

[131]

SARDAR PATEL UNIVERSITY
M. Sc. THIRD SEMESTER EXAMINATION
Date: 01-1-2021

PS03CBIT01: MICROBIAL BIOTECHNOLOGY

TIME: 2.00 TO 4.00 P.M.

MAX.MARKS: 70

Q-1

(A) Select most appropriate answer from the given choices.

[08]

- Succinyl Co-A act as a precursor in Vitamin B12 biosynthesis which is converted to _____ in presence of Glycine.
a) Porphyrin ring b) Corrin ring c) delta-aminolevulinic acid d) Urogen
- Which of the following amylase cleaves both α -1,4 and α -1,6 links?
a) Glucoamylase b) β -Amylase c) α -Amylase d) None of these
- 2,6-Diaminohexanoic acid is the chemical name of _____.
a) Lysine b) Aspartic acid c) Glutamic acid d) Mallic acid
- Steroids are consisting of _____ in its basic structure.
a) 4 Cyclopentane rings c) 3 Cyclohexane rings and 1 cyclopentane ring
b) 5 Cyclohexane rings d) 4 Cyclohexane rings
- Alginate with higher gel forming ability contains more amount of _____.
a) Guluronic acid b) Mannose c) Mannuronic acid d) All of the above
- Streptomycin was discovered by _____.
a) Selman Waksman b) Elizabeth Bugie c) Albert Schatz d) All of these
- High nucleic acid content of SCP can lead to _____ problem in human beings.
a) Gout b) Kidney stone c) Liver damage d) All of these
- Wheat Gluten is made up of _____.
a) Globulin b) Glutenin c) Gliadin d) b) and c) both

(B) Do as directed

a) Fill in the gaps

[8]

- The first commercial single cell protein "Pruteen" was produced by ICI using an organism called _____.
- In Mushroom cultivation, the process of covering the compost with the thin layer of soil like material is known as _____.
- Heterofermentative lactic acid bacteria metabolize hexoses by _____ pathway.
- _____ is an inducer and precursor for biosynthesis of lysergic acid.
- Riboflavin is synthesized by combination of D Ribitol and _____.
- Ergot is the _____ form of *Claviceps sp.*
- L Lysine is a member of _____ family
- Penicillin belongs to _____ class of antibiotics.

(b) State true or false

[8]

- Alginate is a cationic polysaccharide distributed widely in the cell walls of brown algae.
- Homofermentative LAB produces more amount of lactic acid than heterofermentative LAB.
- Polyhydroxybutyrate (PHB) is a polyhydroxyalkanoate (PHA), a polymer belonging to the polyesters class which is important as biodegradable plastics.
- Cheddar cheese is a hard cheese.
- Coagulation of milk during Yoghurt making occurs by proteolytic cleavage of casein.

[1]

[P.T.O.]

6. Vitamin B12 was discovered during research on Parkinsons disease.
7. Alginate is a cationic polysaccharide distributed widely in cell walls of brown algae.
8. Acetaldehyde is one of the major flavor compound produced during yoghurt fermentation.

- Q-2** **Answer any seven short questions** **[14]**
- i. Define the term: Oleaginicity
 - ii. Enlist uses of Glutamic acid.
 - iii. Write the mode of action of streptomycin.
 - iv. Explain the biological role of xanthan.
 - v. Name the substrates used to synthesize steroid drugs.
 - vi. Neatly narrate the structure of ergolene ring.
 - vii. Write applications of citric acid
 - viii. Write the desirable characteristics of organism to be used as SCP.
 - ix. Explain the synergism between yoghurt starter cultures.
- Q-3** **Answer the following** **[4+4]**
- a) Explain the recovery of penicillin from fermented broth.
 - b) Briefly describe non food applications of microbial proteases.
- OR
- Q-3** **Write in detail on fermentative production of citric acid.** **[8]**
- Q-4** **Explain in detail the cultural conditions affecting sporulation and alkaloid production by *Claviceps spp.*** **[8]**
- OR
- Q-4** **Write in detail on maiting and mashing steps of beer manufacture.** **[8]**
- Q-5** **Write in detail on major steps used in cultivation of edible mushrooms.** **[8]**
- OR
- Q-5** **Write notes on:** **[4+4]**
- a) Microbial hydroxylations of steroids and its importance.
 - b) Nutritional value of SCP
- Q-6** **Neatly narrate flow diagram of cheddar cheese making process and explain in detail the role of rennets.** **[8]**
- OR
- Q-6** **Explain the following:** **[4+4]**
- a) Biosynthesis of microbial exopolysaccharides
 - b) Functions of starter cultures in fermented milk products.

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