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 R_0 what is C_{ss} and Q_{ss}?

(b) If R_0 for a drug is 900 mg/h and $T_{\frac{1}{2}}$ is 0.9h what is Q_{ss} for the drug? If infusion is stopped when Q_{ss} is reached, how long would it take for the drug to reach 10% of Q_{ss} assuming that the drug follows first order exponential kinetics? $6+6\frac{1}{2}$

Or

2. *(a)* Derive the quantity of a drug (Q_N) in the system after N doses, assuming that the drug follows first order exponential kinetics?

(b) A drug has a $T_{\frac{1}{2}}$ of 4 hours and is given i.v. at 200 mg every 12 hours. Calculate C_{ss} (max. and min.) given that $V_D = 40L$. $6+6\frac{1}{2}$

3. A clinical Biochemistry report states as follows :

(i) Age of the patient 65 yrs. (F)

(ii) Serum Ca^{2+} concn $\rightarrow$ 7 mg/dL

(iii) Serum PO_4^{3-} concn $\rightarrow$ 1.6 mg/dL

(iv) Serum ALP activity $\rightarrow$ 580 U / L .

From the above mentioned report can you conclude any diagnosis from clinical biochemistry end.

(a) What could be the probable diagnosis? $1\frac{1}{2}$

(b) Justify your answer mentioning reference range of the above mentioned markers and the reasons. $1\frac{1}{2}+3\frac{1}{2}$

(c) How would you find out reference range of blood sugar in your lab? 3

(d) What is the reference range of fastig blood sugar and p.p. blood sugar? Do they depend on the method of estimation? 2+1

Or

4. *(i)* How is bilirubin circulated in blood? $2\frac{1}{2}$

(ii) Why is bilirubin nurotoxic? $2\frac{1}{2}$

(iii) How is cholesterol transported in blood? $2\frac{1}{2}$

(iv) What is Renal Threshold of human for glucose? 1

(v) Apart from glucose estimation in blood what other parameter could be of predictive value in diabetes and why? 1+3