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[A-60]

SARDAR PATEL UNIVERSITY
B.Sc.(6th Semester) EXAMINATION 2016
Saturday, April 9^h 2016
2:30 p.m. TO 5:30 p.m.
SUBJECT: MICROBIOLOGY US06CMIC06
(Industrial Microbial Technology)

TOTAL MARKS: 70

Note: (1) All the questions are compulsory.
 (2) Figures to the right indicate marks

- Q-1 Select the correct answer for each question from the option given below [10]**
1. String discharge mechanism is used in rotary vacuum filter to remove the filter cake developed by _____ biomass.
 (A) Bacterial (B) Fungal (C) Yeast (D) All
 2. Which agent is used as the filter aid during the process of filtration?
 (A) Glass wool (B) Sand (C) Diatomaceous earth (D) CaCO₃
 3. Which of the following can be detected by LAL reagent?
 (A) Exotoxin (B) Endotoxin (C) Peptidoglycan (D) Flagella
 4. Which of the following is associated with the expenditure incurred in fermentation equipments and facilities?
 (A) Capital cost (B) Overhead charges (C) Insurance (D) Research cost
 5. Which of the following is added as an antioxidant during the ageing process of beer?
 (A) Hop oils (B) Potassium meta bisulphate (C) Adjuncts (D) Resins
 6. What should be the optimum biotin concentration (µg/lit.) for glutamic acid production?
 (A) 0.5 (B) 5 (C) 50 (D) 500
 7. Which of the following amino acid during penicillin biosynthesis is present in the D-isomeric form?
 (A) α amino adipic acid (B) Cysteine (C) Lysine (D) Valine
 8. Which enzyme converts glucose to gluconic acid?
 (A) Glucose isomerase (B) Glucose oxidase (C) Glucose peroxidase (D) None
 9. Enzyme pullulanase can be recovered from *Klebsiella pneumoniae* by which of the following technique?
 (A) Ultrasonication (B) Osmotic shock
 (C) Freezing thawing (D) Detergent treatment
 10. Which of the following is a precursor for vinegar?
 (A) Ethanol (B) Methanol (C) Propanol (D) Butanol

Q-2 Give Short answers to following questions (Any ten) [20]

- [1] Write about the technique which is used to concentrate low molecular weight solutes.
- [2] How enzyme treatment can help in recovering the fermentation product?
- [3] What is cross flow filtration? How is it better than conventional filtration?

- [4] Write down the principle of LAL test.
- [5] Write about the media used in sterility testing.
- [6] How media sterilization and overhead charges influence fermentation economics?
- [7] Which are the criteria used for the selection of Baker's yeast?
- [8] Draw neat and labelled diagram of submerge fermenter for acetic acid production?
- [9] Which nutritional requirements are present in the molasses?
- [10] Why lactose is used as a major carbon source in production medium of penicillin?
- [11] Write in brief about α -amylase
- [12] Justify the need for the commercial production of gluconic acid.

Q-3

- (A) Write a brief note on- Criteria for the selection of recovery process [04]
- (B) Explain-Physicomechanical methods for cell disruption. [06]

OR

- Q-3 What do you mean by 'like dissolves like'? Explain in detail various methods liquid:liquid extraction for the recovery of fermentation products. [10]

- Q-4 Enlist ideal characteristics of test organism used in bioassay and discuss various methods of bioassay for fermentation products in detail. [10]

OR

- Q-4 Define immobilization? Explain different methods of enzyme immobilization in detail. [10]

- Q-5
- (A) Discuss in detail – Malting, Mashing and Kettle boiling in beer fermentation. [06]
- (B) Discuss surface process for vinegar production. [04]

OR

- Q-5 Discuss in detail fermentative production of glutamic acid from *Corynebacterium glutamicum*. [10]

- Q-6 (A) Discuss three different stages of acetone butanol fermentation [03]
- (B) Write about fermentative production of Gluconic acid. [07]

OR

- Q-6 Discuss in detail fermentative production of penicillin from *P. chrysogenum* [10]
