KUMARAGURU
college of technology
character is life

Register Number: …….

B.TECH DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2013)

Third Semester

BIOTECHNOLOGY

U13BTT302**:** Microbiology

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Which one of the following is not a differential stain?
   a) Gram stain b) acid-fast stain
   c) crystal violet stain d) capsule stain
2. A culture of microorganisms in which all the cells have been derived from the same parent cell is called a(n) ---------- culture
3. Which one of the following is not a characteristic of fungi?
   a) Vacuole b) filamentous shape
   c) chlorophyll d) nutrition by absorption
4. The retroviruses contain an enzyme ---------- that synthesizes a DNA strand using RNA as the template
5. The growth rate is maximal and constant in which phase of the growth curve?
   a) log b) lag
   c) stationary d) decline
6. The optimum pH for growth of fungi is generally ---------- than that of bacteria
7. Liquid nitrogen that possess a temperature of ---------- is used in the preservation of microbial cultures
   a) -178^0C b) -196^0C
   c) -42^0C d) -213^0C
8. The antimicrobial action of mercuric chloride is through reaction with the ---------- groups of enzymes and other proteins

9. Introduction of air under pressure below the water table to increase groundwater oxygen concentration and enhance biodegradation of contaminants is called

a) bioventing b) biosparging

c) bioaugmentation d) biostimulation

10. Bioleaching is an ideal method when the concentration of the metal in the ore is -------

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. Relate the disease to its causative agent using Koch postulates
12. Summarize the advantages of electron microscopy compared with light microscopy
13. How the organelles of mitochondria and chloroplast have evolved as a eukaryotic cell?
14. Demonstrate the characteristic features of Glomeromycetes
15. “Selection of an ideal culture Preservation method is very important” Justify your answer.
16. Illustrate an electron transport chain
17. In what context the filtration is used as a method of sterilization?
18. Interpret the mode of action of antibiotics.
19. “Purified enzymes are better biocatalyst than whole cells” substantiate your answer.
20. Relate the use of sentinel organisms in a biomonitoring program

PART C (5 x 14 = 70 Marks)

(Not more than 400 words)

Q.No. 21 is Compulsory

21. Explain the working principles of transmission and scanning electron microscopes. Identify the techniques for specimen preparation.

22. a) Relate the structural and functional anatomies of prokaryotic and eukaryotic cells

(OR)

b) Examine the distinguishing features of protozoa and the prominent phyla to which they belong

23. a) Categorize bacteria based on their pH, temperature and oxygen requirements. Show how a batch culture of bacteria passes through various growth phases and explain their qvantification.

(OR)

b) Demonstrate the pathways of glycolysis and TCA cycle and interpret their significance

24. a) Enlist the ideal characteristics of a disinfectant. Compare the use of phenol, alcohol and detergents as disinfecting agents

(OR)

b) Evaluate the different classes of antibacterial antibiotics based on their mode of action, toxic side effects and the eventual development of drug resistance in microbes

25. a) List the important enzymes obtained from microbial sources and their applications. Outline the general production and purification strategies of intracellular and extracellular enzymes

(OR)

b) How bioleaching can be applied for the extraction of metals present in low the concentration in the ore. Discuss the advantages and limitations of the process

****