BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH **SEMESTER : IV**
BRANCH: BIOTECHNOLOGY **SESSION : SP/2025**

SUBJECT: BE214R1 NATURAL PRODUCT BIOTECHNOLOGY

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Identify the different sources of natural products with suitable examples in each case. Distinguish between the types of metabolites.	[5]	1	2,4
Q.1(b)	Justify the interrelationship of major biosynthetic pathways of metabolites giving a suitable example. Categorize phytochemicals with a suitable example in each case	[5]	1	4,5
Q.2(a)	Analyze the importance of Shikimic acid pathway in the production of natural products and illustrate any <u>one</u> phytochemical biosynthesis pathway	[5]	2	2,4
Q.2(b)	Select and interpret the tests (qualitative and quantitative) performed for screening of any <u>one</u> phytochemical and <u>one</u> bioactive compound obtained from microorganisms	[5]	2	3,5
Q.3(a)	Select and analyze any <u>one</u> conventional and <u>one</u> advanced method used for extraction of natural products	[5]	3	3, 4
Q.3(b)	Justify the importance of purification and characterization steps applied for analysis of natural products giving <u>one</u> suitable method in each case	[5]	3	5
Q.4(a)	Determine the steps involved in the production of any <u>one</u> essential oil using extraction method	[5]	4	5
Q.4(b)	Evaluate the significance of plant cell culture technique for the production of any <u>one</u> natural compound	[5]	4	5
Q.5(a)	Choose and describe the production process of any <u>one</u> nutraceutical. Assess the importance of heterologous biosynthesis of natural products	[5]	4	2,3, 5
Q.5(b)	Interpret the steps involved in the production of any <u>one</u> biopharmaceutical using fermentation technology	[5]	4	5

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