QP Code: RJ23MTECH059 | Reg. No | | | | | | | | | | | AY 23

GIET UNIVERSITY, GUNUPUR – 765022

M. Tech (First Semester) Examinations, January – 2024

MPEBT1041 - Analytical Techniques in Biotechnology

(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. Define the principle behind fluorescence microscopy.	CO1	K2
b. Give two advantages of electron microscopy over light microscopy in terms of imaging biological samples.	CO1	K3
c. What are the laws governing the absorption of light in spectrophotometry?	CO2	K2
d. Outline the key components of instrumentation of UV-Vis spectrophometer.	CO2	K3
e. Define the principles of Ion-exchange chromatography.	CO3	K2
f. Differentiate between differential and density gradient centrifugation.	CO3	K2
g. Define the principle of gradient gel electrophoresis.	CO4	K2
h. Write down the applications of Western hybridization.	CO4	K3
i. Explain the fundamental nature of radioactivity.	CO5	K2
j. Write down the applications of radioactive isotopes in biochemistry	CO5	K2

PART – B **(10 x 5=50 Marks)**

Answer ***ANY FIVE*** questions	Marks	CO#	Blooms Level
2. What is microscopy? Explain the working principle, instrumentation and applications of SM?	2+8	CO1	K3
3.a. Describe the principle of fluorescence microscopy.	5	CO1	K3
b. Write the working principle of ESR spectroscopy?	5	CO2	K3
4. What is spectroscopy? Explain its working principle, instrumentation and applications of NMR spectroscopy.	2+8	CO2	K4
5. What is column chromatography? Explain the principle, instrumentation & applications of HPLC.	2+8	CO3	K3
6. a. Discuss on different types of centrifuge.	5	CO3	K2
b. Explain the principles of agarose gel electrophoresis and its applications in molecular biology.	5	CO4	K3

7.	Explain the principles of Southern blotting and its role in detecting specific DNA sequences.	2+8	CO4	K4
8. a.	Explain the principles of liquid scintillation counting.	5	CO5	K3
b.	Describe the basic steps involved in autoradiography.	5	CO5	K2

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