QP Code: RF23MSC045 | Reg. No | | | | | | | | | | | AY - 23

GIET UNIVERSITY, GUNUPUR – 765022

M. Sc. (First Semester) Regular Examinations, February – 2024

22BTPC106 – Basics 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 $2\begin{bmatrix}3 & 4\\5 & x\end{bmatrix}+\begin{bmatrix}1 & y\\0 & 1\end{bmatrix}=\begin{bmatrix}7 & 0\\10 & 5\end{bmatrix}$, then find $(x-y)$.	CO1	K2
b.	Explain the difference between exogenous and endogenous rhythms.	CO3	K2
c.	Find the value of $\lim_{x\to 0}\frac{\log\left(1+\frac{2}{5}x\right)}{x}$.	CO2	K2
d.	Evaluate $\int(4x^6-2x^3+7x-4)\,dx$.	CO1	K2
e.	Define square matrix and give one example.	CO2	K2
f.	Define ordinal or ranking scale.	CO1	K1
g.	Define linear regression and write the types of linear regression.	CO3	K1
h.	Find $f''(x)$ of $f(x)=6x^3-9x+9$.	CO1	K2
i.	How many ways can you draw 4 cards from a deck of 52 cards?	CO3	K1
j.	What is analysis of variation? What are the assumptions necessary to read analysis of variation?	CO3	K1

PART – B **(10 x 5 = 50 Marks)**

Answer ***ANY FIVE*** questions

		Marks	CO #	Blooms Level
2. a.	Evaluate $\int_1^9\frac{2x^2+x^2\sqrt{x}-1}{x^2}$.	5	CO1	K2
b.	Find the derivative of the function $x^2 cos\ x$.	5	CO1	K2
3.a.	Find the value of $\lim_{x\to 0}(x^3-3x^2+6x-3)$	5	CO1	K2
b.	Find the derivative of the following function: $F(z)=\frac{6}{\sqrt{z^3}}+\frac{1}{8z^4}-\frac{1}{3z^{10}}$	5	CO2	K2
4.	Give a note on circadian rhythms.	10	CO2	K3
5.	Calculate the coefficient of correlation from the following data:	10	CO2	K3

X	105	104	102	101	100	99	98	96	93	92
y	101	103	100	98	95	96	104	92	97	94

6.	If $A = \begin{bmatrix} 6 & -3 & 7 \\ 1 & 4 & 2 \\ 0 & 5 & 4 \end{bmatrix}$ and $B = 2A, C = B + 3A - 5I$. Find matrix D such that $D = 2A + B - C$.	10	CO3	K3
7.	Define lipids and classify them with suitable examples.	10	CO4	K2
8.	What are the types of probability sampling? Discuss about them.	10	CO4	K2