

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

CLASS: MTECH  
BRANCH: MECHANICAL

SEMESTER : II  
SESSION : SP/2023

SUBJECT: ME505 MECHATRONICS

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)	What do you understand By Mechatronics? Why is it important in the home office and factory automation?	[5] 1	Easy
Q.1(b)	What are Analog to Digital converters. Explain the process with Sampling theorem	[5] 2	Medium
Q.2(a)	Explain Linearity, Hysterisis Error in terms of sensors performance	[5] 1	Medium
Q.2(b)	Explain Proximity sensors and Pyroelectric sensors with proper applications.	[5] 3	medium
Q.3(a)	What are Microprocessors. Why are they needed in Mechatronic devices?	[5] 2	medium
Q.3(b)	Explain 8051 microcontroller with specifications and working	[5] 2	medium
Q.4(a)	How is PLC different from regular controllers and computer. Show the basic architecture of PLC.	[5] 2	easy
Q.4(b)	A sensor gives a maximum analog output of 5V.What word length is required for an ADC if there bis to be a resolution of 10mV?	[5] 3	medium
Q.5(a)	How is traditional process of mechanical engineering different from advanced. Why is it called as Mechatronics and not Electromechanical ?	[5] 4	medium
Q.5(b)	Explain any one case study of Mechatronics with basic design and its configuration.	[5] 5	hard

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