

CBCS SCHEME

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18MT752

Seventh Semester B.E. Degree Examination, June/July 2023 Mechatronics System Design

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the design process of mechatronics system. (10 Marks)
- b. What are integrated design issues in mechatronics system? Explain advantages of concurrent engineering. (10 Marks)

OR

- 2 a. Explain key elements of mechatronics system design. (10 Marks)
- b. Explain the factors to be considered while designing mechatronics system. (10 Marks)

Module-2

- 3 a. Explain the basic feedback system to find the closed loop transfer function. (10 Marks)
- b. Solve the following to find its transfer function.

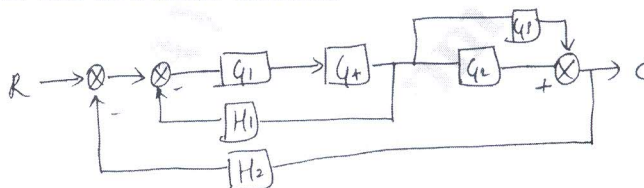


Fig.Q.3(b)

(10 Marks)

OR

- 4 a. Solve the following electrical system to find its transfer function:

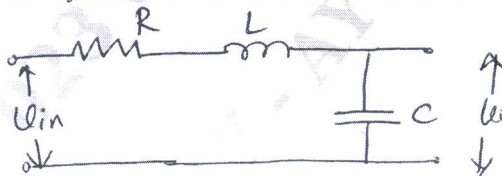


Fig.Q.4(a)

(10 Marks)

- b. Solve the following to find the transfer function.

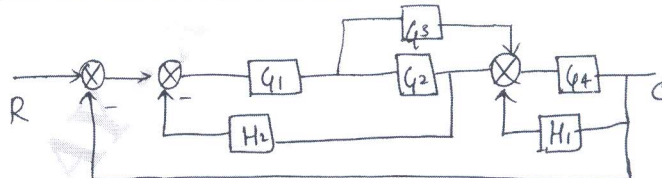


Fig.Q.4(b)

(10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-3

- 5 a. Explain transient state and steady state response of a signal. (10 Marks)
b. Find $y(t)$ for $y(s) = \frac{s+4}{s^3+6s^2+11s+6}$. (10 Marks)

OR

- 6 a. $y(s) = \frac{1}{(s+2)^3(s+3)}$, find $y(t)$. (10 Marks)
b. $y(s) = \frac{10}{s^2+8s+41}$ find $y(t)$. (10 Marks)

Module-4

- 7 a. Explain data acquisition system in detail. (10 Marks)
b. Explain: i) amplification ii) filtering iii) multiplying. (10 Marks)

OR

- 8 a. Explain working of inverting and non-inverting amplifier. (10 Marks)
b. Explain analog to digital conversion process. Find approximate digital value for 11.2V. (10 Marks)

Module-5

- 9 a. Explain working of pick and place robot. (10 Marks)
b. Explain working of digital camera. (10 Marks)

OR

- 10 a. Explain working of car parking barrier system. (10 Marks)
b. Explain working of wind screen-wiper motion. (10 Marks)
