

SEAT No. _____

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[328A24]

SARDAR PATEL UNIVERSITY
B.Sc. (6th Semester) EXAMINATION 2017
Friday, April 7th 2017
10:00 a.m. TO 1:00 p.m.
SUBJECT: MICROBIOLOGY US06CMIC06
(Industrial Microbial Technology)

TOTAL MARKS: 70

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

Q-1 Select the correct answer for each question from the option given below [10]

1. Which of the following cake discharge mechanism is used for fungi in rotary vacuum drum filter?
(A) String (B) Scraper (C) Scraper with filter aid (D) None of these
2. Which of the following method of cell disruption can be used to obtain luciferase enzyme from *Photobacterium fischeri*?
(A) Ultrasonication (B) Use of detergents
(C) Osmotic shock (D) Alkali treatment
3. Which bifunctional agent is commonly used in cross linking for enzyme immobilization?
(A) Formaldehyde (B) Acetaldehyde
(C) Ethylene oxide (D) Glutaraldehyde
4. In fermentation economics cost associated with fermentation equipment and facilities is included under which of the following category?
(A) Utility (B) Overhead (C) Capital expenditure (D) Labour
5. Which of the following vitamin plays important role in glutamic acid fermentation?
(A) Thiamine (B) Biotin (C) Riboflavin (D) Biotin
6. Which of the following type of beer is manufactured by top fermented yeast?
(A) Lager (B) Ales (C) Pilsen (D) Dortmund
7. Which of the following amino acid during penicillin biosynthesis is present in the D-isomeric form?
(A) α aminoadipic acid (B) Cysteine (C) Lysine (D) Valine
8. Gluconic acid producing organisms contains which of the following enzyme?
(A) Glucose isomerase (B) Glucose Peroxidase
(B) Glucose oxidase (D) Glucose kinase
9. Which centrifuge is worked on the principle of centrifugation and filtration?
(A) Basket (B) Tubular bowl (C) Multichamber (D) Disc-bowl
10. Which medium is jointly used for the detection of aerobic and anaerobic bacteria in the fermentation products?
(A) Macconkey's (B) Tryptone soya broth
(C) Muller Hilton Agar (D) Fluid Thioglycolate

(1)

(P.T.O.)

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

- [1] Why filters aids are used in the filtration process for the removal of bacterial cells from the fermentation broth?
- [2] What is ultrafiltration? How can it be used to concentrate the product.
- [3] How precipitation can be useful for product recovery? Give name of two agents which can cause precipitation.
- [4] Write about end point determination method of bioassay with its merits and demerits.
- [5] How incubation period and sterilization affect fermentation economics?
- [6] Briefly write about the metabolic response method to assay fermentation product.
- [7] Why hop oils are added during the beer production?
- [8] Enlist various steps involved in the cheese production and give at least two examples of starter culture.
- [9] Which criteria are used for the selection of Baker's yeast.
- [10] What is saccharogenic amylases and starch liquefying amylase.
- [11] Name the organisms involved in gluconic acid production. Why fungal cultures are preferred over bacterial cultures?
- [12] Which metal ions and precursors play important role in cyanocobalamine production?

Q-3

- (A) Write a brief note on-Criteria used for the selection of recovery process. [04]
- (B) Discuss various batch filters used for solid removal with its merits and demerits. [06]

OR

- Q-3** What do you mean by "likes dissolve like"? Enlist various methods of liquid:liquid extraction and discuss organic solvent extraction method in detail. [10]

Q-4

- (A) Write a note on- LAL test. [05]
- (B) Write a note on- Ideal characteristics of test organism used in bioassay. [05]

OR

- Q-4** Define immobilization and discuss various methods of immobilization in detail. [10]

Q-5

- (A) Draw biosynthetic pathway of Vinegar and discuss Surface process for vinegar production in detail. [06]
- (B) Discuss mashing and kettle boiling processes in beer production. [04]

OR

- Q-5** Write a note on- Fermentative production of glutamic acid from *Corynebacterium glutamicum* [10]

- Q-6** Describe acetone-butanol fermentation using *Clostridium acetobutylicum*. [10]

OR

- Q-6** Write a note on- Fermentative production of penicillin. [10]
