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End Semester Examination of Semester-III, 2015

Subject : MICROBIOLOGY (HONS.) (UG)

Paper : VII (THEORY)

Full Marks : 40

Time : 2 Hrs

The figures in the margin indicate the marks corresponding to the question.

Candidates are requested to give their answers in their own word as far as practicable.

Illustrate the answers wherever necessary.

Group A

Answer **any two** from the following questions : 10x2=20

1. a) Describe, in detail, a stirred tank bioreactor. Name the various bioreactor used in fermentation process.
- b) Point out the characteristics of industrial strain. State the strategies that are used in the improvement of strain. (3+2)+(2+3)
2. a) What are semi-synthetic Penicillins? How are they produced? Why are they more effective than natural penicillin?
- b) Briefly describe the precursors, micro-organism extraction and purification of penicillin production. (1+2+2)+5

(2)

3. a) State the principle and various practices used for food preservation. (physical, chemical and biological).
b) What is single cell protein? State the advantages and disadvantages of using such protein. (1+5)+(1+3)
4. a) What is biofertilizer? How Rhizobium inoculant is produced commercially? What are the Rhizobium standards which have been laid out by ISI to protect the interest of farmer?
b) Write a short note on mycotoxin. (1+4+2)+3

Group B

Answer any two from the following questions : $5 \times 2 = 10$

5. Mention the steps for manufacturing cheese and yoghurt.
 $2\frac{1}{2} + 2\frac{1}{2}$
6. What is bioinsecticide? Mention the mechanism of killing of pest by Bacillus thurengensis. 1+4
7. i) Briefly describe the Biochemistry of glutamic acid production.
ii) What do you mean by immobilization? 4+1
8. Write a short note on 'Bio gas production using cow dung as substrate.

Group C

Answer **any five** from the following questions : 2x5=10

9. What is Assimilatory NO_3 reduction? How does it differ from dissimilatory NO_3 reduction?
 10. What information does the phosphate test reveal about milk? How the test is performed?
 11. What are the essential ingredients of the medium for industrial production of Vitamin B_{12} ? How it is separated from the fermented broth?
 12. Mention suitable Carbon and Nitrogen sources for large scale production of ethanol. What are the by-products of this fermentation?
 13. How do you sterilize large volume of air for aerobic fermentation?
 14. What is solid state fermentation? Mention the advantages and disadvantages of this type of fermentation.
 15. What is VAM? State its significance?
 16. Mention two microorganisms which are used a bioindicator.
 17. What is bioplastic? State its importance.
 18. What is biofilm? Mention the negative impact of biofilm formation.
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