Q.P. Code : 10676

[Time: Three Hours] **[Marks:75]**

Please check whether you have got the right question paper.

N.B:
1. All questions are compulsory.
2. Figures to the right indicates marks.
3. Draw neat labelled diagram wherever necessary.

Q.1 Describe the process of microbial synthesis of citric acid and Add a note on its commercial application. **15**

OR

Q.1 A) Write a detailed note on Biosynthesis of polyhydroxy-alkanoates (PHA). **08**

B) Describe steps involved in improving antibiotic production. **07**

Q.2 Describe the process of batch fermentation and Add a note on its advantages and disadvantages. **15**

OR

Q.2 A) Explain ways of Maximising the efficiency of fermentation process. **08**

B) Describe crosslinking and Lattice entrapment method of immobilization. **07**

Q.3 Write a detailed note on marine natural products & their medicinal potentials. **15**

OR

Q.3 A) Write a note on subunit vaccine production against Bovine Foot & Mouth disease virus. **08**

B) Explain mode of action of thuringiensis toxin. **07**

Q.4 Explain the process of production of single cell proteins by using biomass as raw materials. **15**

OR

Q.4 A) Describe the chracteristics of aerobic microorganisms for degladation of organic pollutants. **08**

B) Explain process of treatment of waste water. **07**

Q.5 Write short notes on: **15**

a) Ethical issues associated with GMOs.
b) Characteristics features of mammalian cellines
c) Phytoremediation.

OR

Q.5 Write short notes on: **15**

a) Biopol-commercial biodegradable plastic
b) Media for cultivation of mammalian cells
c) Nitrogen fixation.
