

M. M. M.
C. B. B.
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University Final Year Examinations
BSc Biomedical Sciences
Final Year
Clinical Biochemistry: BMS 4150

Thursday, November 11, 2021.

09:00 – 12:00 Hours

Venue: LT1 and LT2

Directions

1. The paper consists of Two (2) sections. Therefore, you should answer **BOTH SECTIONS**.
2. All questions must be answered in a **SEPARATE** answer booklet. Ask for additional booklets, if required. Each question carries equal marks
3. You must indicate your **Student Number**, the section, and the number of each question you have attempted on the cover of every booklet.
4. Complete answer booklets should be handed in, all tied together and collected **BEFORE** you leave your seat.

Time allowed: 3 hours.

SECTION B: Long Essay Questions:

Answer any four (4) questions.

1. How and where does ADH act? Explain the known disorders of ADH function. (20 marks)

2. A 52-year-old man with a history of liver disease and nephrotic syndrome is complaining of fatigue, vomiting, abdominal swelling and bone pain. Biochemistry showed that fluid and electrolytes, and calcium values were all normal. LFTs were as follows: Bilirubin = 59 $\mu\text{mol/L}$, AST = 94 IU/L, ALT = 87 IU/L, Albumin = 27 mg/dL, ALP = 217 IU/L, and GGT = 87 IU/L.

- Mention the aspect of hepatic pathophysiology or function being assessed by each of the above LFTs? (6 marks)
- What would be your choice if asked to select your best three tests of the above LFTs for hepatic function assessment in this patient? (6 marks)
- With respect to hepatic pathophysiology, justify your selected tests in part b? (8 marks)

3. Describe the regulation of blood calcium levels by vitamin D and parathyroid hormone (20 marks)

4. The following questions relate to hypercalcaemia
What is hypercalcaemia? (2 marks).
Describe the endocrine causes of hypercalcemia? (18 marks)

5. Answer both questions.
a) Describe, in brief, the mitogen-activated protein kinase (MAPK) pathway (10marks).
b) Highlight the implications of the pathway dysregulation (10 marks).

6. Describe the consequences of parenchymal liver failure (20 marks)

7. The following questions relate to acid-base disorder.
a) With the aid of a diagram, outline how primary respiratory disorders are recognized? (6 marks)
b) Write short notes on respiratory acidosis and the cause of respiratory acidosis. (6 marks).
c) Highlight the body's compensatory mechanisms during respiratory acidosis (8 marks).

(Regulation)

*****END OF EXAMINATION*****

SECTION A: Short Essay Questions:

Answer any five (5) questions.

1. Explain the implications of phosphoinositide 3-kinase pathway dysregulation (10 marks)
2. Outline the considerations for therapeutic drug monitoring? (10 marks)
3. With the aid of a diagram, describe the absorption of Ca^{2+} in GIT. (10 marks)
4. Outline the effects of parathyroid hormone in the body. (10 marks)
5. A 68-year-old man was awakened by severe pain in his left toe. He was shivering and feverish, and the pain became so intense that he could not bear the weight of the bedclothes.
 - a) What could be the condition this man is suffering from? (2 marks)
 - b) What biochemical and other tests would help make the diagnosis? (6 marks)
 - c) List 2 most likely risk factors that could have predisposed the man to develop the condition in (a). (2 marks)
6. Define panhypopituitarism. (2 marks)
Outline the biochemical profile of panhypopituitarism in
 - a) A child (4 marks)
 - b) An adult (4 marks)
7. Describe, in brief, the actions of thyroid hormones. (10 marks)
8. With the aid of the diagram, describe the recovery of bicarbonate from the glomerular filtrate. (10 marks)



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