyclosporine drug interaction
51. Drug therapy in renal failure
52. TROJAN HORSE strategy for controlling rejection
53. Progression of CRF
54. DSA
55. Recurrent disease following renal transplantation
56. Discuss progression of renal disease
57. Approach to post transplant hypertension
58. Evaluation of polyuric disorders
59. HLA
60. T cell antibodies in renal transplant
61. Crystal induced arthropathy in uremia
62. Discuss in detail acute and subacute renal failure in jaundice
- 63.

## **D.M. Degree Examination – Paper II: Clinical nephrology**

1. Long term management of Hep B and C infected renal allograft recipient
2. D/d, investigations and mgt of pediatric hypertension
3. HRS
4. Cerebral salt wasting syndrome
5. Cast Nephropathy
6. Sterile peritonitis
7. Organ preservation
8. Obstetric ARF
9. Cardiovascular risk intervention in ESRD
10. Medical mgt of renal stone disease
11. Tertiary prevention of diabetic nephropathy
12. PET
13. Hepatitis B and renal disease
14. Noninfectious complications of CAPD
15. Therapeutic measures for IgA nephropathy
16. Water treatment for HD
17. Renal failure in sepsis syndrome
18. Post transplant polycythemia
19. Renal involvement in microscopic polyarthritis
20. CAVH – Principles, indications and complications
21. Diagnosis and management of distal RTA
22. Describe clinical manifestations, lab and management of aluminium toxicity in ESRD
23. Discuss investigations in a case of death during dialysis
24. Benign familial haematuria
25. ARF in ICU
26. ANCA related renal disease
27. Congenital nephrotic syndrome
28. Lead nephropathy
29. Discuss management of VUR upto 5 years of age
30. Discuss management of post transplant fungal infection in India
31. Lipid abnormalities in nephrotic state
32. Dietary fish oil in proteinuric states
33. ANP in ARF
34. CAPD in children
35. Bartter syndrome
36. Discuss pathogenesis of progressive renal damage in VUR. Discuss controversies in management
37. Discuss in detail PIH
38. Amphotericin nephrotoxicity
39. HD biocompatibility
40. Uremic pericarditis
41. Etiopathogenesis of calcium containing stones
42. Monoclonal antibodies in renal tx
43. Discuss in detail ARF in mass disasters
44. Discuss management of acute nephritic illness in pregnant patient
45. Lithium nephrotoxicity
46. Anatomical and functional changes in VKD
47. Role of CCB in various stages of renal transplantation
48. Options of RRT in DN
49. Bicarb dialysis



50. Discuss in detail HRS
51. Discuss MCD highlighting differences between children and adults
52. Glomerular collagens in alport's syndrome
53. Pathogenesis of secondary hyperparathyroidism
54. Acute RVT
55. Glucose and insulin metabolism in CRF
56. Hep C and renal transplant
57. Discuss HIV nephropathies
58. Discuss renal lesions in SLE and treatment options for class IV
59. Renal histology in snake bite induced ARF
60. Role of free radicals in acute renal injury
61. Post partum HUS
62. High flux dialysis
63. CAVHD
64. Discuss role of capillary hypertension in pathogenesis of FSGS
65. Rationale for use of immunosuppression in membranous nephropathy
66. Hyperoxaluria type 1
67. criteria for adequate dialysis
68. ANCA
69. HIV nephropathy
70. Aluminium and kidney
71. Discuss RVH and unilateral renal disease with hypertension
72. Discuss in detail RPGN
73. HRS
74. Syndrome primary hyperaldosteronism and phaeochromocytoma
75. Non gonococcal urethritis
76. Acute RVT
77. Cyclosporine in nephrotic syndrome
78. Pathophysiology of ATN
79. Discuss ischemic renal disease
80. Discuss current concepts of immunomodulation in renal tx
81. IgA nephropathy
82. Renal transplant across ABO barriers
83. High flux HD
84. Discuss plasmapheresis
85. Discuss fever in post transplant patient
86. Discuss serological test in SLE
87. Discuss neurological complications of dialysis
88. Lithotripsy for renal calculus
89. Microalbuminuria
90. CCB in renal transplant
91. High permeability membranes
92. Discuss cyclosporine A in renal disease
93. Discuss ANCA mediated SVV
94. Immune adsorption in sensitized renal transplant recipient
95. Schistosomal nephropathy
96. Hepatorenal failure
97. Predictive tests in anticipating preeclampsia
98. Medical prophylaxis of calcium nephrolithiasis
99. Describe in detail bleeding disorders in CRF
100. Discuss metabolic complications of diuretic therapy
101. Reverse osmosis
102. Anti-N like antibodies

103. Describe renal histology in scleroderma, eclampsia, viper snake bite
104. Discuss in detail idiopathic edema
105. Saline dialysis
106. Role of blood transfusion in renal transplant recipients
107. Management of distal RTA
108. Hyponatremia
109. Hypokalemia and hypertension
110. IgA nephropathy epidemiology
111. Cyclosporine in unrelated tx
112. Hypersensitive reaction to dialysis membrane
113. Post partum renal failure
114. PTH as uremic toxin
115. Discuss HSP
116. Discuss management of post tx hypertension
117. Discuss role of renal biopsy as prognostic indicator in CGN
118. Prognosis in IgAN
119. Prognosis in renal tx in paediatric patients
120. D/D of hyperchloremic metabolic acidosis
121. Prevention and management of uric acid stone
122. Toxic immune nephropathy
123. Classify systemic amyloidosis
124. Discuss ACKD
125. Medical management of renal stone disease
126. Polyamines as uremic toxins
127. Assessment of adequacy of dialysis
128. ACEI in renal failure
129. TBM
130. Glomerular tip lesion
131. Dialyser reuse
132. Nail patella syndrome
133. PDGF
134. Lithium toxicity
135. Pathophysiology of reperfusion cell injury
136. Net acid secretion by kidney
137. Long term complications of HD
138. Renal histology in multiple myeloma
139. Mixed lymphocyte culture
140. Xenotransplantation
141. Discuss in detail ROD
142. Discuss methods for assessing adequacy of dialysis
143. Renal tuberculosis
144. GI complications of renal tx
145. Plasma exchange
146. Surgery in treatment of ADPKD
147. Discuss in detail HUS
148. PTRAs
149. Effects of CRF in immune response
150. Bacterial virulence factors in UTI
151. Pre op and intra op management of pheochromocytoma
152. Renal tx in sensitized patient
153. Hormonal alterations in CRF
154. Haemodynamics in chronic allograft rejection
155. Adrenal corticoids and hypertension

- 156. Dialysis related arthropathy
- 157. Discuss investigations for allograft recipients who remain anuric for 48 hours
- 158. Bartter's syndrome
- 159. Mechanism of glomerular injury in immune complex disease
- 160. Discuss in detail dRTA
- 161. Management of recurrent UTI
- 162. Discuss in detail PTE
- 163. Alport's syndrome
- 164. Treatment plan for HUS
- 165. discuss management of systolic hypertension in elderly
- 166. Discuss recurrent haematuria
- 167. Discuss mesangial proliferative GN
- 168. Discarb vs acetate dialysis
- 169. Role of urinary reflux in renal disease
- 170. Role of zinc in CRF
- 171. Helper and suppressor T cells in transplant
- 172. Sorbant therapy in uremia
- 173. Macrophages in glomerulonephritis
- 174. Pulmonary renal syndrome
- 175. ACEI in proteinuric states
- 176. Daily dialysis
- 177. Obesity and renal disease
- 178. Proteinuria and its determinants
- 179. Etiology and management of hypercalcaemia
- 180. Acute serum sickness
- 181. Idiopathic edema
- 182. Cystic disease in dialysis patients
- 183. Dietary management in CRF
- 184. Renal changes in sickle cell disease
- 185. Renal histology in hyperacute rejection and rheumatoid arthritis
- 186.

## D.M. Degree Examination – Paper 1: Basic sciences

1. Experimental models in ARF and the future therapeutic options based on outcome
2. Role of kidney in maintaining acid base homeostasis
3. Role of transporters in the kidney
4. Renal Prostaglandins
5. Leptins in renal disease
6. TG feedback
7. Isotope studies for RVH
8. Apoptosis in renal disease
9. Cystatin C
10. JG apparatus \*\*
11. Genetics of Alports syndrome
12. Counter current mechanism \*\*
13. Discuss the pathogenesis of edema in various condition
14. Etiology, pathogenesis, clinical manifestations and Mgt of metabolic alkalosis
15. Role of complement in the pathogenesis of glomerular disease
16. Inhibitors of stone formation
17. Drugs that alter serum potassium levels
18. Discuss the role of radioisotope in assessing the renal functions and structure
19. Classify hyponatremia. Describe its c/f and mgt
20. Synthesis of calcitriol and its significance
21. Lab diagnosis of pheochromocytoma
22. Effects of aging on renal structure and function
23. Diagnostic significance of the formed elements of the urine sediment
24. Idiopathic hypercalciuria
25. Describe the factors and mechanisms involved in renal handling of magnesium. Mention causes and manifestations of hypomagnesemia
26. Describe structure and function of glomerulus. Describe the methods for measurement of GFR
27. Urinary anion gap
28. Asymptomatic bacteriuria
29. Bartter syndrome
30. Demonstration of VUR and reflux nephropathy
31. Radiocontrast media nephrotoxicity
32. Sodium transporters in proximal tubule
33. Pathogenesis of edema in nephrotic syndrome
34. Genetics of Alport's syndrome
35. Nuclear factor K beta
36. Munich Weister rats
37. MHC peptides and their role in immunomodulation
38. High volume haemofiltration
39. Salt and hypertension
40. Histology of acute rejection
41. Structure and function of glomerular filtration membrane
42. Role of kidney in pathogenesis of hypertension
43. Physiological principles in haemodialysis and factors affecting solute clearance
44. Structure and function of MHC molecules
45. Role of complement in renal disease
46. IF in the diagnosis of renal disease
47. Adhesion molecules in renal injury
48. Significance and utility of anion gap

49. Classify diuretics based on their site of action. Discuss diuretic resistance
50. Determinants of GFR. Advantages and disadvantages
51. Management of hypercalcemia
52. Medullary cystic disease
53. Renal aquaporins
54. Renal involvement in PSS
55. Contrast nephropathy
56. Insulin like growth factor
57. Carnitine
58. IL 2 gene transcription
59. Low anion gap
60. Lyon's hypothesis
61. Discuss renal haemodynamic adaptation to altered physiological states
62. Discuss biochemical changes in brain in uremia
63. Discuss in detail hyponatremia
64. Discuss in detail snake bite ARF
65. Compensatory renal growth
66. Diuretics in Nephrotic syndrome and CRF
67. Lupus anticoagulant
68. Synthesis of calcitriol and its regulation
69. Significance of hypocomplementemia
70. Discuss glucose homeostasis in renal disease
71. Discuss renal toxicity of BJP
72. Masugi nephritis
73. Membrane attack complex
74. Renal histology of immunotactoid glomerulopathy
75. P-fimbriae
76. Sodium hydrogen antiport
77. Discuss in detail renal acidification mechanism
78. Discuss in detail TIN
79. Radionuclides for renal imaging
80. Post obstructive diuresis
81. ARPKD
82. Cell adhesion molecules in glomerulonephritis
83. Metabolic evaluation of recurrent nephrolithiasis
84. Discuss in detail osteomalacic ROD
85. Discuss pathogenesis of uremic acidosis
86. Epidermal growth factor
87. IL 6
88. Monitoring specific renal tolerance
89. Heymann's nephritis
90. Renal histology in mixed essential cryoglobulinemia
91. Discuss counter current mechanism and its regulation
92. Non atrial natriuretic hormones
93. Vitamin D analogues
94. Genetics of ADPKD
95. Factors affecting renal handling of urates
96. Lactic acidosis
97. Discuss urine concentration and dilution
98. Discuss role of proteases and free radicals in the pathogenesis of glomerular injury and toxic nephropathy
99. Medullary circulation
100. Vasoactive agents in renal haemodynamics

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154. Membrane attack complex
155. Proteoglycans in glomerular disease
156. Extra renal control of potassium
157. Post obstructive diuresis
158. Discuss anatomy and physiology of renal glomerulus
159. Hyperviscosity syndrome
160. Renal changes in diabetes mellitus
161. Immune dysregulation
162. Discuss interplay of PTH, calcitonin and vitamin D systems as calcium regulating hormones
163. Discuss in detail types and distribution of vasopressin receptors
164. Culture of glomerular cells
165. EDRF
166. Spurious hyperkalemia
167. Human C3b receptor
168. Omega 3 fatty acid
169. Precipitation, calcification hypothesis
170. Signal transduction in nephrology
171. Discuss in detail the current concepts of divalent ion metabolism in ESRD and role of i.v. calcitriol
172. Role of cytokines in renal disease
173. Microalbuminuria
174. EDRF
175. Cell adhesion molecules in glomerular disease
176. Anti endothelial cell antibodies
177. Discuss mechanisms regulating rennin angiotensin system
178. Discuss in detail dRTA
179. Physiology of EPO, synthesis and release
180. Medullary cystic disease
181. Dense deposit disease
182. Chyluria
183. Growth in children with CRF
184. Hormonal control of urinary excretion of sodium
185. Lab methods of assessing GFR
186. Glomerular nephritis in allografts
187. Mesangial cell system in experimental nephritis
188. Metabolic complications of diuretic therapy
189. Hybridoma
190. Discuss trade off hypothesis in detail
191. Autoimmune mechanisms of chronic pyelonephritis
192. Reverse osmosis
193. Gentamicin nephrotoxicity
194. Renal prostaglandins
195. Post obstructive diuresis
196. Bilateral enlarged kidneys in renal failure
197. Renal failure in patients with hepatocellular jaundice
198. Discuss in detail GBM in health and disease
199. Discuss pathogenesis of renal failure associated with hepatic failure
200. Role of kidney in control of potassium excretion
201. Principles of detection of preformed circulating antibodies
202. Diabetic glomerulosclerosis
203. Ask Upmark kidney
204. Tubuloglomerular feedback

205. Discuss nature and function of human immunoglobulins
206. Pathogenesis of kidney in multiple myeloma
207. Renal prostaglandins
208. MSK
209. Asymptomatic bacteriuria during pregnancy
210. Discuss AIN
211. Hypotension in MHD
212. Silicosis in dialysis patients
213. Discuss physiology of aged kidney
214. Discuss present status of urinary indices in oliguric renal failure
215. Function of glomerular cell
216. Trade off hypothesis
217. Etiology of dialysis dementia
218. Use of diuretics in non edematous states
219. Xanthomatous pyelonephritis
220. Lab diagnosis of phaeochromocytoma
221. Etiopathogenesis of metabolic alkalosis
222. AT2 receptor in relation to development of kidney
223. *Trade off - Hypothesis*