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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.TECH IV Year II Semester Regular & Supplementary Examinations July-2021
MECHATRONICS
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

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|---|---|--|----|----|
| 1 | a | Explain the various components of a Mechatronics system? | L2 | 4M |
| | b | What are the evolution levels of mechatronics? | L5 | 4M |
| | c | How does a GUI work? And what are the benefits of GUI? | L2 | 4M |

OR

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|---|---|---|----|----|
| 2 | a | What are the practical examples of open loop control system | L3 | 6M |
| | b | Distinguish between Robot, industrial robot and humanoid robot? | L2 | 6M |

UNIT-II

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|---|---|---|----|----|
| 3 | a | What is meant by analog input? Difference between analog input and digital input. | L1 | 6M |
| | b | How does operational amplifier work? Draw neatly sketch and symbol. | L4 | 6M |

OR

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|---|---|---|----|----|
| 4 | a | Explain characteristics of ideal filters with neat sketches? | L2 | 4M |
| | b | What is meant by filtering in signal conditioning? Explain notch filtering. | L1 | 8M |

UNIT-III

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|---|---|---|----|----|
| 5 | a | Write classification of actuation system? Draw actuation system functional diagram. | L2 | 6M |
| | b | Draw motor drive system with velocity and angular position feedback explain it. | L3 | 6M |

OR

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|---|---|---|----|----|
| 6 | a | What are the mechanical actuation system functions? | L1 | 6M |
| | b | Explain an electro-hydraulic actuation system with position control with neat sketch. | L2 | 6M |

UNIT-IV

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|---|---|--|----|----|
| 7 | a | What is circuit breaker? Describe working principle of circuit breaker with neat sketch. | L2 | 6M |
| | b | What does Power Supply mean? | L4 | 6M |

OR

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|---|---|---|----|----|
| 8 | a | Define coupling in amplifier? What are the main types of couplings explain? | L2 | 6M |
| | b | Draw protection circuit and explain it with few features. | L3 | 6M |

UNIT-V

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|---|---|--|----|----|
| 9 | a | What are the supporting elements include of a microcontroller and draw block diagram of Microcontroller. | L3 | 6M |
| | b | Explain the following i) ADC ii) DAC iii) system bus. | L1 | 6M |

OR

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|----|---|---|----|----|
| 10 | a | Draw flip flop shift register and explain it. | L3 | 6M |
| | b | What aspects should be considered for the selection of a PLC for the application? | L2 | 6M |

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