KIU
Faculty of Health Sciences
Department of Biomedical Science
Bachelor of Science (Honors) in Biomedical Science-
0906 01001/ 0406 03001
4th Year 7th Semester- End Semester Examination
BMS4503 – Applied Biochemistry 2

Date: 17th February 2020	Duration: 03 Hours
Student Examination No.:_____	Time: 9.00 am – 12.00 pm

Instructions
Please read the following instructions carefully before you answer questions.
Answer all the questions. Write your answers on the papers provided

Objective Questions (100 marks) - One hour

There are 20 objective questions.

Five options are given below each question. Some of those options are **true** and some are **false**. Identify them correctly and mark in the given answer sheet.

1. On the answer sheet, opposite each question number, there are two rows of circles. The upper row is labeled "true" and the lower row labeled as "false"
2. According to your answer whether true or false, color the circle (●) completely.
3. Marks will be given as follows. Correct answers +1, and not answered 0.
4. See the following question and answer that shows how to answer questions.

Example:

Biomedical Science degree include?
a) Medical microbiology
b) Clinical biochemistry
c) Hematology
d) Psychology
e) Management

TRUE ● ● ● Ⓓ Ⓔ
FALSE Ⓐ Ⓑ Ⓒ ● ●

Your answer sheet to MCQ questions will be collected at the end of the first one hour (60 minutes)

Structured Essay Questions (SEQ)   02 hours

There are **four (04)** structured essay questions.
Answer the questions in the booklets provided. The questions will be marked out of 100 marks

1.

    1.1. Give three (03) causes for elevated prolactin in a 28-year-old lady   (15 marks)

    1.2. Define macroprolactenemia   (10 marks)

    1.3. Mention two (02) methods to demonstrate macroprolactenemia   (10 marks)

    1.4. Define high dose hook effect   (10 marks)

    1.5. Name three tests that can be used for diagnosis of "Cushing syndrome"   (10 marks)

    1.6. Define Jaundice   (15 marks)

    1.7. Mention expected liver function test findings of a patient with obstructive jaundice giving a brief explanation   (30 marks)

2.

    2.1. Mr. X, 40-years of age, who used to have recurrent attacks of sore throat in the past developed rapid onset of headache, malaise, loin pain, hematuria, proteinuria, hypertension, diminished urine output and peripheral oedema, admitted in the Medicine ward for evaluation. Previous throat swab culture report showed that the sore throat he had in the past, was due to *Streptococcal* infection.

Urine

Protein –   2 g/ 24 hours

Microscopic   RBC +++   Pus cells +++

Blood

Total protein	-	5 g *(6 - 8 g/%)*	} sligtly decr
Albumin	-	3.5 g	
Cholesterol	-	150 mg	
Blood urea	-	70mg ↑	
Serum creatinine	-	2.2 mg ↑	
ASO titre	-	elevated (evidence of beta hemolytic *Streptococci*)	
C3 complement	-	decreased (Consumed in immune complex formation)	
GFR	-	76 – 120 mL/ minute at 40 years	

2.1.1. Name the probable condition of this patient (05 marks)

2.1.2. Evaluate the clinical condition using the laboratory data provided (20 marks)

2.1.3. Explain the importance of the diagnostic potential of the plasma urea and creatinine clearance in assessing renal function (25 marks)

2.2. Ms. Y, a 19 years old girl, brought to the casualty ward at 11 a.m. with dizziness, tingling of fingers, sweating, breathing heavily and nausea. On examination - Hypeventilation, Carpopedal spasm were found.

Laboratory data

		Reference
pH	7.55	(7.35-7.45)
pCO_2	20 mmHg	(40 mmHg)
HCO_3^-	24 mmol meq/L	(22 – 26 mmol/L)
H_2CO_3	0.6 meq/L	

2.2.1. Name the possible condition of acid-base disorder that this girl is suffering from, giving explation. (10 marks)

2.2.2. List three (03) causes for above condition (05 marks)

2.2.3. Give the compensatory mechanisms available in the body to correct this sort of acid base imbalance. (10 marks)

2.3. Explain the hypothalamo-pituitary-thyroid axis (10 marks)

2.4. Write a short on thyroid hormone degradation (15 marks)

3.

3.1. A 40-year-old women presented with jaundice. There was no history with hepatitis, recent foreign travel, injections or transfusions. She was not an alcoholic

Laboratory report is given below

		Reference value
Total Protein	85g/l	60 – 80 g/L
Albumin	28 g/l	35 – 50g/L
Total bilirubin	340 µmol/l	3 – 20 µmol/l

Alkaline phosphatase (ALP)	522 U/L	30 – 150 U/L
Aspartate transaminase (AST)	98 U/L	10 -50 U/L
Gamma glutamyl transferease (GGT)	242 U/L	20 – 60 U/L

3.1.1. List abnormal finding/findings in the above report and explain the reason behind each finding (30 marks)

3.1.2. Outline the importance of urine full report in liver disorders (20 marks)

3.2. Effective management of hyperlipideamia is of proven benefit in reducing cardiovascular disease mortality.

3.2.1. List five (05) components included in lipid profile (15 marks)

3.2.2. Outline the discrepancies that can occur in measurement of low-density lipoproteins by indirect method (15 marks)

3.2.3. Write a short note on "Specimen collection for lipid profile" (20 marks)

4.

4.1.

4.1.1. Define oral glucose tolerance test (OGTT) (10 marks)

4.1.2. List three (03) indications of the OGTT test (15 marks)

4.1.3. Give one (01) contraindications of OGTT test (05 marks)

4.1.4. Briefly describe the patient preparation of OGTT test (20 marks)

4.1.5. Write a short note on "Diagnosis of Type 2 diabetes mellitus in the chemical pathology laboratory" (25 marks)

4.2. Electrolytes are classified as anions (negatively charged ions that move toward an anode), or cations (positively charged ions that moved toward a cathode)

4.2.1. In a 20 years old male patient the Na^+ level was reported as 101 mmol/L. List four (04) possible conditions for above result (10 marks)

4.2.2. List three (03) other major electrolytes included in electrolyte profile (05 marks)

4.2.3. Briefly outline the blood specimen collection for electrolyte profile including specimen type, effect of preservatives, effect of haemolyis and lipeamic samples (10 marks)