2015
BIOCHEMISTRY
Paper – BCT – 402
(Clinical Biochemistry)
Full Marks – 25

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

1.  (a)  If the clearance for a drug is "CL" and the rate of infusion is R₀, what is Cₜₜ and Qₜₜ?  
(b)  If R₀ for a drug is 900 mg/h and T₁₂ is 0.9h what is Qₜₜ for the drug?  
If infusion is stopped when Qₜₜ is reached, how long would it take for the drug to reach 10% of Qₜₜ assuming that the drug follows first order exponential kinetics?  

Or

2.  (a)  Derive the quantity of a drug (Qₙ) in the system after N doses, assuming that the drug follows first order exponential kinetics?  
(b)  A drug has a T₁/₂ of 4 hours and is given i.v. at 200 mg every 12 hours.  
Calculate Cₜₜ (max. and min.) given that Vₖ = 40L.  

3.  A clinical Biochemistry report states as follows:  
   (i)  Age of the patient 65 yrs. (F)  
   (ii)  Serum Ca²⁺ concn → 7 mg/dL  
   (iii)  Serum PO₄³⁻ concn → 1.6 mg/dL  
   (iv)  Serum ALP activity → 580 U/L.  
From the above mentioned report can you conclude any diagnosis from clinical biochemistry end.  
   (a)  What could be the probable diagnosis?  
   (b)  Justify your answer mentioning reference range of the above mentioned markers and the reasons.  
   (c)  How would you find out reference range of blood sugar in your lab?  
   (d)  What is the reference range of fastig blood sugar and p.p. blood sugar?  
Do they depend on the method of estimation?

[Turn Over]
4. (i) How is bilirubin circulated in blood?  
(ii) Why is bilirubin nurotoxic?  
(iii) How is cholesterol transported in blood?  
(iv) What is Renal Threshold of human for glucose?  
(v) Apart from glucose estimation in blood what other parameter could be of predictive value in diabetes and why?