

P. P. SAVANI UNIVERSITY

Third Semester of B.Sc. Examination
December-2021

SSBT3210-Microbial Biotechnology-II

15.12.2021, Wednesday Time: 12:30 p.m. to 03:00 p.m. Maximum Marks: 60

Instructions:

The question paper comprises of two sections.

1. Section I and II must be attempted in separate answer sheets.
2. Make suitable assumptions and draw neat figures wherever required.
3. Use of scientific calculator is allowed.

Section-I (Total Marks - 30)

Q.1 Short Questions

[10]

1.1 Objectives

[05]

1.1a Which among the following vitamin is also known as cyanocobalamin?

- A B₆
- B B₁₂
- C Vitamin D
- D Vitamin C

1.1b Which among the following microorganism is used for the production of citric acid?

- A Rhizopus
- B *Candida albicans*
- C *Aspergillus niger*
- D Clostridium

1.1c Which among the following microorganism are used for acetic acid production?

- A *Acetobacter xylinum*
- B *Acetobacter aceti*
- C Both A & B
- D None

1.1d Which among the following is a lactic acid fermentative bacterium?

- A *Lactobacillus delbreuckii*
- B *Lactobacillus lactis*
- C *Lactobacillus bulgaricus*
- D All of them

1.1e Which among the following fungi is involved in koji fermentation?

- A *Aspergillus niger*
- B *Candida albicans*
- C Clostridium spp
- D Rhizopus

1.1f At what pH value L-lysine have two positive and one negative charge?

- A 1
- B 5.6
- C 9.7
- D 11

1.1g An intermediate product, indole is formed during the production of which among the following amino acid?

- A L-tryptophan
- B L-lysine
- C L-glutamic acid
- D Lactic acid

1.1h Which charges are present on L-lysine at pH 11?

- A One negative charge
- B Two positive charge
- C One positive and one negative
- D No charge

1.1i Which among the following is an example of carotenoid?

- A Citric acid
- B β -carotene
- C L-lysine

1.1j Which among the following bacteria is used for the production of L-glutamic acid

- A *Zygomonas mobilis*
- B *Acetobacter aceti*
- C *Corynebacterium glutamicum*
- D None

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) [05]

1.2a The steps involved in the development of microorganisms, nutrient preparation, cell culture etc. in microbial synthesis of product is known as

1.2b Define oxidative phosphorylation.

1.2c Define submerged fermentation

1.2d acid is produced by *Aspergillus* spp. and *Penicillium* spp., belonging mainly to the flavus-oryzae tamarii groups.

1.2e At what pH L-lysine exhibits isoelectric point?

Q.2 Short Notes (Attempt any two) [06]

- A Write the steps involved in production of kojic acid
- B Write in brief about microbial production of Beta carotene
- C Fermentation conditions involved in the microbial production of gluconic acid

Q.3 Explain in detail (Attempt any two) [14]

- A Write the steps involved in microbial production of citric acid.
- B Write fermentation conditions for microbial production of vitamin B12.
- C Write fermentation conditions involved in microbial production of L-lysine.

Section-II (Total Marks - 30)

Q.1 Short Questions

[10]

1.1 Objectives

[05]

1.1a Penicillin antibiotic shows its action on_____.

- A Cell membrane
- B Ribosome
- C Cell wall
- D Nucleus

1.1b Recovery of alcohol is accomplished by

- A Centrifugation
- B Filtration
- C Ion exchange
- D Distillation

1.1c Which of the following is broad spectrum antibiotic?

- A Streptomycin
- B Penicillin
- C Both
- D None

1.1d Mashing is stage of_____.

- A Downstream processing of antibiotic.
- B Upstream processing of antibiotic
- C Downstream processing of alcohol
- D Upstream processing of alcohol

1.1e Production of SCP cannot be done on _____

- A Beet molasses
- B Sugar cane molasses
- C n- Alkanes
- D Surfactant

1.1f The major reason that SCP cannot be used as food is_____.

- A High Nucleic acid content.
- B Low nucleic acid content
- C High carbohydrate content
- D Low carbohydrate content

1.1g The organism which can be used as SCP

- A Bacteria
- B Fungi
- C Algae
- D All of these

1.1h Which of the following is not a Beta lactam antibiotic

- A Penicillin
- B Cephalosporin
- C Monobactams
- D Tetracycline

1.1i The precursor used for penicillin fermentation is

- A Gluconic aromatic acid
- B Phenyl Acetic Acid
- C Acetic acid
- D Doesn't require precursor

1.1j Mushroom production is _____.

- A Submerged fermentation
- B Solid State fermentation
- C Anerobic fermentation
- D Closed fermentation

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks)

[05]

1.2a Give examples of beta Lactam antibiotics.

1.2b What do you understand by spawning?

1.2c Name the microbes used for tetracycline production.

1.2d Give uses of acetone.

1.2e Name two commercially available mushrooms.

Q.2 Short Notes (Attempt any two)

[06]

A Write a note on spirulina.

B Describe the recovery of penicillin in brief.

C Discuss the recovery process of ethanol.

Q.3 Explain in detail (Attempt any two)

[14]

A Give advantages and disadvantages of single cell protein

B Write an account on Mushroom production.

C Discuss the industrial production of Butanol-Acetone.