Seat No. : _____

AE-103

April-2016

B.Sc., Sem.-VI

CC-310 : Microbiology

Time : 3 Hours] **[Max. Marks : 70**

Instructions : (1) **All** questions carry equal marks.
(2) Attempt **all** questions.
(3) Mention question number against your answer.
(4) Draw figure/write formulae where needed.

1. Answer any **two** of the following : **14**

(i) Explain the role of induced mutants in strain improvement.

(ii) Describe parasexual cycle as a method of developing recombinants.

(iii) Describe strain improvement for any two properties other than yield.

(iv) Describe preservation and quality control of industrial organisms.

2. Answer any **two** of the following : **14**

(i) Write about problems and designing of DSP.

(ii) Enlist criteria for selection of filter. Describe batch filters for product recovery.

(iii) Describe liquid-liquid extraction as a method of product recovery.

(iv) Describe principle, working and applications of adsorption chromatography.

3. Answer any **two** of the following : **14**

(i) What is the importance of quality assurance ? Describe sterility testing of pharmaceutical products.

(ii) Explain significance of containment in a fermentation process.

(iii) Describe biological methods for treatment of industrial effluent.

(iv) How successful scale up of a fermentation process may be achieved ?

4. Describe any **two** of the following : **14**

(i) Strain improvement, Media and Recovery with reference to penicillin fermentation.

(ii) Mechanism of Citric acid Biosynthesis and formulation of media used for the same.

(iii) Role of auxotrophs in Lysine fermentation.

(iv) Ethanol fermentation by *Zymomonas mobilias*.

5. Answer the following specifically : **14**

(i) Who discovered gradient plate technique ? Give its application.

(ii) What is the difference between complete and minimal medium ?

(iii) Define the term Recombination.

(iv) What are Colligends and Collectors ?

(v) Name two industrial centrifuges used for product recovery.

(vi) What is Hughes press ? Give its application.

(vii) Name two detergents used for cell disruption.

(viii) Name two precipitants used for product recovery.

(ix) How bioassay is superior to chemical assay ?

(x) Name the test used for detection of pyrogen.

(xi) Give applications of vitamin B12.

(xii) Name precursors used for vitamin B12 production,

(xiii) What are semisynthetic antibiotics ? Give two examples.

(xiv) What are protoplasts ? Give their importance.