

KATHMANDU UNIVERSITY  
End Semester Examination  
August/September, 2017

Mark Scored:

Level : B. Sc./B. Tech.  
Year : II

Course : BIOL 207  
Semester : II

Exam Roll No. :

Time: 30 min

F. M. : 20

Registration No.:

Date

SEP 10 2017

SECTION "A"

[15 Q × 1 = 15 marks]

- Based on energy requirement and ability to synthesis essential metabolites, bacteria are classified into phototrophs, chemotrophs, autotrophs and heterotrophs. So, chemotrophs means
  - Derive energy from sunlight
  - Unable to synthesis their own metabolites
  - Obtain energy from chemical reactions
  - Synthesize all organic compound
- If a segment of DNA is removed and reinserted in a reverse direction, it is called
  - Lethal mutation
  - Inversion mutation
  - Silent mutation
  - Missense mutation
- Physical condition required for the growth of bacteria are(Except):
  - Temperature
  - Osmotic effect
  - Light
  - Iodine containing compounds.
- All of the following are criteria for selecting microorganism for fermentation technology (Except)
  - They should be easy to maintain and cultivate.
  - They are easily manipulated genetically
  - They can grow on an expensive
  - They shouldn't be harmful to humans.
- Counter stain used in acid fast staining is
  - Carbol fuchsin
  - Methylene blue
  - Acid alcohol
  - Crystal violet
- During conjugation, the genetic materials will be transferred through
  - Cell wall
  - Capsule
  - Pilli
  - Medium
- The order of stains in gram staining procedure is
  - Crystal violet, iodine solution, alcohol, saffranine
  - Iodine solution, alcohol, saffranine, crystal violet
  - Iodine solution, crystal violet, alcohol, saffranine
  - Iodine solution, alcohol, crystal violet, saffranine
- Bacteria with a tuff of flagella at one end are called
  - Peritrichous
  - Lophotrichous
  - Bipolar
  - Monotrichous
- The ability of microscope to distinguish objects into two separate objects is called
  - Wavelength
  - Resolving power
  - Density
  - Numerical aperture

10. The principles involved in streak plate method is  
a. Separation  
b. Isolation  
c. Streaking  
d. Dilution
11. Which of the following method is/ are used for measurement of air contamination except?  
a. Membrane filter method  
b. Sedimentation method  
c. Slit sampler method  
d. Sweep plate method
12. Phylogenetic classification denotes  
a. Homology of DNA base sequence of microorganism  
b. Evolutionary arrangement of species  
c. Equal weight to all features and groups of bacteria on the basis of similarities of several characteristics  
d. A type of classification which makes an at least to sub classify species of bacteria.
13. Jumping gene  
a. Transposon  
b. Cosmid  
c. Episome  
d. Plasmid
14. In negative staining  
a. The structure to be demonstrated is stained  
b. The background isnot stained  
c. The background and structure are stained  
d. The structure to be demonstrated isnot stained
15. Thermal death time is  
a. Time required to kill all cells at a given temperature  
b. Temperature that kills all cells at a given time  
c. Time and temperature needed to kill all cells  
d. Time is needed to kill all cells.

SECTION "B"

[5 Q × 1 = 5 marks]

Write in one sentence

16. Principle of catalase test:
17. Plasmids:
18. Antiseptics:
19. Sterilization:
20. Test involved in IMViC test:

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SECTION "C"

All questions are compulsory. Figures to the right indicate full marks assigned to the question.  
Draw a well labeled diagram where necessary

1. Give a detailed account of the events occurring in the different phases of bacterial growth curve. [5]
2. What is pure culture? How do you isolate a pure culture? Explain any one techniques. [1+5=6]

**OR**

Write down the criteria of selecting microorganism for industrial purposes. Add note on procedure of fermentation. [3+3=6]

3. Explain the process showing mechanism of phagocytosis. [5]
4. Write notes on theory based on Prokaryote and Eukaryote evolution. [4]
5. Write short notes on: **(Any Two)** [5×2=10]
  - a. Arrangement and significance of flagella.
  - b. Principles and procedure of Gram staining
  - c. Physical condition required for the growth of bacteria.
6. What is gene transfer? Name the different types of gene transfer and write in brief on conjugation. [1+1+5=7]
7. Enlist and explain the different method used for measurement of air contamination. Write any two significance of air sampling. [5+2=7]

**OR**

Describe lysogenic life cycle of bacteriophages with advantages and limits. [7]

8. Write any three differences between: **(Any Three)** [3×3=9]
  - a. Batch culture and Continuous Culture
  - b. Bacteria and virus
  - c. Vegetative cell and Endospores
  - d. Gram positive and Gram negative bacteria.
9. Write any two advantages and disadvantages of membrane filter method. [2]

