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10MR82

Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Control Engineering and Automation

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Drive the Derivation of transfer function of first order Liguid system. **(10 Marks)**

b. Reduce the block diagram shown in Fig. Q1(b) to canonical form and determine transfer function $\frac{C(s)}{R(s)}$. If $G_1 = H_1 = 1$, $G_2 = H_2 = 2$, $G_3 = H_3 = 3$. **(10 Marks)**

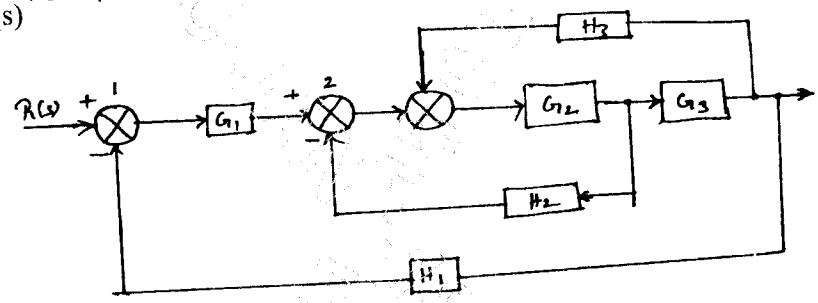

Fig Q1(b)

2 a. State and Explain steady state errors of Type – I unit feedback system. **(10 Marks)**

b. A unity feedback system is characterized by an open loop transfer function $G(s) = \frac{10}{S^2 + 2s + 6}$. Determine the following, when the system is subjected to unit step input i) Undamped natural frequency ii) Damping ratio iii) Peak over shoot iv) Peak time and v) Settling time. **(10 Marks)**

3 a. Write a note on stack Type controller. **(10 Marks)**

b. With a neat sketch explain pneumatic amplificator [Relay] system. **(10 Marks)**

4 a. With a neat sketch explain working of piston actuators. **(10 Marks)**

b. With a neat sketch explain working of valve positioners. **(10 Marks)**

PART – B

5 a. With a neat sketch explain variable inductance transducer. **(10 Marks)**

b. Illustrate with neat diagram and explain Flapper Nozzle. **(10 Marks)**

6 a. With a neat sketch explain marine Boiler combustion control system. **(10 Marks)**

b. Explain working of two-element water level control system with diagram. **(10 Marks)**

7 a. With the help of neat diagram explain working of piston cooling water system. **(10 Marks)**

b. With a neat sketch explain working of fuel oil system. **(10 Marks)**

8 a. How does the micro controller operates? Explain. **(10 Marks)**

b. Explain integrated automation control and monitoring (IC and MS).

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