

[120/A-16]

SEAT No. _____

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SARDAR PATEL UNIVERSITY
M. Sc. Integrated Biotechnology (IGBT) 6th Semester
Theory Examination – March 2019
PS06CIGB03 – Industrial Microbiology (NEW)
23th March 2019 (Saturday), 2:00 pm to 5:00 pm

Maximum Marks: 70

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

Q.1. Choose the correct option

1 × 8 = 8

- (i) Which one of the following method is not used for the culture preservation?
[A] Storage on Agar slopes [B] Autoclaving
[C] Lyophilization [D] Storage under liquid Nitrogen.
- (ii) Which of the following method is not used for sterilization of media.
[A] Filtration [B] Radiation
[C] Agitation [D] Heat
- (iii) Which of the following is the example of In-line sensor?
[A] Ion specific sensor [B] Mass spectrophotometer
[C] Antifoam probes [D] tachometers
- (iv) Some chemicals, when added to certain fermentations, are directly incorporated into the desired products are called _____.
[A] Buffers [B] Inhibitors
[C] Inducers [D] Precursors
- (v) The volumetric mass transfer coefficient, K_{La} has the unit _____.
[A] h^{-1} [B] cm^2h^{-1}
[C] cm^2/cm^3 [D] cm/dm^3
- (vi) Most common cause of foaming is due to _____ in the fermentation medium.
[A] Vitamins [B] carbohydrates
[C] Proteins [D] none of these
- (vii) Ion exchange chromatography is based on the _____.
[A] Electrical mobility of ionic species [B] Electrostatic attraction
[C] Partition chromatography [D] Adsorption chromatography
- (viii) Chemical name of citric acid is _____.
[A] ethanedioic acid
[B] 2-Hydroxybutanedioic acid
[C] 1-Hydroxypropane-1,2,3-tricarboxylic acid
[D] 2-Hydroxypropane-1,2,3-tricarboxylic acid

①

(P.T.O.)

- Q.2.** Attempt any Seven of the following 2 × 7 = 14
- (a) Define Primary and secondary screening.
 - (b) What are antifoam agents? Give example antifoam agent.
 - (c) Draw a flow diagram of co-current and counter current extraction.
 - (d) Explain the terms primary and secondary metabolites.
 - (e) Define the terms: batch fermentation and fed batch fermentation.
 - (f) Enlist the devices used in pressure measurement.
 - (g) Enlist the applications of amylase.
 - (h) With suitable example, explain the rôle dyes in screening.
 - (i) Enlist ideal characteristics of fermentation media.
- Q. 3.** [A] Explain in detail the technique used for primary screening of growth factor producing organisms. [06]
- [B] Enlist various methods of preservation of industrially important microorganisms. [06]
Explain any one method in detail
- OR**
- Q. 3.** [B] Discuss strain improvement using protoplast fusion technique. [06]
- Q. 4.** [A] Discuss in detail various carbon sources used in fermentation medium and factors influencing the choice of carbon source [06]
- [B] Explain the role of following raw materials in the fermentation medium: [06]
- i) Buffers ii) Inducers iii) Inhibitors
- OR**
- Q. 4.** [B] Discuss in detail continuous sterilization of media with neatly labelled diagram. [06]
- Q. 5.** [A] Explain in detail the components of agitation and aeration. [06]
- [B] Explain in detail on measurement and control of temperature & pressure during fermentation process. [06]
- OR**
- Q. 5.** [B] Explain in detail gassing out technique for determination of K_{La} . [06]
- Q. 6.** [A] Discuss in detail fermentative citric acid production. [06]
- [B] Discuss in detail the solvent extraction methods for product recovery. [06]
- OR**
- Q. 6.** [B] Explain in detail the fermentative production of amylase. [06]

