

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/ B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024***Seventh Semester**Electronics and Communication Engineering***OMR351 - Mechatronics***Regulations - 2021**Duration : 3 Hrs**Maximum Marks : 100***PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Mention the needs of mechatronic systems.	RE	1	2
2.	Recall how a capacitance sensor operates when there is a change in area.	RE	1	2
3.	Distinguish between microprocessors and microcontrollers.	UN	2	2
4.	How to instruct a microprocessor to transfer data from memory to the microprocessor using 8085 instruction set?	UN	2	2
5.	What is the procedure for selecting Mode B in the CWR of the 8255?	RE	3	2
6.	List the features of 8255.	RE	3	2
7.	Why PLC is preferred over PC in industries?	UN	4	2
8.	What are the criteria need to be considered for selection of PLC?	RE	4	2
9.	Compare traditional design with mechatronics design.	UN	5	2
10.	List out the sensors used in engine management system.	RE	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i Explain in detail about emerging areas of mechatronics.	UN	1	6
	ii Summarize the static and dynamic characteristics of transducers.	UN	1	7
Or				
	b i Elucidate the working principle of hall effect sensor with neat sketch.	UN	1	6
	ii Illustrate the construction and the principle of operation of LVDT.	UN	1	7

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| 12. | a | i | Discuss briefly about the pin configurations of 8085 microprocessor with necessary diagrams. | AP | 2 | 7 |
| | | ii | Identify and describe the main features of the 8085 microprocessor. | AP | 2 | 6 |

Or

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| | b | i | Apply your understanding to explain the architecture and functional units of the 8085 microprocessor in detail. | AP | 2 | 7 |
| | | ii | Make use of examples to show how the 8085 microprocessor's instructions are executed in various addressing modes. | AP | 2 | 6 |

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| 13. | a | | Build an interfacing diagram of ADC with microprocessor and explain in detail. | CR | 3 | 13 |
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Or

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| | b | | Design a keyboard and 7 segment LED display interfacing with microcontroller for hexadecimal characters. | CR | 3 | 13 |
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| 14. | a | | Construct the ladder logic diagram for OR, NOR, NAND and XOR logic. | AP | 4 | 13 |
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| | b | | Apply your knowledge to explain how an internal relay is used to control multiple inputs and outputs. | AP | 4 | 13 |
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| 15. | a | | Design and explain the fluid power actuator-based pick and place robot. | CR | 5 | 13 |
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| | b | | Develop an automatic car park barrier system and comment on the various units in the system. | CR | 5 | 13 |
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*PART – C (Marks 1*15 = 15)*

Q.No		Questions	BLT	CO	Marks
16.	a	Design a traffic light controller using 8255 microprocessor.	CR	3	15
Or					
	b	Explain the choices and selection scenarios of PLC with real time applications.	EV	4	15