Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 16-May-2023

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 in detail peritonitis, causes, management and prevention in peritoneal dialysis (PD) patients.
2. Explain common complications during dialysis, its causes, management and preventions.
3. Describe the Long-term complications of Veno-venous access, with emphasis on infections and its management and prevention.

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

4. Exit site tunnel infections in PD patients
5. Management of Ultrafiltration failure (UFF) in peritoneal dialysis patients
6. Sequential ultrafiltration, advantages and indications
7. Describe Automated Peritoneal Dialysis (APD) and various treatment modalities available in APD.
8. Mechanical complications of peritoneal dialysis
9. Explain the factors affecting clearance in peritoneal dialysis.
10. Compare button-hole and ladder techniques, advantages and disadvantages
11. Adequacy of Hemodialysis
12. Briefly explain the history of dialysis.
13. Explain hydraulic system in dialysis machine with diagram, use of volumetric ultrafiltration controller in Haemodialysis machine.
14. What are the different types of Catheter locks available and its advantages and disadvantages?
15. Physiology of peritoneal transport

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

16. Define ultra-filtration coefficient.
17. Define transmembrane pressure.
18. Dialyser clearance
19. Blood leak detector-how does it work?
20. Describe conductivity in dialysis machine and use of conductivity monitors.
21. Allen test
22. Equilibrated Kt/V
23. List immediate complications of central venous catheterization.
24. Predisposing factors which increase the incidence of AV access thrombosis
25. Guidelines to obtain post serum urea nitrogen sample
26. Causes of itching in CRF patients
27. What is Low molecular weight heparin and write three examples?

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 18-May-2023

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. Define hypertension. Write the causes, management and prevention of hypertension in CKD patients
2. Write in detail about plasmapheresis
3. Write in detail about phosphorus binders

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

4. What are the biochemical investigations used in dialysis patients?
5. Explain the indications, advantage and treatment prescriptions of SLED
6. What are the infection control protocol used in a dialysis unit?
7. Clinical benefits of online HDF compare to haemodialysis
8. What are the advantages and disadvantages of nocturnal dialysis?
9. Write about water softener, used in water pretreatment system
10. Explain different treatment modalities in peritoneal dialysis
11. Depression in dialysis patients
12. What are the indications for dialysis in children? Explain treatment modalities.
13. Explain different treatment modalities in CRRT
14. Management for patient with barbiturate poisoning
15. Write about water distribution system, type of disinfection methods and its frequency?

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

16. What is osteomalacia?
17. Foods contain high phosphorus
18. Role of telemedicine in dialysis practice
19. What are the causes for malnutrition in dialysis patients?
20. What is residual renal function?
21. Use of protamine sulphate
22. What is high efficiency dialysis?
23. What is Empty Bed contact Time (EBCT)?
24. Write two examples of low volume dialyzers used for pediatric patients
25. What is biocompatibility?
26. Name the toxins removed by MARS therapy
27. AAMI standards for bacteria and endotoxin levels in the water for dialysis

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 16-May-2023

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

1. With the help of schematic representation describe peritoneal dialysis modalities.
2. Explain any four common intradialytic complications with causes and management.
   OR
   Mention various vascular access used for hemodialysis. Write in detail about venous catheter access. Enumerate the commonly encountered complications of arterio venous graft.

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

3. Discuss regional anticoagulation.
4. Describe vaccination in hemodialysis patients.
5. Discuss factors affecting diffusion and ultrafiltration in hemodialysis.
   OR
   Enumerate and describe various safety alarms related to blood and dialysate circuit.
6. Write chronic hemodialysis prescription.
7. Explain composition of peritoneal dialysis solution.
8. What are the common laboratory tests done in hemodialysis patients?
9. Explain peritoneal equilibration test.
10. Discuss metabolic complications of peritoneal dialysis.
    OR
    List ten different between hemodialysis and peritoneal dialysis.
11. Define dialyzer reprocessing and explain advantages and disadvantages of reprocessing.
12. Write briefly on long term complications of hemodialysis.

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

13. What is sequential dialysis?
14. Define isolated ultrafiltration.
15. List three signs of dialyzer clotting.
    OR
    Name three organisms causing peritonitis.
16. List any three causes for chills during dialysis.
17. Give three examples for biocompatible membrane.
18. List any three causes of air embolism in hemodialysis patients.
19. List chemicals used in dialyzer reprocessing area.
20. Define solvent drag.
    OR
    Differentiate AV fistula from AV Graft.
21. List any three causes for outflow failure in peritoneal dialysis.
22. Explain three pore model.

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 18-May-2023

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. Describe water treatment plant. Illustrate with diagram.
2. Discuss in brief any three infections that occur in a patient undergoing hemodialysis.
   OR
   Define CRRT? Enumerate the various CRRT therapies and its advantages and disadvantages.

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

3. With the help of neat labelled diagram explain the procedure of hemoperfusion.
4. Discuss prescription for online hemodiafiltration.
5. Describe dialyzer and blood lines for paediatric dialysis.
   OR
   Explain MARS.
6. Discuss membrane plasma separation.
7. Discuss bone disease in dialysis patients.
8. Define home hemodialysis. Explain different types of the same.
9. Explain principle of sorbent dialysis.
10. Write hemodialysis prescription for a pregnant woman.
    OR
    Discuss diet recommendations for patients undergoing hemodialysis.
11. Write a note on erythropoietin stimulating agents.
12. Explain physiologies of peritoneal membrane.

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

13. Name three common causes of anaemia in hemodialysis.
14. Define haemolysis and write management of it during hemodialysis.
15. List three phosphate binders.
    OR
    List three antihypertensive drugs given in dialysis patients.
16. Explain anemia in renal failure patients.
17. Advantages of telemedicine in dialysis practice.
18. What are the water contaminants causing haemolysis in dialysis patients?
19. Mention maximum allowed range of bacteria and endotoxin in dialysis water according to AAMI standards.
20. List three drugs used during cardiac arrest.
    OR
    Write haemodialysis prescription for uremic pericarditis.
21. What is filtration fraction in CRRT?
22. Write treatment of hyperkalemia in CKD patients.

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 24-Nov-2023

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 principles of dialysis, factors affecting clearance and elaborate Urea Kinetic modeling.
2. Explain about complications of Arterio-Venous (AV) access, with focus on different access surveillance techniques to assess recirculations.
3. Metabolic complications of peritoneal dialysis (PD)

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

4. Describe briefly about dialysis fluid circuit with diagram and safety features incorporated in dialysis machines.
5. Physical examination of AV fistula and graft
6. **Regional Citrate anticoagulation**
7. Briefly explain the history of dialysis.
8. Heparin associated complications
9. Mechanical complications of peritoneal dialysis
10. Type of ultrafiltration failure and management in PD patient
11. Peritoneal dialysis modalities in acute kidney injury
12. Explain about non-glucose containing PD solutions and it advantages and disadvantages.
13. Tidal peritoneal dialysis and its advantages and disadvantages
14. Explain factors affecting ultra filtration in peritoneal dialysis.
15. Explain long term complications of veno-venous access.

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

16. List immediate complications of central venous catheterization.
17. Content of PD fluid
18. CAPD
19. PD catheter break-in period
20. Define ultra filtration co-efficient.
21. Define K_0A.
22. Difference between low flux, high efficiency and high flux dialysers
23. Potential AV graft locations
24. Indications for tunneled dialysis catheters
25. What are the risks during removal of temporary catheter and how to prevent?
26. Steal syndrome
27. Oncotic pressure

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 27-Nov-2023

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. Define hypertension? Write the causes, management and prevention of hypertension in CKD patients
2. What is anemia? Write in detail about iron deficiency anemia in CKD patients and its management
3. Write in detail about Dialyzer reuse and clinical concerns related to dialyzer reuse.

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

4. What are the side effects of ESA therapy?
5. MARS
6. Explain about indications and different techniques used in plasmapheresis
7. What are the indications for dialysis in children? Explain about different treatment modalities in children.
8. Write about biomedical waste management in dialysis unit
9. Write about biochemical investigations involved in dialysis patients
10. Write about care for HBV patients in dialysis unit
11. What are pretreatment systems used in water purification system for dialysis, and its daily monitoring?
12. Explain about phosphate binders
13. Explain about CVVHDF with diagram and Write a sample prescription for CVVHDF.
14. Psychological issues faced by ESRD patients
15. Explain in details about Online HDF

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

16. AAMI standards for bacteria and endotoxin in the water for dialysis
17. Indications for CRRT
18. Maximum allowed chlorine and chloramine in the water for dialysis
19. Causes of anemia in CKD patients
20. Universal precautions
21. What is SCUF? What are the indications.
22. How to estimate plasma volume for plasmapheresis.
23. Use of Telemedicine in dialysis therapy
24. Trisodium citrate and its uses
25. Osteoporosis
26. Molecular weight of albumin, IgG and IgM
27. Write examples of two low volume dialyzer used for pediatric patients

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 24-Nov-2023

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 types of heparinisation in dialysis. Add a note on heparin-free dialysis
2. Discuss transport mechanism in haemodialysis and peritoneal dialysis
   OR
   Give a detailed note on apparatus of peritoneal dialysis

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

3. Explain hollow fiber dialyzer with their technical and clinical consideration
4. Venovenous HD access – types, design and insertion location
5. Compare the true and false aneurysm of AV fistula
   OR
   Write different types of vascular access and illustrate possible locations for the same
6. Regional anticoagulation in HD
7. Analyse monitoring devices and safety alarms of HD machine
8. Interpret final dialysis solution composition
9. Explain medical complications during HD
10. Elaborate URR and Kt/V
    OR
    What is Ultrafiltration failure (UFF) and how to diagnose UFF?
11. Summarise the acute and chronic catheters of PD with diagram
12. Explain exit site and tunnel infection

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

13. Write metabolic complications of peritoneal dialysis
14. Indications for PD during acute renal failure
15. Assessment of AV fistula for first cannulation
    OR
    Write different types of catheter locks
16. Protamine sulphate use in haemodialysis unit
17. Note on single needle devices
18. Modalities of chronic PD
19. Define relapsing, recurrent and repeat periotonitis
20. Scribner's shunt
    OR
    Rule of sixes
21. Dwell time in how average transporters and high average transporters
22. How to find out iron saturation in dialysis patient?

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Renal Dialysis Technology Degree Examination – 18-May-2023

Time: Three Hours | Max. Marks: 100 Marks

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

Q.P. CODE: 3306

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Draw neat labeled diagrams wherever necessary

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

1. Describe water treatment plant. Illustrate with diagram.
2. Discuss in brief any three infections that occur in a patient undergoing hemodialysis.
   OR
   Define CRRT? Enumerate the various CRRT therapies and its advantages and disadvantages.

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

3. With the help of neat labelled diagram explain the procedure of hemoperfusion.
4. Discuss prescription for online hemodiafiltration.
5. Describe dialyzer and blood lines for paediatric dialysis.
   OR
   Explain MARS.
6. Discuss membrane plasma separation.
7. Discuss bone disease in dialysis patients.
8. Define home hemodialysis. Explain different types of the same.
9. Explain principle of sorbent dialysis.
10. Write hemodialysis prescription for a pregnant woman.
    OR
    Discuss diet recommendations for patients undergoing hemodialysis.
11. Write a note on erythropoietin stimulating agents.
12. Explain physiologies of peritoneal membrane.

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

13. Name three common causes of anaemia in hemodialysis.
14. Define haemolysis and write management of it during hemodialysis.
15. List three phosphate binders.
    OR
    List three antihypertensive drugs given in dialysis patients.
16. Explain anemia in renal failure patients.
17. Advantages of telemedicine in dialysis practice.
18. What are the water contaminants causing haemolysis in dialysis patients?
19. Mention maximum allowed range of bacteria and endotoxin in dialysis water according to AAMI standards.
20. List three drugs used during cardiac arrest.
    OR
    Write haemodialysis prescription for uremic pericarditis.
21. What is filtration fraction in CRRT?
22. Write treatment of hyperkalemia in CKD patients.

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