

UNIVERSITY OF JAFFNA, SRI LANKA
BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES
FOURTH YEAR FIRST SEMESTER EXAMINATION- SEPTEMBER 2018
MLSCB 4135 CLINICAL BIOCHEMISTRY II

Date: 25.09.2018

Time: 03 Hours

ANSWER ALL SIX QUESTIONS

ANSWER EACH QUESTION IN SEPARATE ANSWER BOOK

1.
 - 1.1. You are asked to prepare a leaflet in English for the preparation and advice for a patient undergoing lipid profile testing. Briefly list the advice, preparation and precautions to be taken by the patient when they come for the above testing. (30 marks)
 - 1.2. A 42 year old obese woman came to the surgical emergency department with a history of on and off right upper colicky abdominal pain, exacerbated by fatty meal. This time, the pain was unbearable and did not settle for the routine medicines given by her family doctor. On examination, she had a yellow discolouration of the sclera and a tender right hypochondrium. She was diagnosed to have acute-on-chronic cholecystitis.
 - 1.2.1 Give two (02) causes for gallbladder inflammation. (20 marks)
 - 1.2.2 What is the most probable type of jaundice she has at present. (20 marks)
 - 1.2.3 List three (03) investigations you will receive to Chemical Pathology laboratory for this patient and mention the expected abnormality that can be observed for each test. (30 marks)
2. You have been asked to start an external quality assurance program in your laboratory for Clinical Chemistry analytes.
 - 2.1 List four (04) features you will look into, in choosing the external quality assurance programme. (20 marks)
 - 2.2 Give five (05) benefits of Proficiency testing in a laboratory. (15 marks)

2.3 Explain briefly the process of Proficiency testing highlighting each step involved. (40 marks)

2.4. The Proficiency Testing report of April 2018 for Lactate Dehydrogenase (LDH) of your laboratory after many months of following it, is given as attachment:

2.4.1 Is LDH within the acceptable limits for April 2018? (05 marks)

2.4.2 Explain briefly the steps you will take when you get a report as in 2.4. (20 marks)

3.

3.1. A 35 year old woman came to the clinic with a history of lump in the anterior neck of six (06) months duration. On direct questioning she also has constipation, cold intolerance and menstrual irregularities. Primary Hypothyroidism was suspected.

3.1.1. What is the first line test request that you will receive to the laboratory for this patient. (10 marks)

3.1.2. List four (04) other tests including laboratory and imaging studies that can be done in this patient. (20 marks)

3.1.3. List two (02) methods that can be used to measure free hormones in clinical laboratory for this patient. (20 marks)

3.1.4. List three (03) types of antibodies that can interfere in thyroid-function test. (15 marks)

3.2.

3.2.1. When Thyroglobulin test is ordered, what other test will you do as reflex testing for the clinician to interpret the results? (10 marks)

3.2.2. Give one (01) important reason for the test mentioned in 3.2.1 to be done with thyroglobulin. (15 marks)

3.2.3. Give one (01) reason that Thyroglobulin measurement should be made on the same analyzer with same reagent for monitoring thyroid carcinoma in a patient. (10 marks)

4. A 65 year old man was admitted to the hospital with a history of hypotension and fainting when he stood up from lying position. He was suspected to have adrenal insufficiency. His serum Sodium and Potassium were 125 mmol/L and 7.2 mmol/L, respectively.
- 4.1. List two (02) other causes (for each) of hyperkalaemia and hyponatraemia. (20 marks)
- 4.2. List two (02) causes for adrenal insufficiency. (20 marks)
- 4.3. Mention one (01) dynamic function test that can be done in this patient to diagnose the cause. (10 marks)
- 4.4. Mention briefly, how the investigation mentioned in 4.3 is done, including procedure and interpretation of results. (40 marks)
- 4.5. List two (02) other biochemical abnormalities (other than serum Sodium and Potassium) that can be seen in this patient. (10 marks)
- 5.
- 5.1.
- 5.1.1. Briefly explain the working principle of Ion Selective electrode using line diagram. (30 marks)
- 5.1.2. Briefly explain **Electrolyte exclusion effect**. (15 marks)
- 5.1.3. List two (02) other causes for errors (other than mentioned in 5.1.2) associated with the use of Ion selective electrode. (10 marks)
- 5.1.4. List three (03) advantages of using Ion selective electrode for electrolyte measurement. (15 marks)
- 5.2.
- 5.2.1. List two (02) methods for Foecal occult blood testing (FOBT) that are used in the routine clinical laboratory. (10 marks)
- 5.2.2. Briefly explain the principle behind the chemical method used for FOBT. (15 marks)
- 5.2.3. List two (02) causes which can yield false positive results in the test mentioned in 5.2.2. (05 marks)

6.

6.1. A 25 year old man was admitted with fever, headache and vomiting for 3 days duration. On examination he was found to have neck stiffness. He was suspected to have meningitis. His cerebrospinal fluid (CSF) report revealed the following:

CSF protein >250 mg/dL

Cell Count 1000/mm³

6.1.1 List two (02) differential diagnosis for the above CSF findings. (10 marks)

6.1.2 Mention two (02) other CSF parameters and expected changes which may support your differential diagnosis. (10 marks)

6.1.3 Mention three (03) causes other than the ones mentioned in 6.1.1 for high CSF proteins. (15 marks)

6.1.4 Mention two (02) analytical methods to determine CSF protein. (10 marks)

6.2 A 25 year old woman presented to the general practitioner with the history of bilateral ankle oedema. Her serum total protein value was 47g/L.

6.2.1 Mention three (03) causes for hypoproteinaemia. (15 marks)

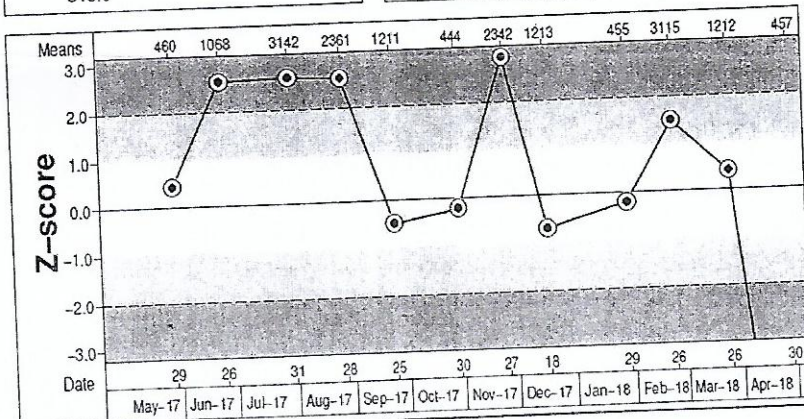
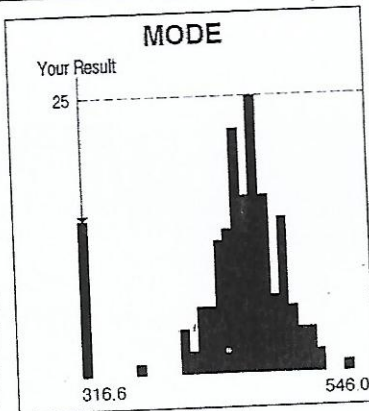
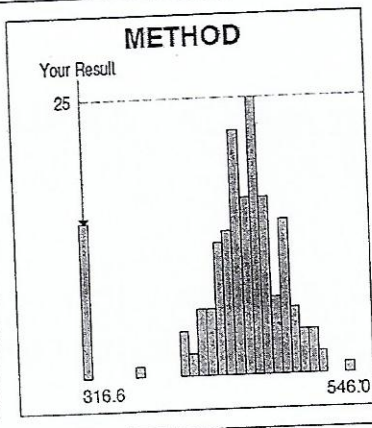
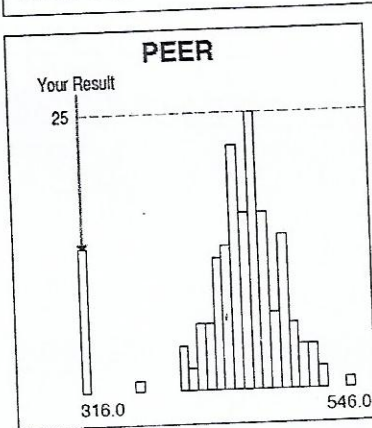
6.2.2 Mention 2 analytical methods for the estimation of serum total protein. (10 marks)

6.2.3 Briefly explain the analytical principle of one of the methods you mentioned in 6.2.2. (30 marks)

Attachment: Proficiency Testing Report of April 2018 for LDH

	LDH Report Clinical Chemistry (Monthly) Program	Cycle 16 Jul 2017 - Jul 2018 Sample No: 10 Sample Date: 30 Apr 18 Lot No: 211500
		EQAS <small>European Quality Assurance Service</small>

VITROS Microslide Series	Comparative Statistics					Your Deviation			
Your Result	N	Mean	SD	CV	U ¹	Z-score	RMZ	%	
176 U/L	◆ Your Mode	175	457	28.0	6.14	5.29	-10.0	-1.02	-61.5
	■ Your Method	175	457	28.0	6.14	5.29	-10.0	-1.02	-61.5
	● Your Peer	174	457	28.2	6.16	5.34	-9.97	-1.01	-61.5



LDH 16 : 10
CYCLE SAMPLE

¹ Expanded uncertainty coverage factor, k=2
Generated 05 May 2018