



UNIVERSITY OF EMBU

2017/2018 ACADEMIC YEAR

SECOND SEMESTER EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

(BIOLOGY)

SBT 105/SMB 102: INTRODUCTION TO MICROBIOLOGY

DATE: APRIL 3, 2018

TIME: 11:00AM-1:00PM

INSTRUCTIONS: Answer **ALL** Questions from **SECTIONS A and B**, and **ONE** Question selected from **Section C**.

SECTION A: Multiple Choice Questions (1 Mark each)

Please tick in the box opposite the correct answer.

1. The golden age of microbiology sought to find answers to all of the following phenomenon except one
 - The germ theory of disease
 - Spontaneous generation
 - The cause of diseases
 - Fermentation
2. Which of the following organisms was found to cause the Siberian plague by Robert Koch?
 - Bacillus thuringiensis*
 - Bacillus anthracis*
 - Bacillus aerius*
 - Bacillus aerophilus*

3. Which one of the following organisms is not a diplococcus
- Moraxella catarrhalis*
 - Streptococcus pneumoniae*
 - Neisseria gonorrhoeae*
 - Streptococcus agalactiae*
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4. Which of the following statements is not true about Archaea
- They lack peptidoglycan in their cell walls
 - RNA polymerase of archaea is similar to that of eukaryotes
 - RNA polymerase of archaea is similar to that of prokaryotes
 - Cell walls of archaea are made up of glycoproteins and polysaccharides
5. One of the following statements is not true about viruses
- They have no organelles
 - Their genomes consists of only one type of nucleic acid
 - They are metabolically inert
 - They have complex metabolic pathways
6. Which of the following is not an indirect method for the measurement of cell mass?
- Nutrient composition
 - Cell dry weight
 - Viscosity
 - Heat evolution
7. When preparing media for culturing microorganisms, radical shifts in pH can be prevented by incorporating
- A buffer
 - An oxidizing agent
 - A reducing agent
 - A gelling agent

8. Sexual reproduction in the Protozoa occurs most commonly by
- Conjugation
 - Gametangial contact
 - Binary fission
 - Binary fusion
9. Which of the following disinfectant is not effective against viruses?
- Hydrogen peroxide
 - Hypochlorite
 - Formaldehyde
 - Phenolic disinfectants
10. Which of the following is not true of protozoa?
- Lack cell wall
 - Produce no sporebearing structures
 - Comprise the microbial population known as phytoplankton
 - Form active feeding forms called trophozoites
11. Starvation proteins are produced by a culture during which of the following segments of the growth curve?
- Stationary phase
 - Lag phase
 - Exponential phase
 - Death phase
12. The primary stain of Gram's method is
- safranin
 - phenolphthaleine
 - crystal violet
 - methyl red

13. Which of the following problems would makes it impossible to satisfy all of Koch's postulates?

- Microorganism causing serious symptoms in humans
- Microorganism which cannot be isolated in pure culture
- Microorganism causing only one disease
- Genes from the microorganism cannot be amplified by PCR

15. All bacteria that inhabit the human body are?

- heterotrophs
- chemolithotrophs
- autotrophs
- phototroph

SECTION B: SHORT ANSWER QUESTIONS (5 Marks Each)

Your answers should be brief and to the point (Use the examination answer book provided)

16. Describe the Louis Pasteur's swan neck experiments (5 marks)
17. State the differences between eukaryotic and prokaryotic cells (5 marks)
18. Discuss the spirilla patterns of bacterial arrangement (5 marks)
19. Discuss motility in the four phyla of protozoans (5 marks)
20. Explain the generalizations in the hologenome theory of evolution (5 marks)
21. Describe the phylum Proteobacteria in the kingdom eubacteria (5 marks)

SECTION C: ESSAY QUESTIONS (25 Marks Each)

Write an essay on any ONE of the following topics (Use the examination answer book provided)

22. Discuss the process of viral replication and the techniques that can be applied to inactivate viruses (25 marks)
23. Discuss the different categories unicellular algae (25 marks)
- 24.
- a) Illustrate the bacterial growth curve (5 marks)
 - b) Explain the different phases of growth of bacteria (15 marks)
 - c) Outline five major components of a bacteria growth medium (5 marks)

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