QP Code: RD22MSC127 | Reg. No | | | | | | | | | | | AY 22

GIET UNIVERSITY, GUNUPUR – 765022

M. Sc (Third Semester) Regular Examinations, December – 2023

22BTPC302 – Emerging technologies

(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. What is an aperture disc, and what is its function?	CO1	K2
b. What is goniometer?	CO3	K1
c. What are the desirable features of an analyzer.	CO2	K3
d. State vitrification.	CO1	K1
e. Write the advantages of small angle X-ray scattering?	CO3	K3
f. Why is it important to create vacuum in the Mass spectrometer instrument?	CO2	K4
g. Explain special sampling.	CO1	K3
h. What is Bragg's Law? Which instrument functions according to this law?	CO3	K2
i. Explain the concept of nanobodies.	CO4	K3
j. What is CRISPER?	CO4	K1

PART – B **(10 x 5 = 50 Marks)**

Answer ***ANY FIVE*** questions	Marks	CO #	Blooms Level
2. a. How are molecules made to fluoresce in fluorescent microscopy?	2	CO1	K3
b. Illustrate the instrumentation and application of confocal microscopy.	8	CO1	K2
3.a. Explain resolution, pinhole and signal channel configurations.	5	CO1	K3
b. Differentiate between phase contrast and fluorescent microscope.	5	CO1	K2
4. a. Discuss Ionization techniques employed in mass spectroscopy.	5	CO2	K3
b. Explain the concepts of magnification, resolution and numerical aperture	5	CO1	K3
5.a. Write the principle behind NMR spectroscopy.	2	CO3	K2
b. Write the principle, instrumentation, and application of X-ray diffraction.	8	CO3	K3
6. a. Elaborate fragmentation process in mass spectroscopy.	5	CO2	K4

b.	What is chemical shift? Elaborate the factors which influences chemical shift.	5	CO3	K3
7.a.	Give an account on gRNA design.	5	CO4	K2
b.	Discuss on CRISPR technology as a next generation therapeutic method.	5	CO4	K3
8. a.	Explain the structure of camlid antibody with sketch.	5	CO4	K3
b.	Write note on nanobodies.	5	CO4	K2

*** End of the Paper ****