	Utech
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Invigilator's Signature :	

CS/B.TECH (BT-NEW)/SEM-3/BT-303/2011-12 2011

MICROBIOLOGY

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following:

 $10 \times 1 = 10$

- i) Facultative anaerobic organism is an organism that can survive in
 - a) presence of oxygen
 - b) absence of oxygen
 - c) both in presence and absence of oxygen
 - d) none of these.
- - a) algae, bacteria
- b) bacteria, fungus
- c) fungas, algae
- d) none of these.

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iii)	is responsible for transfer of genetic material.				
	a)	Pilus	b)	Ribosome	
	c)	Endospore	d)	Cell wall.	
iv)	is a cold loving micro-organism.				
	a)	Psychrophile	b)	Mesophile	
	c)	Halophile	d)	Barophile.	
v)	The char	membrane protein racteristic of	ba	cteriorhodopsin is a	a
	a)	Halobacterium			
	b)	Escherichia coli			
	c) Mitochondrion of bovine heart				
	d)	none of these.			
vi)		ch of the following ertilizer?	bao	eteria is used as a	a
	a)	Mycobacterium	b)	Salmonella	
	a) c)	Mycobacterium Escherichia coli	b) d)	Salmonella Rhizobium.	
vii)	c)	•	d)		
vii)	c)	Escherichia coli	d)		
vii)	c)	Escherichia coli	d)	Rhizobium.	
·	c) 60 C a) c)	Escherichia coli to is the main source of X-ray	d)b)d)	Rhizobium. UV-ray none of these.	
·	c) 60 C a) c)	Escherichia coli So is the main source of X-ray Gamma ray	d)b)d)	Rhizobium. UV-ray none of these.	
·	c) 60 C a) c) The	Escherichia coli co is the main source of X-ray Gamma ray bacterial species nitrob	d)b)d)	Rhizobium. UV-ray none of these.	
·	c) 60 C a) c) The	Escherichia coli To is the main source of X-ray Gamma ray bacterial species nitrob ammonia to nitride	d) b) d) acter	Rhizobium. UV-ray none of these. converts	



- ix) Resolution unit of light microscope is
 - a) between 0.5 0.2 microns
 - b) between 2 5 microns
 - c) between 10 20 microns
 - d) between 0.02 0.05 microns.
- x) A bacterium which can grow only in the total absence of oxygen is described as
 - a) Facultative anaerobic
 - b) Anaerobes
 - c) Obligate aerobes
 - d) Obligate anaerobes.

GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

- 2. Which lens in a compound microscope gives maximum magnification? What is the purpose of using Cedar Wood Oil?
- 3. What bacterial cell structure may help to increase the cell's surface areas/volume ratio? Draw a typical bacterial cell and identify all parts. 2+3
- 4. What are the various direct and indirect modes of measuring of bacterial growth? $2\frac{1}{2} + 2\frac{1}{2}$
- 5. Why some bacteria follow Entner Duodruff's pathway? Give example. What is mixed acid fermentation? 2+3
- 6. What do you mean by haploid and diploid cells of saccharomyces cerevisiae? Show reproductive life cycle of yeast.

GROUP - C

(Long Answer Type Questions)

Answer any three of the following.



- 7. Briefly discuss with suitable diagram the process of symbiotic nitrogen fixation. Explain four different phases of bacterial growth curve. What is heterocyst? 7 + 4 + 4
- 8. Differentiate between Gram positive and Gram negative cell walls.
- 9. "Archaea belongs to a kingdom between prokaryote and eukaryote." Justify why are archaea preffered producers of industrial enzymes? What are different potential biotechnological uses of Algae? What is lysogenic virus?

5 + 3 + 5 + 2

- 10. Explain different steps involved in endospore formation. Explain the differences between sexual and asexual spores. In what ways are fungi important to human? 6+5+4
- 11. Write two different waterborne diseases with causative agent. What is the difference between fecal and non-fecal coliforms? Write notes on one positive, one negative and one neutral interaction present in soil microbes.

3 + 4 + 8