GIET UNIVERSITY, GUNUPUR – 765022
M. Sc. (First Semester) Examinations, March – 2023
22BTPC106 – Basic of Mathematics and Statistics
(Biotechnology)

Time: 3 hrs   Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A   **(2 x 10 = 20 Marks)**

Q.1. Answer all questions

		CO#	Blooms Level
a.	If $6x + i(4x - y) = 6 + i(-2)$, where x and y are real numbers, then find the values of x and y.	1	K2
b.	Do the following conversions. (a) Convert 4 radians into degree measure. (b) Convert 35 degree into radian measure.	1	K2
c.	If $2\begin{bmatrix} 3 & 4 \\ 5 & x \end{bmatrix} + \begin{bmatrix} 1 & y \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 7 & 0 \\ 10 & 5 \end{bmatrix}$, then find $(x - y)$.	1	K2
d.	Evaluate $\int (4x^6 - 2x^3 + 7x - 4)\, dx$	2	K2
e.	Find the value of $\lim\limits_{x \to 0} \frac{\log(100)+\log(0.01+x)}{x}$.	2	K2
f.	Evaluate $\int 7z^2(14 + 8z^3)^{-5} dz$.	2	K2
g.	Explain the difference between exogenous and endogenous rhythms?	3	K1
h.	Differentiate natality and mortality.	3	K1
i.	Define continuous variable with examples.	4	K1
j.	What are independent and dependent events? Explain with examples.	4	K1

PART – B   **(10 x 5 = 50 Marks)**

Answer *ANY FIVE* questions

		Marks	CO#	Blooms Level
2. a.	Multiply out and simplify the following expression: $(1 + x)(1 + x^2)(1 - x + x^2)$.	5	1	K2
b.	Solve: $\frac{3x - 2}{3} + \frac{2x + 3}{3} = \frac{x + 7}{6}$	5	1	K2
3.a.	Evaluate $\int \left(t^3 - \frac{e^{-t}-4}{e^{-t}} \right) dt$	5	2	K2
b.	Evaluate $\int_1^9 \left(\frac{2x^2+x^2\sqrt{x}-1}{x^2} \right) dx$.	5	2	K2
4.	What is population dynamics? Explain with diagram.	10	3	K3
5.	Give a note on circadian rhythms.	10	3	K3
6.	Classify aminoacids in various ways with suitable examples.	10	3	K3
7.a.	What are the different types of symmetry in biological system? Discuss about them.	10	3	K3
8. a.	Define simple linear regression with example.	5	4	K1
b.	Give a note on factorial experiment design.	5	4	K1

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