



## **BRAINWARE UNIVERSITY**

Term End Examination 2024-2025
Programme – Dip.RA-2022
Course Name – Mechatronics
Course Code - ECOE501A
( Semester V )

Library
Brainware University
398, Ramkrishnapur Road, Barasat Kolkata, West Bengal-700125

Full Marks: 60

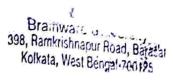
[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1.	Choose the correct alternative from the following:		
(i)	A servo motor is a typical example of		
	a) Electronics system	b) Mechanical system	
	c) Computer system	d) Mechatronics system	
(ii)	i) Analyze the function of an input signal conditioning unit is		
	a) To produce control signals	b) To amplify the signal and convert it into digital form	
(iii)	c) To perform mechanical work Choose the following carry out the overall control	d) To produce electrical signals of a system is	
	a) Graphical display	b) Sensors	
	c) Actuators	d) Digital controls	
(iv)	Select the feedback generated by sensors in a mechatronics system is		
	a) Input sensors	b) Comparators	
	c) Mechanical actuators	d) Output sensors	
(v)	Prototyping involves		
	a) Conceptual design	b) Replacing non-computer systems with actual hardware	
(vi)	c) Database for maintaining project information The light emitting diodes are used as a/an	d) Sub models for eventual reuse	
	a) intelligence	b) display	
	c) transducer	d) sensor	
(vii)	ii) The largest value for which the instrument output remains zero is		
	a) hysteresis error	b) resolution	



viii)	c) sensitivity  Analyze the effect on properties of LDR when ligh	d) dead zone t falls on it	Kolkata, West Bengal 700 19
•000	a) Its resistance remains same c) Its capacitance changes Select the nature of resistance to light intensity go	b) Its resistance changes d) Its inductance changes	dent resistor)
(x)	<ul><li>a) Increasing</li><li>c) Parabolic</li><li>In capacitive sensors the displacement is measure internal factor of the sensor?</li></ul>	b) Decreasing d) Constant ed with respect to change in	which
(xi)	a) Capacitance     c) Inductance     Capacitive transducers can be used by	b) Resistance d) Effervescence	
(xii	<ul> <li>a) Measuring change in distance between plates</li> <li>c) Change in a dielectric material</li> <li>) For a material capacitance increases with</li> </ul>	b) Measuring change in are d) All of the mentioned	a of plates
(xii	<ul> <li>a) Decrease in area of plates, all other factors constant</li> <li>c) Decrease in distance between plates, all other factors constant</li> <li>i) The 8255 is a chip.</li> </ul>	<ul><li>b) Increase in distance between factors constant</li><li>d) None of the mentioned</li></ul>	veen plates, all other
(xiv	a) Digital to analog c) Analog to Digital v) "DJNZ RO, label" is byte instruction.	b) Input/Output d) None of the mentioned	
(xv	<ul><li>a) 2</li><li>c) 1</li><li>f) Select when we add two numbers the destination</li></ul>	b) 3 d) Can't be determined address must always be.	
	a) some immediate data c) accumulator	b) any register d) memory	
	<b>Grou</b>   (Short Answer Ty		3 x 5=15
<ol> <li>Define Mechatronics.</li> <li>Describe the key elements of a mechatronics system.</li> <li>Express the working principle of hydraulic system.</li> </ol>			(3) (3) (3)
5. E	xplain how the I/O process is managed in a comput	ing or control system.	(3)
6. 1	Briefly explain different unconditional jump instruct	ions of 8051.	(3)
(	OR Compare MOVX and MOVC instructions.		(3)

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## Group-C (Long Answer Type Questions)

7. Explain force voltage and the second Answer Type Questions)	5 x 6=30
7. Explain force voltage analogy.	
8. Illustrate the classification of transducers.	(5)
classification of transducers.	(5)
9. Explain the addressing mode of 8051 microcontroller.	(5)
	(5)
10. Explain, the Challenges and Future Trends in Mechatronics and Automation.	
in Mechatronics and Automation.	(5)
11 Familiation 1	
11. Explain advantages and disadvantages of using fluid power via a hydraulic system.	(E)
	(5)
12. Write some of the challenges faced in implementing a Mechatronics system in a manufacturing setting and how can they be addressed.	(5)
and they be addressed.	1-2
Give some everythen f	
OR  Give some examples of successful implementations of Mechatronics systems in manufacturing, and what benefits have they provided.	(5)
and they provided.	. ,
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