

B.Sc. DIALYSIS TECHNOLOGY
(New Syllabus 2014-2015)

THIRD YEAR

PAPER I – DIALYSIS TECHNOLOGY

Q.P. Code: 801336

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Non-dialyzable anti-hypertensive agents.
2. Treatment of accidental administration of heparin to a dialysis patient with ongoing bleeding.
3. Potassium exchange resins.

II. Write notes on:

(8 x 5 = 40)

1. Activated form of Vitamin D use in Chronic Kidney Disease.
2. Adequacy of peritoneal dialysis.
3. Sodium modeling in hemodialysis.
4. Vascular access steal phenomenon.
5. “Button hole” technique of cannulation of arterio-venous fistulae.
6. Standard measures of dialysis water purity and its relevance to flux of the dialyzer.
7. Choice of a modality of renal replacement therapy– guiding a patient.
8. Common complications encountered during a hemodialysis session.

III. Short answers on:

(10 x 3 = 30)

1. Disposition of arterio-venous fistula needles after a dialysis session.
2. Routine blood biochemistry testing in a patient on regular thrice-weekly maintenance hemodialysis.
3. “Dry weight” in a hemodialysis patient.
4. Different peritoneal fluids available in routine clinical practice.
5. Sites of arterio-venous fistula construction.
6. Contraindications to initiation of Peritoneal Dialysis in chronic kidney disease.
7. Target Hemoglobin level to be maintained in a CKD patient on hemodialysis.
8. Dose calculation for continuous veno-venous hemofiltration.
9. SINGLE POOL Kt/V vs. STANDARD Kt/V.
10. Precautionary measures while dialyzing patients with Human Immunodeficiency Virus infection.

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Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Potential adverse effects of heparin use.
2. Potential adverse effect of erythropoietin use.
3. Potential adverse effects of intravenous iron use.

II. Write notes on:

(8 x 5 = 40)

1. Drugs useful in the medical treatment of hyperkalemia and their mechanism of action.
2. Type of heparin preferred in Hemodialysis – unfractionated heparin vs. low molecular weight heparin and why?
3. Catheter related blood stream infections – what are they? How is the diagnosis made? How are they treated?
4. Diagnosis of Iron Deficiency anemia in a patient of chronic kidney disease on hemodialysis.
5. Hepatitis B vaccination schedule in dialysis patients.
6. Infection preventive strategies in patients on peritoneal dialysis.
7. Universal precautions in a hemodialysis unit.
8. Regional anticoagulation.

III. Short answers on:

(10 x 3 = 30)

1. Reaction to formaldehyde residue in the dialysis system – recognition and treatment.
2. Disadvantages of reprocessing and reuse of dialyzers.
3. Biomedical waste segregation in a dialysis unit.
4. Optimal hand hygiene.
5. Steps in the training a patient on continuous ambulatory peritoneal dialysis.
6. Sustained Low Efficiency Dialysis?
7. Access recirculation – diagnosis and treatment.
8. Symptoms of overt uremia. Which symptom needs immediate initiation of dialysis?
9. Automated Peritoneal Dialysis.
10. Nocturnal home hemodialysis.

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Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Explain about complications during hemodialysis and its management.
2. What are psychologic problems and psychosocial issues in the ESRD population?
3. What is peritoneal dialysis? Explain about its complications.

II. Write notes on:

(8 x 5 = 40)

1. Write a short note on hemodialysis.
2. What is the composition of standard hemodialysis solution? What is Dual – concentrate system?
3. What are the types of permanent access for hemodialysis and its complications?
4. What are the factors favouring clotting of the extra-corporeal circuit? What are the signs of clotting in the extra-corporeal circuit?
5. Explain CAPD exchange procedure of double bag system.
6. What are the potential routes of infection in peritoneal dialysis?
7. What is GFR? What are the stages of CKD?
8. What are the acute dialysis indications for infants and children?

III. Short answers on:

(10 x 3 = 30)

1. What is the surface area (m²), priming volume, Kuf (ml/hr/mmHg), membrane of F6HSP and F8HSP?
2. What is inter dialytic hypotension?
3. What are principles of peritoneal dialysis?
4. What is the use of inj. Heparin in peritonitis?
5. What are the pre and post patient assessment in hemodialysis?
6. What do you mean by online sodium clearance?
7. What are the replacement solutions used in plasmapheresis? What are its advantages and disadvantages?
8. Write a note on management and prevention of muscle cramps during hemodialysis?
9. What are the precautions you will take while doing hemodialysis for HIV patient?
10. What are the criteria of donor selection?

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Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. What are the types of central venous catheterization and explain about its complications in detail?
2. Explain in detail about dialyzer reusing process.
3. Write in detail about acute hemodialysis prescription.

II. Write notes on:

(8 x 5 = 40)

1. Write a note about monitors and alarms in hemodialysis machine.
2. What is disequilibrium syndrome? How will you manage it?
3. What are dialyzer reactions?
4. Explain about continuous hemofiltration, continuous hemodiafiltration, SCUF.
5. What is PET? Explain the transport characteristic of peritoneum.
6. What are the mechanical complications of peritoneal dialysis?
7. What is the daily dietary recommendation for hemodialysis and peritoneal dialysis patient for protein (g/kg), calories, carbohydrate, fat, sodium, potassium, phosphorus?
8. What are the potential indications for plasmapheresis?

III. Short answers on:

(10 x 3 = 30)

1. What is priming volume?
2. What are the complications during hemodialysis?
3. Write about three-pore model of peritoneal transport.
4. What is Tidal peritoneal dialysis?
5. What are the signs and symptoms of peritonitis?
6. What are the functions of softener in R.O. plant?
7. How to prevent interdialytic hypotension during hemodialysis?
8. What is SCUF?
9. What are the risks and complications of kidney transplant (recipient)?
10. What is the significance of thymoglobulin in renal transplantation?

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Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Mention the various modes of renal replacement therapy. Indications, advantages and disadvantages of each mode of renal replacement therapy.
2. Draw, label and explain the hemodialysis circuit.
3. Elaborate the causes of anaemia in a patient on hemodialysis and management.

II. Write notes on:

(8 x 5 = 40)

1. Adequacy of hemodialysis.
2. Peritonitis in peritoneal dialysis patient.
3. Causes of hypotension during HD.
4. Water treatment plant.
5. Hemodialfiltration.
6. Reuse of dialyzer.
7. Management of hyperkalemia.
8. Plasmapheresis.

III. Short answers on:

(10 x 3 = 30)

1. Vaccinations given in Dialysis patients.
2. Steps in hand hygiene.
3. Ultrapure water.
4. Causes of fever during dialysis.
5. Peritoneal equilibration test.
6. Techniques used to cannulate AV fistula.
7. Newer Peritoneal dialysis fluids.
8. First use syndrome.
9. Catheter related blood stream infection.
10. Indications for CRRT.

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Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Define Acute kidney injury (AKI). Classification and causes of AKI. Indications for dialysis.
2. Anticoagulation techniques in hemodialysis.
3. Approach to peritonitis in a peritoneal dialysis patient.

II. Write notes on:

(8 x 5 = 40)

1. Access recirculation.
2. Adequacy of hemodialysis.
3. Plasmapheresis.
4. Acute peritonitis in CAPD patient.
5. Adequacy of Dialysis.
6. Causes of fever in a dialysis patient and management.
7. Reuse of dialyzers.
8. Mention various Iron preparations. Complications of using iron injections.

III. Short answers on:

(10 x 3 = 30)

1. Causes of anaemia in dialysis patient.
2. Ultrafiltration failure in Peritoneal dialysis.
3. Indications for SLED.
4. Dialysis disequilibrium syndrome.
5. AV fistula cannulation techniques.
6. Complication of chronic hemodialysis.
7. Care of permanent HD catheter.
8. Causes of PD outflow failure.
9. Management of hyperkalemia.
10. Indications for CRRT.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[LR 1220]

**DECEMBER 2020
(AUGUST 2020 EXAM SESSION)**

Sub. Code: 1336

**BACHELOR IN DIALYSIS TECHNOLOGY
THIRD YEAR – (Regulation from 2014-2015)
PAPER I – DIALYSIS TECHNOLOGY
Q.P. Code: 801336**

Time: Three Hours

Answer ALL questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Define Acute Kidney Injury (AKI). Classification and causes of AKI. Indications for Dialysis.
2. Anticoagulation techniques in Haemodialysis.
3. Approach to Peritonitis in a Peritoneal Dialysis patient.

II. Write notes on:

(8 x 5 = 40)

1. Access Circulation.
2. Adequacy of Haemodialysis.
3. Plasmapheresis.
4. Acute Peritonitis in CAPD patient.
5. Adequacy of Dialysis.
6. Causes of Fever in a Dialysis patient and management.
7. Reuse of Dialyzers.
8. Mention various Iron preparations. Complications of using Iron injections.

III. Short answers on:

(10 x 3 = 30)

1. Causes of Anaemia in dialysis patient.
2. Ultrafiltration failure in Peritoneal Dialysis.
3. Indications for SLED.
4. Dialysis Disequilibrium Syndrome.
5. AV Fistula Cannulation techniques.
6. Complication of Chronic Haemodialysis.
7. Care of Permanent HD Catheter.
8. Causes of PD Outflow Failure.
9. Management of Hyperkalemia.
10. Indications for CRRT.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0122]

JANUARY 2022

Sub. Code: 1336

(FEBRUARY 2021 & AUGUST 2021 EXAM SESSION)

B.Sc. DIALYSIS TECHNOLOGY
THIRD YEAR – (Regulation from 2014-2015)
PAPER I – DIALYSIS TECHNOLOGY
Q.P. Code: 801336

Time: Three Hours

Answer ALL questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. What is RRT? Explain in detail about its types and complications.
2. A patient on peritoneal dialysis presenting to OPD with complaints of fever, abdomen pain & turbid peritoneal fluid. How will you proceed and manage the patient?
3. What are the types of vascular access for Hemodialysis patient? What is meant by CRBSI and how will you prevent CRBSI?

II. Write notes on:

(8 x 5 = 40)

1. Write a short note on Plasmapheresis and indications.
2. What is the cause of anemia in CKD patient and how will you treat anemia in CKD?
3. How to monitor Anticoagulant in hemodialysis.
4. What is PET? Different types of transporters in peritoneum.
5. Hormonal functions of kidney.
6. What is SLED? And explain its importance.
7. What is Renal Transportation? Who are all eligible to donate kidney according to HOT act.
8. Explain about infection control in dialysis and what are the Universal precautions?

III. Short answers on:

(10 x 3 = 30)

1. Dialysis reuse and its disadvantage.
2. What is Automated Peritoneal dialysis?
3. Vaccine practice in CKD patients.
4. Cannulation techniques for AVF.
5. How will you manage intradialysis hypotension?
6. What is 'Dry Weight' in hemodialysis?
7. Explain about BMD in CKD patients.
8. Explain dialysis in children.
9. Name few Non-dialyzable antihypertensive agents.
10. Explain High flux dialysis.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0922]

SEPTEMBER 2022

Sub. Code: 1336

(FEBRUARY 2022 & AUGUST 2022 EXAM SESSIONS)

B.Sc. DIALYSIS TECHNOLOGY
THIRD YEAR – (Regulation from 2014-2015)
PAPER I – DIALYSIS TECHNOLOGY
Q.P. Code: 801336

Time: Three Hours

Answer ALL questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Dialyzers types and differences.
2. Anticoagulation in Hemodialysis.
3. Water treatment – pre treatment, deionizer and reverse osmosis.

II. Write notes on:

(8 x 5 = 40)

1. Types of peritoneal dialysis.
2. Adequacy of Hemodialysis.
3. Access recirculation-diagnosis and management.
4. What is dry weight? How will you assess dry weight in a patient on dialysis?
5. Complication of Hemodialysis.
6. Biomedical waste disposal and colour coding.
7. Fistula cannulation techniques.
8. Newer PD solutions.

III. Short answers on:

(10 x 3 = 30)

1. Steps in reprocessing of Hemodialyzers.
2. Advantages of PD over HD.
3. Disposal of PD solutions in an HIV infected patients.
4. Long term complications of patients on Hemodialysis.
5. Advantages of Frequent Nocturnal Hemodialysis.
6. Name 3 conditions which require intensive Hemodialysis.
7. Erythropoietin stimulating agents.
8. Vaccinations in dialysis patients.
9. Complications of long term IV Iron therapy.
10. Monitoring of patients on dialysis.

THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY

[AHS 0423]

APRIL 2023

Sub. Code: 1336

**B.Sc. DIALYSIS TECHNOLOGY
THIRD YEAR (Regulation 2014-2015 & 2018-2019 onwards)
PAPER I – DIALYSIS TECHNOLOGY**

Q.P. Code: 801336

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(30 x 1 = 30)

1. What are the types of Vascular accesses for Hemodialysis? Give the advantages and disadvantages of Arterio-Venous Fistula versus Arterio-Venous Graft.
2. Define Continuous Renal Replacement Therapy (CRRT). What are the indications for CRRT? List the different types and the differences between them. Draw and explain the typical CRRT circuit.
3. Explain the anticoagulation techniques used in Hemodialysis.

II. Write notes on:

(8 x 5= 40)

1. Alarms in the hemodialysis circuit. What is normal venous pressure? What are the causes of high venous pressure alarms?
2. Write briefly on online haemodiafiltration.
3. Diagnosis and management of CAPD peritonitis.
4. What are the causes and consequences of hypotension during dialysis? Write briefly on the steps to manage hypotension during dialysis.
5. Write briefly on dialysis prescription in patients with AKI detailing the principles behind it.
6. Write briefly on the different types of dialyzer membranes.
7. Carbon filter in water purification.
8. First use syndrome in haemodialysis.

III. Write answer on:

(10 x 3 = 30)

1. Complications of central venous catheterization.
2. Tests for dialyzer performance after reuse.
3. Post dialysis evaluation of a patient undergoing acute hemodialysis.
4. Complications of plasmapheresis.
5. Types of AV fistula cannulation.
6. Define Hyponatremia and classify.
7. What are all the steps in dialyzer reprocessing?
8. Write about pre dialysis patient assessment.
9. What are all the possible contaminants in source water?
10. Causes of intra-dialytic hypertension.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1123]

NOVEMBER 2023

Sub. Code: 1336

B.Sc. DIALYSIS TECHNOLOGY

THIRD YEAR (Regulations 2014-2015 & 2018-2019 onwards)

PAPER I – DIALYSIS TECHNOLOGY

Q.P. Code: 801336

Time: Three Hours

Answer ALL questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Explain in detail about Non-infectious complications of CAPD.
2. What are the psychosocial problems faced by dialysis patients? Explain about the need for counselling in ESRD patients.
3. Enumerate the principles of Hemodialysis and Peritoneal Dialysis.

II. Write notes on:

(8 x 5 = 40)

1. If a patient comes in unconscious state to dialysis unit, what are the vital things to be checked? Give the normal and abnormal values of vitals to be measured.
2. Etiology of Intradialysis hypotension and hypertension and how will you manage it?
3. What is Kt/V binding? How to measure it?
4. Factors to be considered before blood transfusion and complications of blood transfusion.
5. What is Automated Peritoneal Dialysis and indications of APD over CAPD?
6. What is CRRT? Explain its uses.
7. Types of vascular access for Hemodialysis.
8. Exit Site infection in CAPD.

III. Short answers on:

(10 x 3 = 30)

1. Contraindications of Anticoagulant in dialysis patient.
2. How to manage cramps?
3. Dietary recommendations for patients in PD.
4. What are the indications for RRT?
5. Types of solution used in peritoneal dialysis.
6. What are the precautions to be taken to prevent seroconversion in hemodialysis unit?
7. Composition of dialysate.
8. Differentiate between CAPD and APD.
9. Define Plasmapheresis.
10. How to prevent peritonitis in peritoneal dialysis?
