



**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCES
DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY**

**BACHELOR OF SCIENCE HONOURS DEGREE IN APPLIED
BIOLOGY AND BIOCHEMISTRY**

GENERAL MICROBIOLOGY 1 SBB 1207

**EXAMINATION PAPER
MAY 2017**

This examination paper consists of 3 pages

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: NONE

INSTRUCTIONS TO CANDIDATES

- 1. Answer Four (4) Questions. Each question carries 25 marks.**
- 2. Where a question contains subdivisions, the mark value for each subdivision is given in brackets.**
- 3. Illustrate your answer where appropriate with large, clearly labelled diagrams.**

1. (a) Describe the differences between a Gram positive and Gram negative bacterial cell envelope. (10 marks)
 - (b) Give an account of the importance of wet mount and hanging drop preparations. (5 marks)
 - (c) Discuss the contributions made by Robert Koch to modern day microbiology. (10 marks)
- 2.(a) The composition of MacConkey and Bismuth sulphate agar are given below:

MacConkey		Bismuth sulphite	
Ingredient	concentration (g/L)	Ingredient	concentration(g/L)
Peptone	2	Beef extract	5
Proteose peptone	3	Peptone	10
Lactose	10	Na ₂ HPO ₄	4
Bile salts	1.5	FeSO ₄	0.3
Neutral Red	0.03	Bismuth Sulphite	8
Crystal violet	0.001	Brilliant green	0.025
Agar	18	Agar	20

- Explain the role of specific components of both media and how the media is made selective/differential. (10 marks)
- (b) Discuss the use of heat in the enrichment of *Bacillus*. (5 marks)
 - (c) Using specific examples, discuss the different arrangements of cocci. (10 marks)
- 3 (a) Name a classical species of the coliform group giving the characteristics and the importance of the named organism. (5 marks)
- (b) Discuss the classification systems that are used in Kingdom Prokaryotae. (10 marks)
 - (c) Describe the similarities and differences between cyanobacteria and bacteria. (10 marks)

- 4 (a) Describe the general characteristics of named true fungi, detailing the different growth forms and mode of nutrition. (15 marks)
- (b) Discuss the use of fungal spores in the classification of terrestrial fungi. (10 marks)
5. (a) Describe the biological and physical properties of a typical virus. (12 marks)
- (b) Using specific examples outline Baltimore's classification of animal viruses. (13 marks)
6. Write an essay on the importance of organisms found in the Kingdom Protista.

END OF EXAMINATION

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