

**UNIVERSITY OF JAFFNA, SRI LANKA**  
**BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES**  
**FIRST YEAR SECOND SEMESTER EXAMINATION- FEBRUARY, 2014**

**MLSCB 1206 CLINICAL BIOCHEMISTRY**

**PART II**

**Date: 07.03.2014**

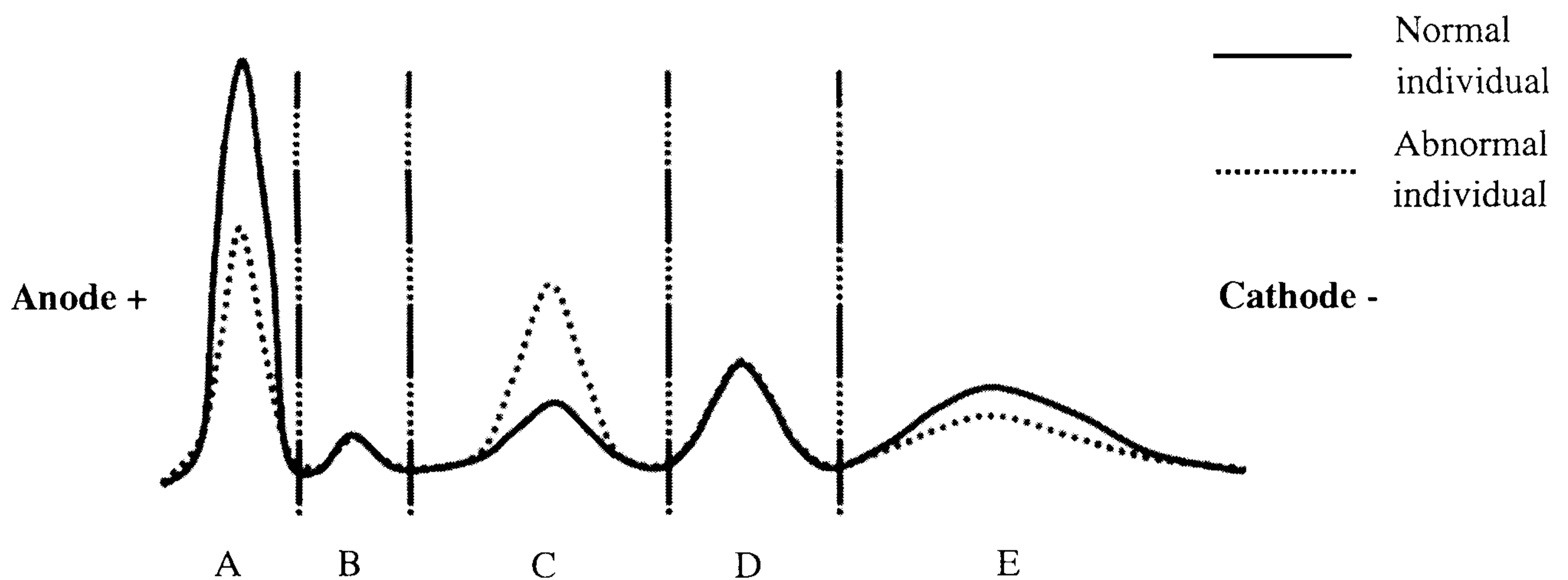
**Time: 2 hours**

**ANSWER ALL EIGHT QUESTIONS.**

1. 1.1 Give the characteristic properties of the buffer solution. **(15 Marks)**
  - 1.2 1.2.1 Give five types of additives which are used in buffer solutions with examples. **(25 Marks)**
    - 1.2.2 Give the functions of each additives you have mentioned above. **(30 Marks)**
  - 1.2 Explain how contamination of buffer solution can be prevented. **(30 Marks)**
  
2. 2.1 Explain the precautions and important procedures in urinalysis by using 'Urine strip'. **(50 Marks)**
  - 2.2 Briefly explain the biochemical principles of the measurements of following urine strip parameters.
    - 2.2.1 Glucose. **(25 Marks)**
    - 2.2.2 Urobilinogen. **(25 Marks)**
  
3. 3.1 List 5 causes for cholestasis. **(20Marks)**
  - 3.2 Explain the biochemical alterations that could take place due to cholestasis. **(50 Marks)**
  - 3.3 Write short notes on 'Blood Urea Nitrogen (BUN) test'. **(30 Marks)**

4. 4.1 List 5 common indications for 'lumba puncture'. (20 marks)
- 4.2 List the important protocols you would consider when receiving CSF sample. (20 Marks)
- 4.3 Give the "CSF full report" of normal individual (25 marks)
- 4.4 How would you differentiate the CSF full report of viral meningitis from TB meningitis. (35marks)

5. 5.1 Give the principles of electrophoresis (20 Marks)
- 5.2 Explain how would you prepare the serum for electrophoresis. (30 Marks)
- 5.3. Serum of a patient was sent to the laboratory for Electrophoresis. The Densitometer Scan of Serum Protein Electrophoretic patterns of the patient and the normal person are given below in the same figure.



- 5.3.1 Label the figure. (10 Marks)
- 5.3.2 What could be the probable problem in the above patient. (10 Marks)
- 5.3.3 Discuss the biochemical basis of the above alterations. (30 Marks)

6. A 14 year old boy was brought to a General physician with the history of fever of 40.6°C and shaking chills for the previous day. On physical examination, he had mild right costovertebral angle tenderness. The urine report was given below.

<b>Macroscopic Urinalysis</b>			
Color	:Yellow	Glucose	:Negative
Specific Gravity	:1.017	Ketones	:+
pH	:6.5	Bilirubin	:Negative
Protein	:Trace	Urobilinogen	:Normal
LeukocyteEsterase	:4+	Blood	:Negative
<b>Microscopic Urinalysis</b>			
WBC/hpf	:>50/hpf		
RBC/hpf	:5-10/hpf		
Casts	:WBC cast +		
Other	:Occasional transitional cells		

- 6.1 What could be the probable condition. **(15 Marks )**
- 6.2 How would you instruct the boy to collect the urine samples for the above report. **(40 Marks)**
- 6.3 Comment on the appearance of the urine. **(20 marks)**
- 6.4 How would you detect the protein in the urine other than strip method. **(25 marks)**
7. 7.1 Give the principle of gel filtration chromatography. **(30 Marks)**
- 7.2 Illustrate with a flow scheme diagram how the sample mixture could be separated in High performance liquid chromatography (HPLC) **(35Marks)**
- 7.3 How would you prepare the paper chromatography for amino acid separation. **(35 Marks)**

8. A 40 year-old male presented with headache, diaphoresis and tachycardia. On clinical examination, he had paroxysmal hypertension. He has been referred to adrenal medullary imaging which shows tumor. His urine sample was sent to the laboratory.

8.1 Give the biochemical test that would you perform in the urine to confirm the diagnosis.

**(20 Marks)**

8.2 Explain the biochemical basis of the above test in the urine.

**(40 Marks)**

8.3 Briefly describe the procedure to estimate that abnormal finding in the urine.

**(40 Marks)**