

Seat No. : _____

SL-113

September-2020

B.Sc., Sem.-VI

CC-310 : Microbiology (New Course)

Time : 2 Hours]

[Max. Marks : 50

- Instructions :**
- (1) Students should write answers for the question paper applicable to them, either “NEW COURSE” or “OLD COURSE” and it must be mentioned in the beginning of the answer paper.
 - (2) Attempt any **THREE** questions in **Section I**.
 - (3) Question 9 in **Section II** is **COMPULSORY**.
 - (4) Draw figure wherever necessary.

Section – I

1. Describe containment and clean room environment as safety procedures. 14
2. (A) Describe in brief solid substrate fermentation. 7
(B) Write a note on mass transfer of Oxygen. 7
3. Prepare a brief account on cell disruption methods. 14
4. (A) Describe precipitation as a method of product recovery. 7
(B) Describe activated sludge process for industrial effluent treatment. 7
5. Write an essay on fermentation economics. 14
6. (A) Describe types of diffusion assay. 7
(B) Describe principle, procedure and applications of LAL test. 7
7. Describe in brief all component parts of ethanol fermentation process. 14
8. (A) Enlist various applications of amylase and citric acid. 7
(B) Describe the role of auxotroph in L-lysine fermentation. 7

Section – II

9. Give short and specific answer in **1 to 2** lines only (any **eight** out of **16**). **8**
- (1) Give an example of surface culture fermentation.
 - (2) Give full name of DOT.
 - (3) What is the use of tachometer in stirred tank bioreactor ?
 - (4) What is scale up window ?
 - (5) What is the use of Kieselguhr in filtration process ?
 - (6) Which type of centrifuge is also called as centrifugal filter ?
 - (7) Name the cell disruption method carried out using X-press.
 - (8) Write the frequency of ultrasonic waves.
 - (9) What is the significance of positive controls of sterility testing ?
 - (10) What is the use of Petroff-Hausser counting chamber ?
 - (11) Write Beer's law.
 - (12) Which instrument is used to check packed-cell volume ?
 - (13) Define International Unit of penicillin activity.
 - (14) Name the precursor used to produce Penicillin – V.
 - (15) Name the vitamin which promotes L-lysine production in *C. glutamicum*.
 - (16) Name the organic solvent found in azeotropic mixture of ethanol.
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 - (3) Question 9 in **Section II** is **COMPULSORY**.
 - (4) Draw figure wherever necessary.

Section – I

1. Describe parasexual cycle and protoplast fusion for strain improvement. **14**
2. (A) Describe selection of non-foaming and morphologically favourable strains. **7**
(B) Write a brief note Lyophilization. **7**
3. Explain in brief mechanical and chemical methods of cell disruption. **14**
4. (A) Describe liquid-liquid extraction as method of product recovery. **7**
(B) Describe drying of fermentation product as finishing stage of product recovery. **7**
5. Explain in brief Containment and Clean room environment. **14**
6. (A) Write a brief note on Pyrogen Test. **7**
(B) Describe in brief industrial effluent treatment for environment safety. **7**
7. Describe in brief all component parts of penicillin fermentation process. **14**
8. (A) Describe in brief the recovery of ethanol from fermentation broth. **7**
(B) Describe in brief the recovery of Vitamin-B12 from fermentation broth. **7**

Section – II

9. Give short and specific answer in **1 to 2** lines only (any **eight** out of **16**).

8

- (1) Give full name of HRM in relevance to phage infection.
 - (2) Give one example of cryoprotective agent.
 - (3) What is heterologous protein ?
 - (4) What is heterokaryon ?
 - (5) What is Sephadex ? Give its use in chromatography.
 - (6) Give one example of detergent used for cell disruption.
 - (7) Give one example of non-ionic polymer used for protein recovery.
 - (8) Give one example of surfactant used in foam separation method.
 - (9) Define Oxford unit of penicillin activity.
 - (10) What is the use of pilot plant fermentor ?
 - (11) Name one medium for the growth and cultivation of anaerobic bacteria.
 - (12) Name the animal whose blood is used to prepare LAL reagent.
 - (13) Name the precursor used to produce Penicillin G.
 - (14) Name the precursor used to produce vitamin B12.
 - (15) Which acid is produced as by product during ethanol fermentation ?
 - (16) Name the salt of citric acid used as anti-coagulating agent for blood.
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