2018

BOTANY

BOT-403

MICROBIOLOGY-III

**Full Marks: 80**

**Time: 3 Hours**

*The figures in the margin indicates full marksfor the questions :*

1. **Choose the correct answer for following multiple choice questions:** 1x7=7

i. Which of the following is known as brewer's yeast

a) *Saccharomyces cerevisiae*

b) *Saccharomyces baulardii*

c) *Sacccharomyces pastorianus*

d) *Saccharomyces ludwigi*

ii. Industrial microbiology mainly depends on the phenomenon of

a) Pasteurization

b) Fermentation

c) Vaccination

d) Both i.& ii

iii. An air lift bioreactor uses:

a) An impeller for mixing

b) Air bubbles for mixing the contents

c) Differential density for mixing purpose

d) Asparger for mixing contents

iv. A bioreactor to which fresh medium is continuously added, while culture liquid containing leftover nutrients, metabolic end products and micro-organisms are continuously removed at the same rate is called

a) Cryostat

b) Chemostat

c) Fed-batch fermentation

d) Continuous fermentation

v. Which of the following is phosphate solubulizing microbe

a) VAM

b) *Mucor* sp

c) *Rhizopus* sp

d) *E. coli.*

*vi. Nitrosomonas* and *Nitrobacter* interactions in the nitrogen cycle where *Nitrosomonas* oxidise ammonia to nitrite and nitrite is oxidized to nitrate by *Nitrobactor* is an example of-

a) Commensalism

b) Symbiosis

c) Proto-cooperation

d) Amensalism

vii. Nicin which is the only approved bacteriocin to be approved for food preservation is produced by

a) *Lactococcus lactis*

b) *Lactobacillus acidophilus*

c) *Bifidobacterium*

d) None of the above

**2. Answer the following very short questions: 2x7=14**

a) What is putrefaction?

b) Why is milk pasteurized?

c) Write names and functions of two chemicals used in food preservation.

d) What type of association is found between ruminant animals and Archeabacteria? Explain briefly.

e) What is the significance of phosphate solubilizing microbes? Give examples of phosphate solubilizing microbes.



f) Distinguish between primary and secondary metabolites. Give example of each one with industrial importance.

g) Why *Agrobacterium tumificiens* are called the natural genetic engineers?

h) What do you understand by Frankia nodulation?

**3. Write short notes: 5x4=20**

a) Methods of food preservation

b) Significance of PGPR

c) Metagenomic environmental library

d) Upstream processing

e) Biotic interactions of rhizospheric region.

**4. Answer the following questions: 9x3=27**

a) Write in detail with suitable examples about different types of interactions found among microbial population with other organisms **(9)**

b) What is fermentation technology? Distinguish between batch culture and continuous culture fermentation. Write their advantages, disadvantages and industrial application. **(1+4+4=9)**

c) Write an account on industrial production of enzyme from microbial sources. **(9)**

d) Explain the extrinsic and intrinsic factors that are responsible for food spoilage. Mention some diseases caused due to consumption of spoiled food. **(6+3=9)**

**5. Write notes on any two: 6X2=12**

a) In- situ bioremediation

b) Soil microflora

c) Agriculturally important microbes

d) Biosensors

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