



Register Number:

B.TECH DEGREE EXAMINATIONS: DEC 2014

(Regulation 2009)

Third Semester

BIOTECHNOLOGY

BTY105: Microbiology

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions

PART A (10 x 1 = 10 Marks)

1. Dark field Microscope allows the viewer to visualize
 - a) living, stained cells
 - b) living, Unstained cells
 - c) Dead, stained cells
 - d) Dead, Unstained cells
2. Gram negative bacteria has in its outer membrane
 - a) Porins
 - b) Thicker Peptidoglycan layer
 - c) Lipopolysaccharides
 - d) Both a & C
3. Peritrichous Bacteria has
 - a) Flagella at one end
 - b) Flagella at both ends
 - c) Cluster of flagella at one or both ends.
 - d) Evenly over the whole surface of cells.
4. Which one of the following helps for survival of Bacteria in harsh environments?
 - a) Inclusion bodies
 - b) Gas vacuoles
 - c) Endospores
 - d) Capsules
5. Balanced growth of bacterial cells are observed in
 - a) Lag phase
 - b) Log phase
 - c) Stationary Phase
 - d) Death Phase
6. PTS(PhosphoTransferase System) helps to translocate
 - a) Sugars
 - b) Vitamins
 - c) Minerals
 - d) Iron

7. The mode of action of Tetracyclines is to interfere with
- binding of amino acyl t-RNA with 30S subunit of Ribosomes
 - Binding of amino acyl t-RNA with 50S subunit of Ribosomes
 - binding of mRNA with 30S subunit of Ribosomes
 - Binding of mRNA with 50S subunit of Ribosomes
8. Both *Mycobacterium tuberculosis* and *Streptococcus pneumoniae* infections are caused by
- are acquired by inhalation
 - have cell walls that contain a high content of mycolic acids
 - have polysaccharide capsules
 - stay in the lung and rarely, if ever, enter the bloodstream
9. Alcoholic beverages are sterilised by
- Pasteurization
 - Fractional sterilization
 - UV light
 - Autoclaving
10. The first step in biodegradation of aryl halides is
- reductive dehalogenation
 - Oxidative dehalogenation
 - Oxidation alone
 - Reduction alone

Answer ALL Questions

PART B (10x2=20 Marks)

- State Koch's postulates.
- How oil immersion in objective increases the resolution of light microscope.
- Differentiate ribosome of Prokaryotes and Eukaryotes.
- What is mycoplasma? List its features.
- Which method of plating you prefer for isolating pure cultures from environmental samples? Spread Plate or Streak Plate? Justify with a reason
- Enumerate the energetics of bacterial motility.
- List few antiviral agents. State its mode of action.
- What is the mechanism of action of cholera toxin?
- What are primary metabolites? Give examples.

20. How bio-fertilizers are beneficial to the eco system compared to chemical fertilizers.

PART C (5x14= 70 Marks)

21. a) (i) List the Contributions of Louis Pasteur and Alexander Fleming in the field of Microbiology. (7)

(ii) What is the concept of Spontaneous generation in microbial existence and how it was disproved by scientists. (7)

(OR)

b) (i) Explain with a neat diagram the working of Fluorescence Microscope. (8)

(ii) Illustrate the Steps involved in acid fast staining and give examples for acid fast staining bacteria. (6)

22. a) What is lytic and lysogenic cycle? Explain the steps in the lytic cycle of bacteriophage.

(OR)

b) (i) Illustrate the anatomy of bacterial flagella with a neat diagram. (6)

(ii) Enumerate the lifecycle of asexual reproduction in yeast. (8)

23. a) Elucidate about the different methods used to quantitate bacterial growth.

(OR)

b) (i) Elaborate the steps involved in synthesis of bacterial cell wall. (10)

(ii) Differentiate between complex and define media. (4)

24. a) (i) Explain the different mechanisms used by host to protect against microbial infections. (10)

(ii) What is antibiotic resistance? How to overcome the problem of antibiotic resistance in treating infectious agents. (4)

(OR)

b) Elaborate the causative agents, mode of infection ,symptoms and treatment strategies for

a) *Staphyococcal* infections (7)

b) Typhoid fever (7)

25. a) (i) Explain the steps in industrial production of penicillin. (8)

(ii) List the organisms used for leaching of ores .How it can be used for extracting metal from Ores. (6)

(OR)

b) What are biosensors? What are different types of biosensors? How glucose can be estimated by using glucose biosensor.
