

**D.B.F.Dayanand College of Arts and Science, Solapur**

**Department of Microbiology**

**Academic Year-2018-19**

**Class- B.Sc.II**

**Certificate Course in Advanced Industrial Microbiology**

**(College Level- Career Oriented programme)**

---

**Course Structure**

**Theory Papers –I-**

**45 lectures**

- 1) Fundamentals and basics of Industrial Microbiology**
- 2) Applied Industrial Microbiology**
- 3) Techniques in Industrial Microbiology**

**Practical course – I**

**12 lectures**

**Industrial Visit/Project**

**Examination Pattern-**

**Total 100 Marks**

- 1) Theory -70 Marks**
- 2) Practical -20 Marks**
- 3) Visit/Project- 10 Marks**

**Theory Papers –I- Advanced Industrial Microbiology**

**Total 45 lectures**

**Unit-Fundamentals basics of Industrial Microbiology**

**Total Lectures 11**

- 1) History and scope of Industrial Microbiology
- 2) Basic concepts of Fermentations
- 3) Fermentation Media
- 4) Design and types of typical bioreactor

**Unit-II Applied Industrial Microbiology**

**Total Lectures 10**

- 1) Screening of :-Primary and Secondary
- 2) Strain improvement
- 3) Preservation of industrially important microorganisms
- 4) Inoculum Development
- 5) Scale up of fermentation

**Unit-III Microbial assay and Techniques in Industrial Microbiology**

**Total Lectures 12**

- 1) Diffusion Assay
- 2) Turbidometric assay
- 3) Sterilization Techniques
- 4) Downstream processes
  - a) Filtration
  - b) Centrifugation
  - c) Flocculation
  - d) Crystallization
  - e) Solvent extraction
  - f) Chromatography

**Unit-IV Industrial Productions**

**Total Lectures 12**

- 1) SCP
- 2) Penicillin
- 3) Acetic acid
- 4) Alcohol

**Practical course – I**

**12 lectures**

- 1) Preparation of media for industrial production products
- 2) Preparation of Reagents and Solutions
  - a) Phosphate buffer
  - b) 1N NaOH
  - c) 1N HCL
- 3) Estimation of alcohol by using  $K_2Cr_2O_7$
- 4) Screening of Amylase producers by Replica plate method

## **Examination Pattern**

**Theory Examination**

**70 Marks**

**Time 2.30hrs**

---

**Q.1. Multiple Choice Questions**

**14 Marks**

**1 to 14 ----- (Each question carries 1 Mark)**

**Q.2. Short answer Questions**

**14 Marks**

**Solve any 7 from 9 questions**

**(Each question carries 2 Marks)**

**Q.3. Section A) and B)**

**14 Marks**

**Section A) Answer the following questions**

**(10 Marks)**

**Attempt any two questions from 3**

**(Each question carries 5 Marks)**

**Section B) Answer the following question**

**(4 Marks)**

**Attempt any one question from 2**

**Q.4. Answer the following questions**

**14 Marks**

**Attempt any two questions from 3**

**(Each question carries 7 Marks)**

**Q.5. Answer the following questions**

**14 Marks**

**Attempt any two questions from 3**

**(Each question carries 7 Marks)**

## Examination Pattern

**Practical Examination**

**30 Marks**

**Time 2.30hrs**

---

- |  |                 |
|--|-----------------|
| <b>Q.1. Proceed following experiment and write results</b>     | <b>10 Marks</b> |
| <b>Q.2. Proceed the following experiment and write results</b> | <b>10 Marks</b> |
| <b>Q. 3. Project report-</b>                                   | <b>10 Marks</b> |
| <b>Or</b>  |                 |
| <b>Q. 3. Industrial visit report-</b>                          | <b>10 Marks</b> |