Sub Code: BT 502

154506 | Roll No: | |

BTECH
(SEM V) THEORY EXAMINATION 2019-20
FERMENTATION BIOTECHNOLOGY

Time: 3 Hours *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data, then choose suitably

SECTION A

1. **Attempt *all* questions in brief.** 2 x 7 14

(a)	Differentiate primary metabolite and secondary metabolite.
(b)	Name the two microorganisms involved in acetone-butanol fermentation.
(c)	Give the name of two important enzymes that regulate the nitrogen metabolism.
(d)	Give the name of microorganism's involved in Bioleaching.
(e)	Define Syngas fermentation. Give examples of microorganisms.
(f)	Name the two host microorganisms involved in production of rDNA pro[illegible]
(g)	What are β-lactam antibiotics?

SECTION B

2. **Attempt any *three* of the following:** 7 x 3 = 21

(a)	Discuss the various stages in the chronological development of fermentation industry. Explain major groups of commercially important fermentation processes.
(b)	Illustrate the general steps involved in production of fermented product. Draw the general flow diagram of fermentation process.
(c)	Explain carbon catabolite repression regulates the production of enzymes in the microorganisms? Give suitable examples.
(d)	Explain the phenomenon of feedback regulation in microorganisms with suitable examples.
(e)	Discuss the types, parameters, production process and various applications of amylase enzyme.

SECTION C

Attempt any *one* part of the following: 7 x 1 = 7

(a)	Differentiate SSF and SmF. Discuss the various advantages and applications of SSF.
(b)	What is strain improvement? Discuss the different strategies to develop strain improvement of industrially important microorganisms.

Attempt any *one* part of the following: 7 x 1 = 7

(a)	Describe the various methods of pretreatment of raw materials used in fermentation industry. Enlist the various feedstock used for production of ethanol.
(b)	Discuss the different types of cellulosic raw material used in fermentation industry. Illustrate the application of cellulosic biomass in fermentation

Roll No:

Attempt any *one* part of the following: **7 x 1 = 7**

(a)	Explain the sequential gene expression phenomenon of Lac Operon in *E coli*. Describe the various methods of selection of constitutive mutants.
(b)	Trp Operon is a repressible operon. Justify the statement. How it is regulated by feedback repression and attenuation process.

Attempt any *one* part of the following: **7 x 1 = 7**

(a)	What do you understand by overproduction of metabolites? Illustrate the overproduction of IMP nucleotide from microorganisms.
(b)	What is Biotransformation? Describe the various applications of microbial transformation process.

Attempt any *one* part of the following: **7 x 1 = 7**

(a)	Explain the biosynthesis, process parameters and downstream processing of Penicillin G?
(b)	What is Microbial leaching? Mention the different types of microorganisms involved and chemistry of bioleaching. Describe the various methods of commercial leaching processes.