

- I. Distinguish between the following: (4% each)
 1. differential staining and negative staining
 2. eucaryotes and prokaryotes
 3. photoautotrophs and chemoheterotrophs
 4. moist heat and dry heat used in microbial control
 5. fungi and protozoa
 6. spirilla and spirochetes
 7. differential media and selective media
 8. bactericide and bacteriostatic
 9. cell wall structure of Gram-positive and Gram-negative bacteria
 10. mutualism and commensalism in microbial interactions
- II. Describe at least four different ways in which humans exploit microorganisms for our benefit. (10%)
- III. Microbiologists use five basic techniques in the laboratory: inoculation, incubation, isolation, inspection and identification. Describe briefly all these five techniques. (10%)
- IV. Discuss the relationship of:
 1. anabolism and catabolism
 2. electron acceptor and fermentation
 3. electron transport and oxidative phosphorylation
 4. glycolysis and TCA cycle
- V. Describe the major features of plasmids. How do they differ from chromosomes? (10%)
- VI. Define the plaque-forming units. How do you perform a plaque assay for a bacteriophage? (10%)
- VII. Classify the following examples of immunity as naturally acquired active immunity, naturally acquired passive immunity, artificially acquired active immunity or artificially acquired active immunity. (10%)
 - (a) Immunity following injection of diphtheria toxoid
 - (b) Immunity following an infection
 - (c) Newborn's immunity to yellow fever
 - (d) Immunity following an injection of anti-rabies serum

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