Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 22-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

APPLIED RENAL DIALYSIS TECHNOLOGY – I (RS2)

Q.P. CODE: 2918

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Explain anticoagulation protocols. List precautions for prevention of clotting in extracorporeal blood circuit. Explain citrate anticoagulation.
2. Discuss anatomy and physiology of peritoneal dialysis.
3. List various renal replacement therapies available for renal failure patients in intensive care unit.

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. Explain metabolic complication of peritoneal dialysis.
5. Explain the procedures for dialysis withdrawal.
6. Describe in brief about types of dialyzer membranes, materials, design and flux.
7. Explain hydraulic components of hemodialysis machine with schematic representation.
8. Write a note on hemodialysis machine cleaning and disinfection protocols. Explain different chemicals used for disinfection and cleaning.
9. With the help of neat labelled diagram describe peritoneal dialysis catheters and explain the differences.
10. Long term complications of Arterio venous access.
11. Explain types of hernias in peritoneal dialysis patients and risk factors for hernia formation.
12. Explain bicarbonate based hemodialysis solution, composition, advantages and disadvantages.
13. Discuss biochemical investigations done in a patient on dialysis and its significance.
14. Causes of haemolysis. How do you identify haemolysis during HD? Explain the management of haemolysis during HD.
15. Define ultrafiltration failure in peritoneal dialysis patients and explain its management.

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

16. Describe the rule of six for AV fistula.
17. List the composition of peritoneal dialysis solution.
18. What is "Break in period'' in CAPD?
19. Define Kt/v. Write Kt/V for HD and PD.
20. Write any three advantages of high flux dialyzer.
21. What are the types of cannulation technique used for Arterio Venous Fistula and which is the best technique?
22. Define dialysis disequilibrium syndrome and mention any one cause for it.
23. Define dry weight.
24. Discuss high and low transporters in peritoneal dialysis.
25. What are the normal value of serum calcium, serum potassium and serum phosphorus?
26. List any three causes for outflow failure in peritoneal dialysis.
27. Define ultrafiltration coefficient.

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 27-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

APPLIED RENAL DIALYSIS TECHNOLOGY – II (RS2)
Q.P. CODE: 2919

Your answer should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. What is Online Hemodiafiltration? What are the difference between hemodialysis and online hemodiafiltration? What are the advantages of hemodiafiltration over hemodialysis?
2. Elaborate various extra-corporeal treatments available for management of poisoning. Explain hemoperfusion.
3. Write in detail about different modes of dialysis available for a hemodynamically unstable patient admitted in intensive care unit?

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. Indications of plasmapharesis.
5. Causes and management of Aluminium toxicity in hemodialysis patient.
6. Causes of anemia in dialysis and its management.
7. Explain indications and techniques to perform Molecular Adsorbent Recirculating System (MARS).
8. Explain technical aspects of dialysis in infants and children.
9. Explain Daily hemodialysis.
10. Automated peritoneal dialysis modalities.
11. Complications of plasmapharesis.
12. Infection control practice in dialysis, explain dialysis of HBsAg positive patient.
13. Discuss about Bone disease in dialysis patients.
14. Explain bacterial infections in dialysis patients.
15. Explain few water contaminants which can be harmful to dialysis patients.

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

16. How to prevent bacterial contaminations in dialysis water?
17. Explain the function of carbon filter in water treatment plant.
18. Monitoring and maintenance of sand filter in water treatment plant.
19. How to calculate plasma volume for plasmapheresis?
20. Molecular weight of Albumin and Normal value.
21. Water contaminants causes anemia in dialysis patients.
22. Name some chemical substances which are used for disinfection during dialyser reuse?
23. What methods are used for disinfection of RO water distribution system?
24. Advantages of dialyzer reuse.
25. Replacement fluids used during plasmapheresis.
26. What is the function of softener in water treatment plant?
27. Maximum allowed limit of endotoxin and bacterial count in ultrapure dialysis solution as per AAMI standards.

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 27-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

Applied Dialysis Technology – Paper -II (RS-3)

Q.P. CODE: 3306

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

LONG ESSAYS (Question No.2 Choice) **2 x 10 = 20 Marks**

1. Explain common complications of hemodialysis and its management.
2. Define plasmapheresis. Explain centrifugal plasma separation technique and associated complications.

   OR

   Discuss nutritional assessment and dietary recommendations in renal failure patients.

SHORT ESSAYS (Question No.5 & 10 choice) **10 x 5 = 50 Marks**

3. Discuss pre-treatment components of water treatment plant.
4. Define online HDF. List apparatus and explain advantages of online hemodiafiltration.
5. Describe vascular access options for paediatric hemodialysis. Explain best vascular access for paediatric patients.

   OR

   Discuss dialysis in patients with congestive heart failure.
6. Explain MARS.
7. Discuss iron therapy for the management of renal anaemia.
8. Define haemolysis. How do you identify haemolysis during HD? Explain management of haemolysis during HD.
9. Describe nocturnal hemodialysis.
10. Discuss dialysis in failed transplant.

    OR

    Explain SCUF and CVVHF.
11. What is dialysis disequilibrium and its prevention.
12. Write a note on renal transplant (Broad outline).

SHORT ANSWER (Question No. 15 & 20 choice) **10 x 3 = 30 Marks**

13. List three causes of malnutrition in hemodialysis patients.
14. Explain isolated UF.
15. What do you mean by restless leg syndrome?

    OR

    Define telemedicine. List its two uses in dialysis practice.
16. Write causes of seizures in dialysis patients.
17. List three drug removed by hemoperfusion.
18. Explain ultrafiltration in CAPD patient.
19. List three effects of aluminium toxicity.
20. **List two reasons for hypotension during plasmapheresis and its management**

    OR

    List steps in management of hyperkalemia.
21. Define ostetis fibrossa and osteomalacia.
22. What is sodium modeling in hemodialysis?

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 27-Oct-2025

Time: Three Hours **Max. Marks: 100 Marks**

APPLIED RENAL DIALYSIS TECHNOLOGY – I (RS2)
Q.P. CODE: 2918

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. What are the acute and long-term complications of hemodialysis? How do you manage muscle cramps during hemodialysis?
2. What is dialysis adequacy? How do you assess hemodialysis, peritoneal dialysis and CRRT adequacy?
3. Mention all types of vascular access for hemodialysis. Explain access recirculation and method to assess recirculation.

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. Principles of peritoneal dialysis.
5. Explain the history of dialysis.
6. Role of air detector in dialysis machine. How to prevent and manage air embolism?
7. Long term complications of arterio venous access.
8. Anticoagulants used during hemodialysis.
9. Explain different treatment modalities available in APD machines.
10. Explain about Peritoneal equilibration test.
11. What are the difference between ladder techniques?
12. Explain the structure of dialyser and interpret the dialyser specifications.
13. Mechanical complications of peritoneal dialysis.
14. Peritonitis in PD patients, pathogenesis, diagnosis and management.
15. Metabolic complications of peritoneal dialysis.

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

16. Indications of sodium modeling.
17. Name some central venous catheter lock preparations.
18. Uses of amino acid containing peritoneal dialysis fluid.
19. What is "rule of six"?
20. Common sites for construction of arteriovenous fistula with diagram.
21. Molecular weight of urea, Vitamin B_{12} and β_2-Microglobulin.
22. Dialysis solution composition.
23. What are the signs of infected arteriovenous fistula?
24. Contraindications for peritoneal dialysis.
25. Advantages of Icodextrin.
26. Immediate Complications of central venous double lumen catheter insertion.
27. Advantages of Sequential ultrafiltration.

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 29-Oct-2025

Time: Three Hours **Max. Marks: 100 Mark**

APPLIED RENAL DIALYSIS TECHNOLOGY – II (RS2)
Q.P. CODE: 2919

Your answer should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Explain various psychosocial issues in patients undergoing renal replacement therapies.
2. Explain water treatment system used for hemodialysis. Illustrate with diagram.
3. Explain infections that occur in a patient undergoing hemodialysis and peritoneal dialysis.

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. With the help of schematic representation explain peritoneal dialysis regimens.
5. Explain online hemodiafiltration and technical requirements for online hemodiafiltration.
6. Describe vascular access options for paediatric hemodialysis. Explain best vascular access for paediatric patients.
7. Discuss cardiovascular issues in dialysis patients.
8. Explain MARS.
9. Write a note on replacement fluids used in plasmapheresis.
10. Discuss manual reprocessing steps.
11. Describe nocturnal hemodialysis.
12. Discuss dialysis in post transplant patients with acute failure.
13. Causes of anemia in dialysis patients and its management.
14. Discuss the uses of telemedicine in dialysis practice.
15. Discuss pathophysiology of bone disease in renal failure patients and add a note on Osteitis Fibrosa.

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

16. List three causes of malnutrition in hemodialysis patients.
17. Write a note on isolated ultrafiltration.
18. Describe restless leg syndrome.
19. Explain three disadvantages of dialyzer reprocessing.
20. Mention three indications for continuous renal replacement therapy.
21. List three drugs removed by hemoperfusion.
22. How to calculate blood volume in infants and children?
23. List three complications of aluminium toxicity.
24. Causes for hypotension during plasmapheresis and its management.
25. List three causes of hyperkalemia in patients on maintenance hemodialysis.
26. Define Osteomalacia.
27. Difference between pre-dilution and post-dilution in CRRT.

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 27-Oct-2025

Time: Three Hours **Max. Marks: 100 Marks**

APPLIED DIALYSIS TECHNOLOGY – PAPER I (RS-3)
Q.P. CODE: 3305

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

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Discuss the indication and advantages of CAPD and mention the organism causing peritonitis and treatment of peritonitis
2. Describe haemodialysis apparatus in detail

   OR

   What are the various types of haemodialysis access? Write their advantages and disadvantages

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Criteria for dialysis withdrawal
4. Explain Automatic Peritoneal Dialysis (APD).
5. Adequacy of HD

   OR

   What is Peritoneal Equilibrium Test (PET) and why it is done?
6. Name few cause of death in dialysis patient
7. What nutritional parameters do you monitor in HD patients?
8. Describe advantages and steps involved in dialyser reuse
9. Types of Ultra Filtration Failure (UFF) in PD patients and its management
10. Physiology of peritoneal dialysis

    OR

    KoA and Kuf in artificial kidney
11. Reason for underperform of haemodialysis session and how to measure it
12. Citrate dialysis

SHORT ANSWER (Question No. 15 & 20 choice) **10 x 3 = 30 Marks**

13. Non-renal indications of dialysis
14. What is sequential dialysis?
15. Steal syndrome

    OR

    Sodium profiling
16. Explain chemical disinfection of haemodialysis machine
17. What is Argatroban?
18. First use syndrome
19. Mention the complications of heparin
20. Icodextrin based dialysate in CAPD

    OR

    Composition of Renalin
21. What is retrograde and antegrade in dialysis?
22. Cardiopulmonary recirculation

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 29-Oct-2025

Time: Three Hours **Max. Marks: 100 Marks**

Applied Dialysis Technology – Paper -II (RS-3)

Q.P. CODE: 3306

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

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. What precautions to be taken in haemodialysing HBsAg positive patient. How do you prevent hepatitis B and C infection in HD unit?

2. Indications of plasmapheresis and write the prescription for same
   OR
   Discuss in detail anemia in dialysis patient with causes, investigations and treatment

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Briefly mention about venous anticoagulant used in HD
4. List water treatment modalities in HD
5. Enumerate HDF and what are the disadvantages of HDF?
   OR
   Choice of therapy for poisoning
6. Explain sorbent dialysis technology
7. Elaborate CRRT with diagram
8. Describe MARS techniques and prescription
9. Explain infant dialysis
10. The role of telemedicine in dialysis
    OR
    Write about physiology of peritoneal membrane
11. Kindly write complication during breaking procedure in CAPD
12. Common psychosocial problem in dialysis patient

SHORT ANSWER (Question No. 15 & 20 choice) **10 x 3 = 30 Marks**

13. Write chemical analysis performed in water treatment plant
14. Mention three problems in doing HD in children
15. What is brown tumor in CKD patients?
    OR
    Explain SCUF with its one main advantage
16. Mention schedule for hepatitis B vaccination
17. Drugs used in management of hyperparathyroidism
18. Causes of hypoglycemia in dialysis patients
19. Use of deionization in water purification
20. Diet modification in renal dialysis patients
    OR
    Phosphate binders used in HD patients
21. **List the modalities of CRRT**
22. Explain peritoneal equilibrium test in CAPD

RGUHS THEORY EXAMINATION OCTOBER-2025

NODAL CENTRE:CAUVERY INSTITUTE OF HEALTH SCIENCES, MYSORE

Date: 29-10-2025 **Session: Morning**

CORRECTIONS

Subject:Applied Dialysis Technology-Paper-II **QP Code:3306**

Q. No	QUESTION Appeared As	QUESTION CORRECTED As	REASON FOR CORRECTIONS
21	Explain hard water syndrome.	List the modalities of CRRT	Out of Syllabus