

Course: B. Tech.

Branch :EXTC

Semester : VIII

Subject Code & Name: BTETPE 802D Industrial Automation and Control

Max Marks: 60

Date: 07/07/2022

Duration: 3.45 Hr.

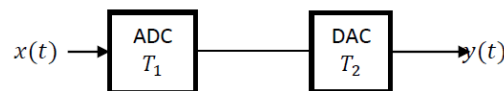
Instructions to the Students:

1. All Questions are Compulsory
2. Draw neat diagram wherever necessary.
3. Figures to right indicates full marks
4. Assume suitable data wherever necessary and mention it clearly

(Level/CO) Marks

Q. 1 Solve Any Two of the following.

- | | | |
|----|---|-----------|
| A) | Explain features of IT for the factory that differentiate it with its more ubiquitous counterparts that are used in offices and other business. | 06 |
| B) | Consider a simple signal processing system shown in figure below: | 06 |



The sampling periods of the ADC and DAC converters are $T_1 = 5 \text{ ms}$ and $T_2 = 2 \text{ ms}$ respectively. Input to the system is given as: $(t) = 3\cos 100\pi t + 2\sin 250\pi t$, then output (t) is

- | | | |
|----|--|-----------|
| C) | Draw a diagram of Fiber optic position sensor and explain its working. | 06 |
|----|--|-----------|

Q.2 Solve Any Two of the following.

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|----|--|-----------|
| A) | Discuss Differential Amplifier and derive the equation for same. | 06 |
| B) | Discuss with block diagram the Elements of a measuring system. | 06 |
| C) | Discuss the values of proportional gain in closed loop continuous oscillation technique. | 06 |

Q. 3 Solve Any Two of the following.

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|----|--|-----------|
| A) | Explain the Architecture of PLC with the help of block diagram. | 06 |
| B) | Give the significant advantages over conventional control panels of PLC. | 06 |
| C) | List and explain Process control input and outputs in stamping process. | 06 |

Q.4 Solve Any Two of the following.

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|----|---|-----------|
| A) | Give the Advantages of Hydraulic Actuation Systems. | 06 |
| B) | Classify CNC machine tool systems and explain any one way. | 06 |
| C) | Dynamic viscosity (μ) of a liquid is $8.9 \times 10^{-4} \text{ kgm}$, pipe's cross-section(A) is 8 cm^2 and hydraulic diameter (DH) of the pipe is 6 cm . Reynolds number (Re) is 2.5×10^5 . Find mass flow rate (W) through the pipe. | 06 |

Q. 5 Solve Any Two of the following.

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|----|--|-----------|
| A) | Give major aspects of production planning. | 06 |
|----|--|-----------|

B) Explain what is Stator and Rotor in Permanent Magnet Brushless DC Motor.

06

C) Write a short note on Variable Reluctance type Step Motor and give its specification.

06

***** End *****