

SECTION A

PART I: Multiple Choice Questions [30 marks]

Choose the correct answer and write down the letter of your chosen answer in the Answer Booklet against the question number e.g. 31 (d). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. What must happen for the following alarms: machine conductivity, dialysate temperature, and UF check to pass your safety check?
 - a) It must be within the manufacturer's limits
 - b) It must stop the blood pump, clamp the venous line, and the alarms must work
 - c) It must be within your clinic's limits
 - d) It must go into bypass mode and be within the limits set by your clinic

2. What must your clinic be sure that local power and water companies always know?
 - a) How much power wattage or water the clinic uses
 - b) How many staff and patients to expect on each shift
 - c) Where the clinic is, what dialysis is, whom to contact
 - d) The next service date for the water treatment system

3. What is the main benefit of "clamp and cut" for disconnecting from a dialysis machine quickly?
 - a) It can be done with one hand
 - b) It requires a disinfected scissors
 - c) It is risk-free and anyone can do it
 - d) Patients with dementia will not try it

4. Which of the following symptoms have been linked to disaster-related stress?
 - a) Mood swings, headaches, stomach upset, changes to vision and hearing
 - b) Oversharing with others around you, delusions of grandeur, hair loss
 - c) Itchy skin rash, pins and needles sensations, unquenchable thirst
 - d) Muscle aches, joint instability, bone pain, apthous ulcers in the mouth

5. In peritoneal dialysis, what is "dwell time"?
 - a) How long the fresh PD fluid stays in the patient's belly before it is drained out
 - b) How long it takes for PD fluid to drain out of the patient's belly
 - c) How long it takes for PD fluid to drain into the patient's belly
 - d) How long it takes for PD fluid to be warmed enough to use for PD

6. Which hormone is secreted by kidney?
 - a) Renin
 - b) Aldosterone
 - c) Thyroxine
 - d) Growth Hormone

7. Most common cause of chronic kidney disease is:
 - a) Diabetes mellitus
 - b) Hypertension
 - c) ADPKD
 - d) Glomerulonephropathy

8. Gold standard method of Glomerular Filtration Rate (GFR) estimation is:
 - a) Creatinine clearance
 - b) Inulin clearance
 - c) PAH clearance
 - d) Urea clearance

9. Type A reaction usually occurs after _____ of dialysis initiation.
 - a) 5-20 minutes
 - b) 1 hour
 - c) 2 hours
 - d) 4 hours

10. First use reaction of dialysis occurs due to:
 - a) Ethylene Oxide (ETO)
 - b) Formaldehyde
 - c) Glutaraldehyde
 - d) Renalin

11. What is AAMI standard for dialysis water treatment for microorganisms (CFU/ml) and Endotoxins (EU/ml)?
 - a) < 200CFU & 2 EU/ml
 - b) < 300CFU & 3 EU/ml
 - c) < 400CFU & 4 EU/ml
 - d) < 500CFU & 5 EU/ml

12. What is maximum urea reduction ratio (URR) required during haemodialysis?
 - a) 65-70%
 - b) 35-40%
 - c) 80-85%
 - d) 50-55%

13. Which of the following is middle molecular weight uremic solute?
 - a) Hippuric acid
 - b) Creatinine
 - c) Microglobulin
 - d) Guanidine

14. Which of the following is continuous dialysis modality?
 - a) CVVHF
 - b) CVVHD
 - c) CVVHDF
 - d) All of the above

15. What is various glucose concentration in PD solution?
 - a) 1.5%
 - b) 2.5%
 - c) 4.5%
 - d) All of the above

16. Most common organism for exit site Infection for CAPD is:
- Streptococcus
 - E. Coli
 - taphylococcus aureus
 - Kiebsieila
17. Diagnostic criteria for CAPD peritonitis in PD fluids:
- >100WBC/mm²
 - >200WBC/mm²
 - >300WBC/mm²
 - >400WBC/mm²
18. Common organism involved in CAPD peritonitis in PD fluids
- Gram positive
 - Gram negative
 - Both
 - None of the above
19. Transport along peritoneum during peritonitis:
- Increases
 - Decreases
 - Unchanged
 - Increases then decreases
20. Ultrafiltration failure is defined as ultrafiltrate volume with 4.5% Glucose:
- < 400 ml
 - < 300 ml
 - < 200 ml
 - < 100 ml
21. Which of the following is the most common renal stone?
- Calcium phosphate stone
 - Calcium oxalate stone
 - Triple (calcium, ammonium, phosphate) stone
 - Uric acid/urate stone
22. Which diuretic work on loop on henle?
- Thiazide
 - Spironolactone
 - Furosemide
 - Bumetanide
23. Which one is **TRUE** for renal function?
- Maintain RBC production
 - Maintain Bone turnover
 - Maintain blood pressure
 - All of the above

24. Which of the following are true in relation to an adult with nephrotic syndrome?
- A renal biopsy is mandatory.
 - Their protein intake should be restricted.
 - A low - potassium diet would be useful.
 - Diuretics will not be effective in managing oedema.
25. Which of the following bacteria is the most common cause of UTI encountered in general practice?
- Klebsiella
 - Enterobacter
 - Enterococcus
 - E. coli
26. Which of the following are secondary causes of hypertension?
- Cushing ' s disease
 - Renal artery stenosis
 - Phaeochromocytoma
 - All of the above
27. An 18-year-old girl is admitted with a suspected salicylate overdose.
Her bloods are as follows:
Na⁺136 mmol/L, K⁺ 5.0 mmol/L, Urea 10.3 mmol/L,
Creatinine 118 µmol/L, Cl⁻ 102mmol/L
ABG: pH 7.10 (7.35 –7.45), pO₂ 19.6 kPa (8 –12), pCO₂- 3.6 kPa (4 –6),
HCO₃⁻ 12mmol/L (22 –28).
What is the anion gap?
- 12
 - 18
 - 27
 - 29
28. What consists of Juxtaglomerular apparatus?
- Granular cells
 - Extra glomerular Mesangium
 - Macula densa
 - All of the above
29. Which one is **TRUE** for AKI definition?
- Increase in S. Cr by 1.5 – 1.9 times of baseline
 - Increase in S. Cr by 0.3 micro mol/L
 - Urine output < 0.5 ml in 6 hr
 - All of the above
30. Which is the principle buffer system works on kidney?
- Bicarbonate Buffer system
 - Protein Buffer system
 - Phosphate Buffer System
 - All of the above

PART II – Short Answer Questions [20 marks]

This part has 4 Short Answer Questions. Answer ALL the questions. Each question carries 5 marks.

1. Define the following:
 - a) dialysis,
 - b) ultrafiltration
 - c) reverse osmosis
 - d) diffusion
 - e) dialyser
2. Draw and label a Hemodiafiltration circuit.
3. Mention ten potential water contaminants with their toxic effects during haemodialysis.
4. What is bioimpedance spectroscopy (BIS)? Describe the working principle of BIS.

SECTION B: Case Study [50 marks]

Choose either CASE I OR CASE II from this section. Each case study carries 50 marks. Mark for each sub-question is indicated in the brackets.

CASE I

40 year-old-patient recently started twice weekly Haemodialysis for ESRD through AVF. He attended ER two times for sever breathlessness, interdialytic weight gain of 5 kg, nausea. He has also intradialytic hypotension frequently. Today on pre dialysis you are meeting the patient in dialysis centre:

1. What history you will ask and clinical assessment you will do for this patients? (10 marks)
2. What are the options you can use in dialysis machine to prevent intradialytic hypotension? (5 marks)
3. Mention the measures to achieve his “dry weight”. (5 marks)
4. How you will assess nutritional status of haemodialysis patients? (5 marks)
5. Briefly describe renal diet. (10 marks)
6. What is access recirculation? How to prevent this? (5 marks)
7. Briefly describe the examination method of vascular access (AVF) before haemodialysis with interpretations. (10 marks)

CASE II

A 60-year-old diabetic, hypertensive, congestive heart failure patient is on continuous ambulatory peritoneal dialysis (CAPD) for last 2 years. Recently he is complaining of cloudy and less effluent, dwelling pain with decrease appetite.

1. Mention advantages of CAPD over HD for this patient. (5 marks)
2. What are the common complications of CAPD? (5 marks)
3. Enumerate different types of CAPD? (5 marks)
4. Mention the Diagnostic criteria of CAPD peritonitis? (5 marks)
5. How you will collect Effluent for microbiology tests. (5 marks)
6. Briefly describe peritoneal equilibration test (PET). (10 marks)
7. What is dialysis adequacy? Mention factors responsible for dialysis adequacy. (5 marks)
8. How will you measure 'dialysis adequacy' in CAPD patients? (10 marks)

TASHI DELEK