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**University Examinations 2023/2024**

**SECOND YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR  
OF SCIENCE IN BIOCHEMISTRY**

**SHC 3202: BASIC METABOLISM I**

**DATE: DECEMBER 2023**

**TIME: 2 HOURS**

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**INSTRUCTIONS:** *Answer question **one** and any other **two** questions*

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**QUESTION ONE (30 MARKS)**

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|--|-----------|
| a) Illustrate the reactions of phosphotruuctose kinase               | (2 marks) |
| b) Describe the alternative structures of D-glucose                  | (3 marks) |
| c) Explain the ethanolic fermentation in yeast serves a dual purpose | (3 marks) |
| d) Illustrate the fructolysis pathway                                | (3 marks) |
| e) Write short notes on lactose intolerance                          | (2 marks) |
| f) Outline the regulation of TCA cycle                               | (2 marks) |
| g) Describe the ubiquinone cycle                                     | (3 marks) |
| h) Explain why glucose is an indispensable metabolite                | (2 marks) |
| i) Explain the solubilisation of fat by detergents                   | (2 marks) |
| j) Illustrate the two activated forms of fatty acids                 | (2 marks) |
| k) Explain the uses of brown fat tissues                             | (2 marks) |



**MUST is ISO 9001:2015 and**



**ISO/IEC 27001:2013 CERTIFIED**

- l) Outline the synthesis of acetoacetate And B-hydroxybutyrate (4 marks)

**QUESTION TWO (20 MARKS)**

- a) Outline the reactions in TCA cycles (10 marks)  
b) Discuss with illustration the hormonal control of phosphofructose kinase and fructose – 1,6 Bisphosphate (10 marks)

**QUESTION THREE (20 MARKS)**

- a) Discuss glycogen synthesis and degradation (10 marks)  
b) Discuss the reactions in the hexose monophosphate shunt (10 marks)

**QUESTION FOUR (20 MARKS)**

- a) Discuss fat acid synthesis reaction one and two (10 marks)  
b) Describe the malate aspartate and glycerophosphate shuttles (10 marks)

