QPC: RA20BTECH867 AY 20 Reg. No | | | | | | | | | | |

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Eight Semester – Regular) Examinations, April– 2024

BOECH8030 – Biochemical Engineering

(Chemical)

Time: 3 hrs Maximum: 70 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. Microbiology is the study of CO1 PO1
(i) Bacteria (ii) Fungi
(iii) Algae (iv) All of these

b. Biochemistry is CO1 PO1
(i) Life science (ii) Chemical science
(iii) Both (i) and (ii) (iv) None of these

c. Protoplasm is consisting of CO1 PO1
(i) Protein (ii) Lipids
(iii) Nucleic acids (iv) All of these

d. Enzymes are CO2 PO1
(i) Low catalytic power (ii) high catalytic power
(iii) highly specific in nature (iv) both (ii) and (iii)

e. IUB is CO2 PO1
(i) International Union of Biology (ii) International Union of Biochemist
(iii) Indian Union of Biochemist (iv) International Union of Biologist

f. Michaelis Menten constant may be defined as the substrate concentration at which the reaction rate is___% of the maximum rate. CO2 PO1
(i) 25 (ii) 50
(iii) 75 (iv) 100

g. Mass transfer studies in Bioprocess is complicated study compared to chemical process because CO3 PO1
(i) Complex Rheology of fermentation broth (ii) Presence of living organism
(iii) Both (i) and (ii) (iv) None of these

h. Mass transfer operations in bioprocess may be studied under the categories of CO3 PO1
(i) Convective mass transfer (ii) Diffusion mass transfer
(iii) Liquid-liquid extraction (iv) All of these

i. Microorganism consume the CO3 PO1
(i) Oxygen gas (ii) Nitrogen gas
(iii) Both (i) and (ii) (iv) None of these

j. In primary isolation CO4 PO1
(i) air is removed (ii) water is removed
(iii) solids are removed (iv) none of these

PART – B: (Short Answer Questions) **(2 x 10 = 20 Marks)**

Q.2. Answer ***ALL*** questions [CO#] [PO#]

a. Differentiate between microbiology and Biochemistry. CO1 PO3

b.	Define cell theory.	CO1	PO1
c.	What are holoenzyme and apoenzyme?	CO2	PO1
d.	Define Turn Over Number(TON)	CO2	PO1
e.	State Monod Growth Kinetics.	CO2	PO1
f.	State Fick's second law of uni-direction diffusion.	CO3	PO1
g.	What are the methods to increase mass transfer rate.	CO3	PO2
h.	Define Sherwood number and Scimdt number.	CO3	PO1
i.	What is downstream processing?	CO4	PO1
j.	What is bioleaching?	CO4	PO1

PART – C: (Long Answer Questions) **(10 x 4 = 40 Marks)**

Answer ***ALL*** questions		Marks	[CO#]	[PO#]
3. a.	Outline the characteristics of biological systems	5	CO1	PO2
b.	Explain Eucaryotic cell with neat sketch	5	CO1	PO2
	(OR)			
c.	Elaborate the characteristics of microorganisms.	10	CO1	PO2
4. a.	Derive Michaelis Menten kinetics.	5	CO2	PO2
b.	Derive a kinetic expression for reversible competitive inhibition.	5	CO2	PO2
	(OR)			
c.	Explain the importance of lipid.	10	CO1	PO2
5. a.	Explain the air sterilization methods.	5	CO3	PO2
b.	Briefly explain thermal death kinetics.	5	CO3	PO2
	(OR)			
c.	Differentiate between fixed bed and fluidized bed reactor.	10	CO4	PO3
6. a.	Explain the working principle, advantages and disadvantages of batch reactor with neat sketch.	5	CO4	PO2
b.	Explain the working principle of air lift reactor with neat sketch.	5	CO4	PO2
	(OR)			
c.	Discuss the techniques used to monitor the physical environment of bioreactor.	5	CO4	PO2
d.	Discussion the biological methods for effluent treatment.	5	CO4	PO2

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