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 notes on:

1. a) Structure of glomerular basement membrane.  
b) Juxta glomerular apparatus.  

2. a) Tubulo-glomerular feedback.  
b) Pharmacological influences on renal haemodynamics.  

3. a) Counter current mechanisms.  
b) Carbonic anhydrase and kidney.  

4. a) Enumerate the markers for measuring glomerular filtration rate (GFR).  
b) Mention the limitations of serum creatinine as a marker of GFR.  
c) Mention the estimated GFR equations & bring out their limitations.  

5. a) Enumerate the various transport proteins present in the renal tubules.  
b) Mention the diseases associated with genetic mutation in these transport proteins.  

6. Role of urinalysis in the diagnosis of various renal disorders.  

7. a) Diagnostic approach to a patient with hypernatremia.  
b) Outline approach to correction of hypernatremia.  

8. a) Transtubular Potassium Gradients.  
b) Urinary anion gap.  
c) Mixed acid base disorders with two examples.  

9. a) T Cell activation in renal transplant.  
b) MHC class I and class II molecules.  

10. a) Membrane biocompatibility.  
b) Ultra pure water for dialysis.  
c) Peritoneal equilibration test and its utility.