

B.TECH DEGREE EXAMINATIONS: NOV/DEC 2010

Third Semester

BIOTECHNOLOGY

U07BT304: Microbiology

Time: Three hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. Gram stain technique is a typical example of
(A) Simple stain procedure (B) Differential stain technique
(C) Negative stain technique (D) Spore staining technique
2. Which of the following is not related to Louis Pasteur?
(A) Disproved spontaneous generation (B) Supported Germ Theory of Disease
(C) First Rabies vaccination (D) Developed acid-fast Stain
3. The following description illustrates one of the phases in the growth of bacterial culture "As more and more bugs are competing for dwindling food and nutrients, booming growth stops and the number of bacteria stabilizes"....Name the phase.
(A) Lag phase (B) Log phase (C) Stationary phase (D) Death phase
4. Which of the following is not true for Mycoplasmas?
(A) Mycoplasma is a genus of bacteria (B) They are parasitic or saprotrophic
(C) They are destroyed by beta-lactam antibiotics (D) They don't possess cell wall
5. Bacterial culture technique used for obtaining individual colonies and colony counting is
(A) Slant culture (B) Broth culture (C) Deep culture (D) Plate culture
6. Which of the following is not true for agar in microbial media?
(A) When added to nutrient solution at 0.5% level semi solid media is resulted
(B) Solid media obtained after mixing with 1.5-3.0% of agar
(C) Easily degraded by most bacteria
(D) Liquefied at 100⁰C
7. Removal of vegetative cells from tissues or procedures that prevent the introduction of vegetative cells to tissues is known as
(A) Antisepsis (B) Sanitation (C) Disinfection (D) Degermation
8. Flash pasteurization is
(A) 63°C, 30 minutes (B) 72°C, 15 seconds (C) 121°C,15 minutes (D) 100°C, 5 minutes
9. Which of the following is not a microbial primary metabolite?

(A) Penicillin (B) Acetone (C) Amino acids (D) Ethanol

10. Any process that uses microorganisms, fungi, green plants or their enzymes to return the natural environment altered by contaminants to its original condition is known as

(A) Bioleaching (B) Biosynthesis (C) Bio-stimulation (D) Bioremediation

PART B (10 x 2 = 20 Marks)

11. Write a note on Robert Koch's Germ Theory of disease
12. Write a short note on cyanobacteria
13. Enumerate the salient aspects of actinomycetes
14. Comment on the features of bacteriophages
15. Comment on the ATP production by Krebs cycle
16. Name four major elements required for bacterial cells
17. What are the major mechanisms involved in drug resistance
18. Name any four major anti-fungals
19. Write brief note on biosensors
20. Comment on the microbiology of biogas production

PART C (5 x 14 = 70 Marks)

21. (a) Write an essay on the different type of microbial staining techniques, their principles and utilities.

(OR)

(b) Write an essay on the microscopy of microbial cultures including the sample preparation, application, usage and advantages of both conventional & modern microscopy

22. (a) Give a detailed account of the structural organization and multiplication of viruses

(OR)

(b) Differentiate the basic features of fungi and bacteria with diagrams and a detailed report.

23. (a) List out and explain the bacterial growth characteristics in batch and continuous cultures

(OR)

(b) (i) Variations in the colony morphology of bacterial cultures exist. Explain this statement with substantial scientific backup. (7)

(ii) Distinguish between aerobic and anaerobic respiration by considering the differences in: the end products created, the relative amounts of ATP produced, and, the locations in the cell where each series of reactions occurs. (7)

24. (a) Write an essay on the physical and chemical control of microorganisms

(OR)

(b) Write an essay on the major concepts constituting the host-microbe interactions

25. (a) Illustrate with example the production profile and application of microbial products such as biofertilizers and biopesticides

(OR)

(b) Explain the organisms used the raw materials the process and conditions for microbial production of alcohol.
