

Code No. : 7265

Sub. Code : PMBM 42

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Fourth Semester

Microbiology — Core

FERMENTATION AND INDUSTRIAL
MICROBIOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. After the inoculation of a culture into a fermentation medium. There is a period during which growth does not appear to occur that period is called _____.
- (a) lag phase (b) log phase
(c) stationery phase (d) death phase

2. _____ are calls devoid of their call walls.
- (a) Gram positive (b) Gram negative
(c) Protoplast (d) None
3. Most industrial microorganisms are _____.
- (a) Lithotrophs
(b) Autotrophs
(c) Auxotrophs
(d) Chemo - organotrophs
4. _____ proposed a rapid method for the design of sterilization cycles avoiding the time consuming graphical integrations.
- (a) Richards (b) Alexandan
(c) Humphrey (d) Jain
5. Construction materials are used for making a Fermenter.
- (a) Glass (b) Stainless steel
(c) Both (a) and (b) (d) Wood
6. _____ is required to achieve a number of mixing objectives?
- (a) Agitator (b) Magnetic drives
(c) Sparger (d) Feed ports

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain upstream processing.

Or

- (b) Discuss about industrial sterilization of equipments.

12. (a) Write short notes on bioreactor.

Or

- (b) What are the principle and factors involved in fermentor design? Explain.

13. (a) Write notes on air driven column reactors.

Or

- (b) Discuss about submerged fermentation?

14. (a) Discuss about applications of filtration in down stream processing.

Or

- (b) Mention the uses of centrifugation process in down stream processing.

7. _____ caused by a sudden change in salt concentration will cause disruption of a number of cell types.

- (a) Liquid shear
 (b) Solid shear
 (c) Agitation with abrasive
 (d) Osmotic shock

8. _____ is a common cation exchange resin.

- (a) Carboxy methyl cellulose
 (b) Hemicellulose
 (c) Lignin
 (d) Chitin

9. In the preparation of malt _____ grains are soaked at 10 to 15.6°C.

- (a) Black gram (b) Barley
 (c) Wheat (d) Soya

10. _____ is glutamate producing organism.

- (a) *Corynebacterium glutamicum*
 (b) *Clostridium glutamicum*
 (c) *Brevibacterium glutamicum*
 (d) *E. coli*

15. (a) Write short notes on vinegar production.

Or

(b) Explain in detail about Baker's Yeast?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the components parts of a fermentation process.

Or

(b) What are the raw materials used in industrial fermentation process? Explain.

17. (a) Write short notes on :

(i) Aeration

(ii) Agitation.

Or

(b) What are the valves attached to fermenters? Explain.

18. (a) Explain in detail about types of fermenter.

Or

(b) Write short notes on the following :

(i) Oxygen delivery system.

(ii) Foam control.

(iii) pH control.

19. (a) What are the purification and polishing technologies involved in down stream processing?

Or

(b) Write short notes on the following :

(i) Drying

(ii) Crystallization.

(iii) Solvent extraction.

20. (a) Write a detailed notes on beer production?

Or

(b) Discuss the production process of Penicillin.