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GIET UNIVERSITY, GUNUPUR – 765022

M. Tech (Third Semester – Regular) Examinations, December - 2020

MPEMD 3022 – MECHATRONICS

(MACHINE DESIGN)

Time: 2 hrs

Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A

(2 x 10 = 20 Marks)

Q.1. Answer ALL questions

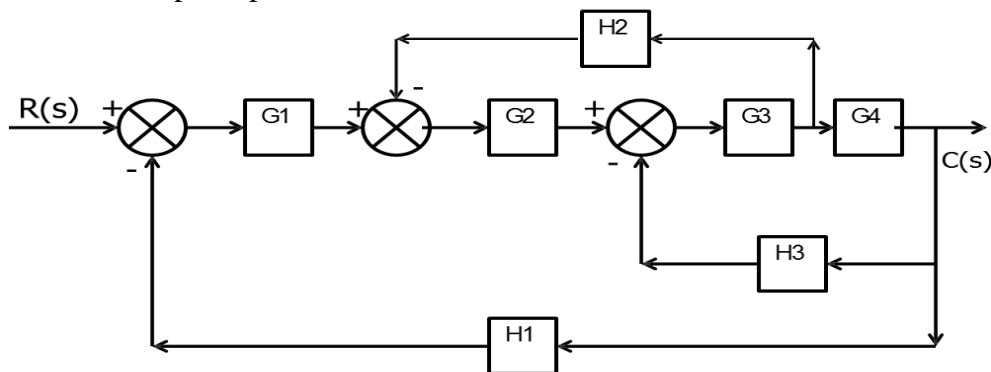
- a. What are the main applications of Mechatronics?
- b. State the purpose of using potentiometer in displacement sensor?
- c. Write objectives of DCV's?
- d. What is the function of hydraulic power system?
- e. State the purpose of control system in Hydraulics.
- f. What is stack and what is the use of stack pointer?
- g. What are the differences between a Microcontroller and Microprocessor?
- h. Draw block diagram of PLC.
- i. What is the function of hydraulic power system?
- j. What are the numbers of stages in the design process?

PART – B (6 x 5 = 30 Marks)

Answer ANY FIVE questions

Marks

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| 2. Explain the static and dynamic characteristic of a sensor? | (6) |
| 3. Explain the construction and working of eddy current and Hall Effect sensor | (6) |
| 4. Explain with block diagram the architecture of 8051 microcontroller. | (6) |
| 5. Write short notes on Pulse Modulation and Multiplexer? | (6) |
| 6. Explain Data Acquisition Systems? | (6) |
| 7. Find the transfer function of following control system as shown in figure using block diagram reduction principles. | (6) |



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| 8. Differentiate between sensors, transducer and actuators | (6) |
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9. Draw Ladder diagram along and state no of inputs and outputs for following process (6)
For 2 motors operation, When start button is pushed motor M1 and M2 starts .After 10 seconds motor. M1 stops Motor M2 stops 15 seconds after motor M1 has stopped. Both M1 and M2 will stop when push button is pressed.

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