



Name :

Roll No. :

Invigilator's Signature :

CS/B.Sc (H),BT,Mol-bio,Microbio,Genetics / SEM-2 / POM-203 / 2010

2010

PRINCIPLES OF 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 any *ten* of the following :

10 × 1 = 10

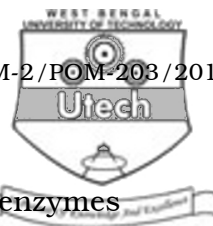
- i) Bacteria that must have organic molecules both for energy and as a source of carbon are called
 - a) Photoautotrophs b) Photoheterotrophs
 - c) Chemoheterotrophs d) Chemoautotrophs.
- ii) In contrast with moist heat, dry heat probably damages microbes by
 - a) oxidising molecules
 - b) denaturing proteins
 - c) denaturing nucleic acids
 - d) cross-linking DNA.

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[Turn over



- iii) Which of the following is used to control microbial growth in foods ?
- a) Organic acids b) Alcohols
c) Aldehydes d) All of these.
- iv) The colour reaction of a stain is due to
- a) Chromophore b) Auxochrome
c) Mordant d) None of these.
- v) Which of the following characteristics is used to classify viruses ?
- a) Capsid shape
b) Presence or absence of tail structures
c) Type and arrangement of nucleic acids
d) All of these.
- vi) Mycoplasma lack what cell structures ?
- a) Cell membrane b) Ribosome
c) RNA d) Cell walls.
- vii) The scientist who gave "the postulates for germ theory of diseases" was
- a) Louis Pastuer b) Robert Koch
c) John Needham d) Paul Ehrlich.
- viii) Antibiotics are sterilized by
- a) Membrane filter b) Autoclave
c) Hot air oven d) None of these.
- ix) Penicillin was discovered by
- a) Flemming b) Pasteur
c) Needham d) none of them.



- x) Heavy metals like mercury
- a) make complexes with -SH group of enzymes
 - b) requires in high concentration
 - c) is a less toxic
 - d) disrupts cell membrane.
- xi) When a semipermeable membrane separates two different solute concentrations, water will move from
- a) higher to lower concentration
 - b) will not move
 - c) lower to higher concentrations
 - d) none of these.
- xii) Neisseria meningitidis causes
- a) typhoid
 - b) malaria
 - c) meningitis
 - d) pertusis.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Write a short note on Joseph Lister.
3. Differentiate between dry heat & moist heat sterilization.
4. Who first disproved the spontaneous generation theory ?
5. Give the advantages and disadvantages of ultraviolet light and ionizing radiation as sterilizing agents.
6. How do the thermophiles adapt themselves in high temperatures ?



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.

3 × 15 = 45

7. a) Describes the types of fungal infections with the help of examples.
- b) Describe the method for determination the phenol coefficient of disinfectant.
- c) Write down some unique features of Archea bacteria.

5 + 5 + 5

8. Draw the structure of a typical Bacteriophage. What is underlying principle of vaccination ? Who first introduced vaccination and how ? Why J. Lister is famous ? Name any three drugs used against virus.

5 + 2 + 1 + 2 + 2 + 3

9. Describe how an autoclave works. What are the differences between moist heat and dry heat ? Why cationic detergents are more effective than anionic ones ? What is incineration ? Name some antibiotics and their producers.

6 + 3 + 3 + 1 + 2

10. What are the possible theories of staining ? What is the difference between acid dyes and basic dyes ? What are the uses of crystal violet, iodine, ethanol and safranin in gram staining ? Name one acid fast bacteria.

5 + 5 + 4 + 1

11. What are the heterocyst and where do you find them ? How is nitrogen fixed in heterocyst ? Describe the nutritional requirements of the four major nutritional groups and give some microbial examples of each.

6 + 5 + 4