

BITS Pilani, Dubai Campus
Dubai International Academic City
Second Semester 2010- 2011
Compre (closed book)

Course No.: BIO C241

Maximum Marks: 60

Weightage: 30%

Course Title: Microbiology

05.06.11

Time: 8:30 am- 11:30 am

Note: Attempt all the questions in the given sequence

- Q1a. How have microorganisms helped in the betterment of human life? [3]
b. Why is it necessary to provide a suitable and optimal environment for microorganisms to grow? [3]
c. What are Lichens? Where are they found? Is it possible to grow them? [2]
d. What are Retroviruses? Why are they so important? [2]
- Q2a. Draw a neat labeled diagram to explain the structure of bacterial flagella. [3]
b. Explain the significance of all the phases in a bacterial growth curve. [3]
c. Explain the terms: [4]
i. Lyophilization
ii. Group Translocation
iii. Similarity coefficient
iv. Cyclic photophosphorylation
- Q3a. What are the different mechanisms by which viral penetration takes place in animal cells? [3]
b. What are the important precursors metabolites from which all cell structures are made? [3]
c. What is a differential media? Give two examples of the same. [2]
d. What are the different methods for determining the viable count of the bacterial cells? [2]
- Q4a. What is the basis of classifying protozoa? Name the types. [3]
b. Explain the DNA hybridization method for classifying bacteria. [3]
c. Explain with an example the Substrate level phosphorylation. [2]
d. What are opportunistic pathogens? Give an example of the same. [2]
- Q5a. Differentiate between: [4]
i. Dry and Moist heat sterilization.
ii. Transcription and Replication
b. What are the different methods of preserving food? [3]
What are the three different methods of genetic exchange among bacteria? [3]
- Q6a. What is meant by symbiosis? Discuss the different forms of symbiosis with examples. [3]
b. Give one example of the following: [4]
i. Flagellate protozoan
ii. Chemical mutagen
iii. Normal biota of the conjunctiva
iv. Organism that is used for making bread
c. Give one word for the following: [3]
i. The protein that binds oxygen and maintains it in optimal concentration in the root nodule of leguminous plants
ii. Conversion of ammonia to nitrates
iii. Excessive growth of phytoplanktons on water bodies
iv. Tiny particles or droplets of liquid released in the air
v. Enzyme that catalyzes nitrogen fixation
vi. Conversion of organic sulfur compounds to hydrogen sulfide.

**BITS PILANI, DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY
SECOND SEMESTER 2010-2011
TEST – 2 (OPEN BOOK)**

**Course No.: BIO C241
Course Title: Microbiology**

17.04.11

**Maximum Marks: 20
Maximum Time: 50 minutes**

Attempt all the questions in the given sequence

- 1a. How would you sterilize a 1% solution of cyanocobalamine (vitamin B12)? [1.5]
- b. What are the different factors on which the sterilization treatment is designed? Discuss each of them. [3]
- c. A company ABC has formulated a new disinfectant Pumol. They performed a dilution test with a culture *Staphylococcus aureus* 6538 and obtained the following data:

Disinfectants	Time of exposure	Dilutions							
		1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512
Phenol	5mins	-	-	+	+	+	+	+	+
	10mins	-	-	-	+	+	+	+	+
Pumol	5mins	-	-	-	-	-	+	+	+
	10mins	-	-	-	-	-	-	-	+

Key: + Growth, - No Growth

- i. Determine the phenol coefficient for Pumol. [3]
- ii. Define phenol coefficient [1]
- d. How is Pasteurization different from sterilization? [1.5]
- 2a. Give the different mechanisms of nutrient transport in bacterial cells. [3]
- b. What is the significance of reducing power generated in the metabolic processes? [2]
- c. Why is the Pentose phosphate pathway important in metabolism? [2]
- d. Fermentation is an industrially important process. Justify. [2]
- e. Define: i. chemoheterotrophs, ii. End product inhibition [1]

**BITS-PILANI, DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY
SECOND SEMESTER 20010-2011
TEST – I (CLOSED BOOK)**

Course No.: BIO C241
Course Title: Microbiology

27.02.11

Maximum Marks: 20

Maximum Time: 50 minutes

Attempt all the questions in the given sequence

- Q1a. Describe Pasteur's experiment to disprove the theory of spontaneous generation. [2]
- b. List out the probable reasons for the outbreak of diseases during wars. [1.5]
- c. Give one example of each: [1.5]
- i. Rod shaped organisms
 - ii. Comma shaped organisms
 - iii. Organisms that cannot be cultured on lab media
- Q2a. Mention the applications of Industrial microbiology to the society. [2]
- b. Give the principle of Dark field microscopy and its applications. [3]
- Q3a. What are the three factors that govern the resolving power of the microscope? [1.5]
- b. What is the hanging drop method? Give its significance. [1.5]
- c. Explain the various steps involved in the Gram staining method. [2]
- Q4a. Write a short note on heat sterilization. [3]
- b. Describe the streak plate method. [2]

BITS-Pilani, Dubai Campus
Dubai International Academic City
Second Semester 2010- 2011

Quiz 1 (closed book)

Course: Microbiology BIO C241

Date: 22.03.2011 Time 1:15pm – 1.35 pm Total marks: 10 (weightage: 5%)

Name: _____ ID No. _____

1. What are the two types of proteins present in periplasm? [1]

2. The unique feature of bacterial cell walls is the presence of _____ made up of repeating units of _____ and _____. [1.5]

3. _____ is the important component of the mycoplasma cell membrane. [0.5]

4. A bacterium with many flagella at one pole is called _____. [1]

5. Define Growth Rate. [1]

6. At 0 hour you have 20 E.coli cells per ml of nutrient broth. What will be the count of cells after 5 generations? [2]

7. Give two examples of inorganic nitrogen sources as nutrients. [1]

8. What are siderophores? [1]

9. Give two examples of techniques involved in total bacterial count. [1]