**23FTP316**

**PSG COLLEGE OF ARTS & SCIENCE**
(AUTONOMOUS)

**MSc DEGREE EXAMINATION DECEMBER 2025**
(Third Semester)

Branch – **FOOD TECHNOLOGY MANAGEMENT**

**FOOD FERMENTATION & INDUSTRIAL ENZYMOLOGY**

Time: Three Hours Maximum: 75 Marks

**SECTION-A (10 Marks)**
Answer **ALL** questions
**ALL** questions carry **EQUAL** marks (10 × 1 = 10)

| Module No. | Question No. | Question | K Level | CO |
|---|---|---|---|---|
| 1 | 1 | Choose the enzyme that is used in the production of high fructose corn syrup<br>a) fructose esterase<br>b) glucose esterase<br>c) glucose isomerase<br>d) fructose isomerase | K1 | CO1 |
| | 2 | Which one the following not the advantages of computer controlled fermentation ?<br>a) consistency b) efficiency<br>c) scalability d) data security | K2 | CO1 |
| 2 | 3 | A cylindrical column filled with liquid where gas is injected from the bottom is called<br>a) bubble column fermenter<br>b) stirred tank fermenter<br>c) fluidized bed reactor<br>d) ohoto reactor | K1 | CO2 |
| | 4 | Soy sauce is made by fermentation of soya bean with<br>a) lactobacilli<br>b) *Aspergillus niger*<br>*c) sacchasromyces cerevisiae*<br>*d) Aspergillus sojae* | K2 | CO2 |
| 3 | 5 | Isoenzymes are one that catalyze the same reaction but have distinct<br>a) AA sequence b) forms c) both d) none | K1 | CO3 |
| | 6 | Name the organic, non-protein molecules that assist the enzymes in catalyzing biochemical reactions.<br>a) isoenzymes b) enzyme catalysere<br>c) pro enzymes d) co enzymes | K2 | CO3 |
| 4 | 7 | Techniques like molecular modeling, bioinformatics , directed evolution, machine learning are called<br>a) enzyme sequencing tools<br>b) enzyme identification tools<br>c) enzyme engineering tools<br>d) enzyme synthesis tools | K1 | CO4 |
| | 8 | Di isopropyl fluorophosphates (DFP) is an example of<br>a) irreversible protease inhibitor<br>b) competitive inhibitor<br>c) uncompetitive inhibitor<br>d) an activator | K2 | CO4 |
| 5 | 9 | Osmotic lysis is a method of<br>a) enzyme disruption b) enzyme purification<br>c) enzyme isolation d) enzyme extraction | K1 | CO5 |
| | 10 | What is the percentage of fructose in high fructose corn syrup used in bakery products?<br>a) 50 b) 52 c) 40 d) 42 | K2 | CO5 |

**Cont...**

## SECTION - B (35 Marks)

Answer **ALL** questions

**ALL** questions carry **EQUAL** Marks (5 × 7 = 35)

| Module No. | Question No. | Question | K Level | CO |
|---|---|---|---|---|
| 1 | 11.a. | Explain the factors affecting fermentation process. | K3 | CO1 |
| | | (OR) | | |
| | 11.b. | Is the role of computers crucial in food fermentation process? Examine. | | |
| 2 | 12.a. | Outline the importance of a fermenter in food industry. | K4 | CO2 |
| | | (OR) | | |
| | 12.b. | Are synbiotics essential to improve gut health? Analyse. | | |
| 3 | 13.a. | Illustrate the mode of enzymatic action. | K4 | CO3 |
| | | (OR) | | |
| | 13.b. | Analyse the role of multi enzyme complex in food fermentation. | | |
| 4 | 14.a. | Explain Michaelis Menten equation and its significance. | K3 | CO4 |
| | | (OR) | | |
| | 14.b. | Discuss the ethical issues and public health concern on genetically engineered food items. | | |
| 5 | 15.a. | Analyze the production and industrial applications of amylase. | K4 | CO5 |
| | | (OR) | | |
| | 15.b. | Explain the production of high fructose corn syrup. | | |

## SECTION -C (30 Marks)

Answer **ANY THREE** questions

**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

| Module No. | Question No. | Question | K Level | CO |
|---|---|---|---|---|
| 1 | 16 | Explain the role of artificial intelligence for fermentation optimization. | K4 | CO1 |
| 2 | 17 | Explain the advantages of IUB classification and numbering of enzymes with suitable example. | K4 | CO2 |
| 3 | 18 | Discuss the role of co enzymes in the speed of enzymatic reaction. | K5 | CO3 |
| 4 | 19 | Compare the advantages of artificial enzymes over natural enzymes in food fermentation industry. | K5 | CO4 |
| 5 | 20 | Discuss the industrial application of glucose isomerase and asparaginase. | K5 | CO5 |

Z-Z-Z END