QPC: RM17001097 AR - 17 Reg. No. | | | | | | | | | | |

GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, May – 2021

(Eighth Semester)

BCHPE8021 - FERMENTATION TECHNOLOGY

(Chemical Engineering)

Time: 2 hrs Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) (1 x 10 = 10 Marks)

Q.1. Answer ***ALL*** questions [CO#] [PO#]

a. Genes from higher organisms may be introduced into microbial cells such that the recipients are capable of synthesizing "foreign" proteins called _____ proteins — 1 — 1

(i) heterologous (ii) homologous

(iii) complex (iv) synthetic

b. Growth rate of the cells gradually increases, the cells grow at a constant maximum rate occur during _____ phase. — 1 — 1

(i) lag (ii) log

(iii) stationery (iv) death

c. Which of the following is not a nitrogen source? — 2 — 1

(i) waste liquor (ii) corn steep

(iii) yeast extract (iv) peptones

d. The destruction of microorganisms by moist heat is described by _____. — 2 — 1

(i) zero-order reaction (ii) first-order reaction

(iii) second--order reaction (iv) third-order reaction

e. The fermentation media should be free from _____. — 2 — 1

(i) precursors (ii) inhibitors

(iii) toxicity (iv) defoamers

f. The type of fermentation observed in yeasts is — 3 — 1

(i) acrylic fermentation (ii) lactic acid fermentation

(iii) pyruvic fermentation (iv) alcoholic fermentation

g. _____ in which exchange of mass and energy is possible with surrounding — 3 — 1

(i) open system (ii) closed system

(iii) isolated system (iv) lumped system

h. For scaling up of a bioreactors, the following parameter is assumed to be constant — 4 — 1

(i) airflow rate (ii) diameter of the impeller

(iii) agitator speed (iv) feed quantity

i. Increasing the stirrer speed improve the value of — 4 — 1

(i) Reynolds Number (ii) Power Number

(iii) Mixing time (iv) Volumetric mass transfer coefficient

j. Antifoam compound affect the — 4 — 1

(i) reduced bubbles (ii) tendency to coalesce

(iii) effect on speed (iv) tendency to separate

PART – B: (Short Answer Questions) **(2 x 5 = 10 Marks)**

Q.2. Answer ***ALL*** questions	[CO#]	[PO#]
a. Write any two differences between chemostat and turbidostat.	1	1
b. Define chemically defined media.	2	1
c. State the law of conservation of mass and write the general mass balance equation.	3	1
d. What is the role of fuzzy control in fermentation?	4	1
e. Why inlet and exhaust stair ports are sterilized in a fermenter.	4	2

PART – C: (Long Answer Questions) **(6 x 5 = 30 Marks)**

Answer ***ANY FIVE*** questions	Marks	[CO#]	[PO#]
3. Discuss the microbial growth kinetics in Batch culture.	(6)	1	1
4. Explain in detail the various isolation methods of industrially important microorganisms.	(6)	1	1
5. Explain the factors influencing the choice of carbon source for medium formulation.	(6)	2	1
6. Discuss the need of addition of precursors and metabolic regulators to media.	(6)	2	1
7. Explain the preparation of inoculum for fermentations employing filamentous organisms.	(6)	3	1
8. A solution of common salt in water is prepared by adding 20 kg of salt to 100 kg of water, to make a liquid of density 1323 kg/m^3. Calculate the concentration of salt in this solution as a (a) weight fraction, (b) weight/volume fraction, (c) mole fraction, (d) molal concentration.	(6)	3	2
9. List the points to be considered when designing a fermenter.	(6)	4	1
10. Explain aseptic operation and contaminant with reference to the fermentation industry.	(6)	4	1

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