

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

**CLASS: BTECH  
BRANCH: BIOTECHNOLOGY**

**SEMESTER : VII  
SESSION : MO/2023**

**SUBJECT: BE415 SYSTEMS BIOLOGY**

**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.
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		CO	BL
Q.1(a)	How is the field of systems biology helpful in today's context?	[5] 6	5
Q.1(b)	How can we apply Control theory in understanding gene regulation?	[5] 4	3
Q.2(a)	Explain the bacterial chemotactic regulatory system with the help of suitable diagram.	[5] 2	2
Q.2(b)	Discuss enzyme co-operativity in detail.	[5] 2	2
Q.3(a)	Discuss the concept of quorum sensing as applicable in <i>Vibrio fischeri</i> .	[5] 2	2
Q.3(b)	Write down the developmental stages of <i>Drosophila</i> .	[5] 2	1
Q.4(a)	Illustrate the LIFO and FIFO temporal orders with suitable motif examples	[5] 2	3
Q.4(b)	Discuss the exclusive key motifs of developmental transcription networks	[5] 2	2
Q.5(a)	Write a note on markup languages and software platforms used in systems biology	[5] 4	1
Q.5(b)	Describe the principles and platforms of microarray technologies.	[5] 4	2

**:::::29/11/2023 M:::::**