

**PD-554**  
**M.Sc. Biotechnology**  
**3<sup>rd</sup> Semester Examination, Dec 2020**  
**Paper-III**  
**Industrial Biotechnology**

Time: Three Hours]

[Maximum Marks: 80  
[Minimum Pass Marks: 29

Note: Answer from both the sections as directed. The figures in the right-hand margin indicate marks

**Section-A**

1. **Answer the following questions:** 1X10
- (a) Primary metabolites produce in which growth phase of bacterial growth.
  - (b) Who coined the term biotechnology?
  - (c) Give one example of secondary metabolite.
  - (d) Which are the amino acids usually produced by *Corynebacterium glutamicum*?
  - (e) Mention any one use of citric acid.
  - (f) What is a bioreactor?
  - (g) What is Batch Sterilization?
  - (h) Name the microorganism used in Citric Acid Production.
  - (i) Are enzymes secondary metabolites?
  - (j) Write expand form of COD.
2. **Answer the following questions:** 2X5
- (a) What a note on media sterilization.
  - (b) Write about pulsed bioreactor.
  - (c) What is Mitten treatment?
  - (d) Explain bout SCP.
  - (e) Write about food preservation.

**Section - B**  
**Unit-I**

- Answer the following questions:** 15X4
- 3 Write an essay on Bioprocess Engineering. OR  
Explain in detail on large scale production using recombinant microorganisms.
- Unit-II**
- 4 Write an essay on measurement and control of bioprocess parameters. OR  
What is Batch Kinetics? Explain in detail.
- Unit-III**
- 5 Write an essay on downstream processing. OR  
Write an essay on whole cell immobilization.
- Unit-IV**
- 6 Write an essay on production of penicillin. OR  
What is food technology? Explain in detail.