

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENCE (NURSING)

ENHE 121: BASICS IN ENVIRONMENTAL MICROBIOLOGY

STREAMS: BSC (NURS)

TIME: 2 HOURS

DAY/DATE: THURSDAY 05/12/2019

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS:

- Answer *All* Questions in this section
- Read the statements below carefully and answer by stating whether the statement is True or False.

1. Dinoflagellates are found in warm, Tropical Oceans.
2. No Archaea pathogens or parasites are known to exist.
3. All bacteria are Eukaryotic
4. In a Phase contrast Microscope, difference in the refractive index between microbe cells and the surrounding medium makes them clearly visible.
5. FISH technique can be used in a clinical setting to identify pathogens or DNA / RNA targets of interest.
6. In a Synecological Bacterial culture, a true natural situation in which more than one bacterial species is present, the growth of microbes is more dynamic and continual.
7. After infecting the cell, the virus continues to reproduce, but it produces more viral protein and genetic material instead of the usual cellular products.
8. 1 millimicron ($m\mu$) unit of measure is equivalent to one millionth of a millimeter
9. **Louis Pasteur (1822-1895)** experiments using a swan shaped flask resolved the controversy of spontaneous generation.

ENHE 121

10. PCR allows for identification of an infectious agent without the need for culturing.
11. The ability of Microscope to distinguish two objects into two separate objects, is called.
 - a. Resolving power
 - b. Wave length
 - c. N.A.
 - d. None of these
12. Cell wall of gram-negative bacteria is
 - a. Thick
 - b. Lipids are present
 - c. Teichoic acids are absent
 - d. None of these
13. A culture medium in which the exact composition of is not known is known as
 - a. Simple
 - b. Complex
 - c. Defined
 - d. Natural
14. Agar is obtained from
 - a. Brown algae
 - b. Red algae
 - c. Green algae
 - d. Blue-green algae
15. The antiseptic method was first demonstrated by
 - a. Lwanowski
 - b. Lord Lister
 - c. Edward Jenner
 - d. Beijerinck
16. The major role of bacteria in carbon cycle is
 - a. Photosynthesis
 - b. Chemosynthesis

ENHE 121

- c. Breakdown of organic compounds
- d. Assimilation of nitrogen compounds
- 17. A facultative anaerobe can
 - a. Only grow anaerobically
 - b. Only grow in the presence of O₂
 - c. Ordinarily an anaerobe but can grow with O₂
 - d. Ordinarily an aerobe but can grow in absence of O₂
- 18. The cell wall deficient form of bacteria is
 - a. Mycoplasma
 - b. 'L' form
 - c. Protoplast
 - d. Spheroplast
- 19. Fungi differs with bacteria in that it
 - a. Contain no peptidoglycan
 - b. Are prokaryotic
 - c. Susceptible to griseofulvin
 - d. Have nuclear membranes
 - e. All of these
- 20. All of the following are energy source of bacteria except
 - a. Oxidation of inorganic compounds
 - b. Oxidation of organic compounds
 - c. Absorption of heat
 - d. Utilization of visible light

SECTION B (30 MARKS)

ANSWER ALL QUESTIONS IN THIS SECTION; ANSWERS SHOULD BE PRECISE

- a.i.1. Briefly explain how the following microscopy techniques are used (6 marks)
 - i. Negative staining
 - ii. Impregnation method
 - iii. Acid fast staining
- 2. State **Three** reasons why viruses are considered as non-living things (3 marks)
- 3. Describe **Three** methods by which bacteria recombine their genetic materials (3 marks)

ENHE 121

4. State **Three** differences between Prokaryotes and Eukaryotes. (3 marks)
5. State **Three** modes of locomotion observed in protozoa (3 marks)
6. State **Three** major differences between Gram Positive and Gram-Negative bacteria. (3 marks)
7. Briefly describe **Three** methods of reproduction in fungi. (3 marks)
8. Explain how Phage (virus) Typing can be used to identify specific types of bacteria. (3 marks)
9. Using examples, identify **Three** main reservoirs of pathogenic microorganisms. (3 marks)

SECTION C: ANSWER ONE QUESTION IN THIS SECTION

1. Discuss, using relevant examples, the economic importance of micro-organisms. (20 marks)
 2. Describe the various modes of transmission of disease causing micro-organisms (20 marks)
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