Total No. of printed pages = 6



**END SEMESTER EXAMINATION–2019**

Semester – 5th

Subject Code : FPT-501

# INTRODUCTION TO FOOD MICROBIOLOGY, BIOCHEMISTRY AND BIOTECHNOLOGY

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

**Instructions :**

1. *All* questions of PART–A are compulsory.
2. Answer any *five* questions from PART–B.

## PART – A

Marks – 25

1. Fill in the blanks : 1×10=10

   (a) _____ medium is media lacking a solidifying matrix.

   (b) A bacterium that occurs as pairs of cocci are called _____.

[Turn over

(c) _____ contain agents that inhibit the growth of certain bacteria while permitting the growth of other.

(d) The portion of the growth curve where a rapid growth of bacteria is observed is known as _____.

(e) Enzymes can be precipitated by using _____.

(f) A medium whose exact chemical composition is known is referred to as _____.

(g) Scientific name of bread mold fungus is _____.

(h) _____ is an enzyme complex that catalyzes the fermentation of sugar into ethanol and carbon-dioxide.

(i) Lipid content in gram positive bacterial cell varies from _____.

(j) A culture is the _____ that grow in a culture medium.

2. Write true or false : 1×10=10

(a) All microorganisms can grow in any given culture medium.

(b) SCP is an edible unicellular microorganisms.





(c) Differential media acts to inhibit the growth of certain kinds of microorganisms while allowing the growth of other.

(d) For spread plate, colony grows only on the surface of the medium.

(e) Endospore formation is not a method of reproduction.

(f) The substance on which the enzyme acts is termed as substrate.

(g) The stage where no bacterial growth occurs is called decline phase.

(h) Yeast belongs to a class of unicellular fungi.

(i) Cell wall is thick in Gram negative bacteria.

(j) Flagella help in transfer of DNA from donor to recipient cell.

3. Choose the correct answer : 1×5=5

(a) Non-protein organic part of the enzyme is

(i) Co-factor (ii) Co-enzyme

(iii) Apo-enzyme (iv) Iso-enzyme

(b) The cocci which mostly occur in single or pairs are

(i) Diplococci (ii) Sarcinae

(iii) Streptococci (iv) None of these

(c) Solid medium is usually used as

(i) Slants (ii) Stabs

(iii) Petridishes (iv) All of the above

(d) Which of the following is not a product of fermentation ?

(i) Oxygen (ii) $CO_2$

(iii) Lactate (iv) Ethanol

(e) The cell walls of many gram positive bacteria can be easily destroyed by the enzyme known as

(i) lipase (ii) lysozyme

(iii) pectinase (iv) peroxidase.



## PART–B

Marks – 45

4. (a) What is micro-organism ? Give two examples of beneficial micro-organisms. 3

(b) Explain in brief the process of ethanol production from sugar. 4

(c) What is the application of an autoclave ? 2

5. (a) Define generation time. In which phase the increase in cell number ceases and why ? 3



(b) Explain the process of conjugation in bacteria. 4

(c) What is the purpose of pure culture isolation ? 2

6. (a) Define enriched media giving suitable examples. 3

(b) Draw and label the flow chart for the production of enzymes by microorganisms. 4

(c) Give some important applications of lyophilization. 2

7. (a) What is colony ? Write the important characteristics of colony morphology. 3

(b) Discuss the different events that take place in the formation of pyruvic acid from glucose. 4

(c) Give an important application of amylase and cellulase used in food processing industries. 2

8. (a) What are enzymes ? Explain the ES complex. 3

(b) What sort of fermenter does it require in antibiotic production ? Draw the diagram of fermenter for penicillin production. 4

(c) What advantages do the streak plate method have over the spread plate method ? 2

9. Distinguish between any *three* : 3×3=9

(a) Synthetic vs Non-synthetic medium

(b) Gram positive vs Gram negative bacteria

(c) Differential vs Reducing medium

(d) Pour plate vs Spread plate

(e) Active vs Allosteric site.

10. (a) What is an inoculation and what is its purpose ? 3

(b) What is fermentation ? Give examples of fermented food. 4

(c) Why do bacteria produce endospores ? 2