

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Electronics and Telecommunication Engineering

Subject Code & Name: Mechatronics (BTETPE704E)

Semester : VII

Max Marks: 60

Date: 24/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q. 1 Solve Any Two of the following.

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|--|------------|----------|
| A) What are the basic elements of Closed Loop Control System | CO4 | 6 |
| B) Explain the Static and Dynamic Characteristics of Sensor | CO1 | 6 |
| C) Explain Construction and Working of LVDT and Potentiometer Sensor | CO1 | 6 |

Q.2 Solve Any Two of the following.

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|--|------------|----------|
| A) Explain RTDS in Details | CO1 | 6 |
| B) Explain Construction and Working of eddy current and Hall Effect Sensor | CO1 | 6 |
| C) Define the term Rise Time, Delay Time , Steady state error and also Determine the stability of system represented by Characteristic equation $S^4 + 8S^3 + 18S^2 + 16S + 5$. Comment on Location of roots. | CO4 | 6 |

Q. 3 Solve Any Two of the following.

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|--|------------|----------|
| A) Explain Construction and Working of Strain – Gauge Sensor | CO1 | 6 |
| B) Discuss how PLC Logic gate System can be formed with Ladder diagram | CO6 | 6 |
| C) Explain i) Timers ii) Latching iii) Counters | CO3 | 6 |

Q.4 Solve Any Two of the following.

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|--|------------|----------|
| A) State Sampling Theorem and Explain Aliasing? | CO2 | 6 |
| B) Describe Operation of Sample and Hold Circuit | CO2 | 6 |
| C) Explain the Process for Building up of Model for Translational and Rotational Mechanical System | CO4 | 6 |

Q. 5 Solve Any Two of the following.

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|--|------------|----------|
| A) What are the Elements in DAQ? Explain | CO3 | 6 |
| B) Explain Proportional Integral Controller with necessary circuit diagram | CO5 | 6 |
| C) With the help of Block Diagram Explain main Components of PLC | CO6 | 6 |

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