

CHUKA



UNIVERSITY

SUPPLEMENTARY/ SPECIAL EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE IN BIOCHEMISTRY**

BIOC 302: BIOCHEMICAL BACTERIOLOGY AND MYCOLOGY

STREAMS: BSC (BIOC)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 03/02/2021

5.00 PM – 7.00 PM

INSTRUCTIONS:

- (i) Answer Question ONE and any TWO questions**
- (ii) Do not write on the question paper**

QUESTION ONE (30 Marks)

- (a) Using structural formulae, describe the backbone of peptidoglycan and its variation among different groups of bacteria. (8 Marks)
- (b) Discuss the pathogenesis and mode of action diphtheria toxin. (6 Marks)
- (c) Describe the formation of Acetyl CoA from formaldehyde using serine pathway in Methylophilic bacteria. (4 Marks)
- (d) Explain how Thermoacidophilic Archaeobacteria have modified Entner- Doudoroff glycolytic pathway to meet their cellular requirements. (6 Marks)
- (e) Describe the butanediol fermentation pathway and its biomedical value. (6 Marks)

QUESTION TWO (20 Marks)

- (a) Describe Stickland reactions between L-Alanine and L-Glycine by *Clostridium sporogenes*. (8 mark)
- (b) Discuss pathological effect of Ergot alkaloids on human health. (6 Marks)
- (c) Ochratoxins are known to be carcinogenic and nephrotoxic. Describe the control and preventive measures against ochratoxins. (6 Marks)

QUESTION THREE (20 Marks)

- (a) Describe the etiology and pathogenicity of Maduromycosis (mycetoma). (7 Marks)
- (b) List the diseases and clinical features associated with candidiasis. (5 Marks)
- (c) Describe the reductive TCA cycle by *Chlorobiumlimicola* and explain how it differs from oxidative TCA cycle. (8 Marks)

QUESTION FOUR (20 Marks)

- (a) What causes syphilis? (2 Marks)
 - (b) Describe the tertiary stage of syphilis. (6Marks)
 - (c) How is it diagnosed and treated? (8 Marks)
 - (d) List other five (5) diseases caused by spirochetes. (5 Marks)
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