Seat No.:	Enrolment No
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Subject Code: 161905

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – VI (OLD).EXAMINATION – WINTER 2016

Date: 24/10/2016

Subject Name: Control Engineering Time: 10:30 AM to 01:00 PM Total Marks: 70 **Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. 07 0.1 Explain open loop and closed loop systems with suitable examples. Define: transfer function. Write properties, advantages and disadvantages of transfer function. Obtain transfer function C(S)/R(S) of the system as shown in figure. 07 0.2 R(S) C(S) What is signal flow graph (SFD)? Write the steps for solving signal flow graph using 07 Mason's gain formula. OR (b) Explain transient response (time domain) specifications of second order control system 07 with neat sketch. 0.3 Explain Routh's stability criterion. What is Advantages and Disadvantages of Routh's 07 criterion? (b) Define: Root locus. Write steps for solving Problems on Root Locus. 07 Explain unit step response of first order system. 07 0.3 (a) Determine the stability to $s^6+2s^5+8s^4+12s^3+20s^2+16s+16$. 07 **(b)** 0.4 (a) Draw a neat sketch of Hydraulic Crane. Describe component and working of hydraulic 07 crane. **(b)** What is hydraulic coupling? Explain any one hydraulic coupling with neat sketch. 07 OR Explain control mechanisms for liquid level. 07 0.4 (a) Describe problem caused by gas in Hydraulic circuits. **07 (b)** Q.5 (a) Explain different types of pneumatic valves. 07 Define fuzzy logic. Explain the concept of Fuzzy logic with a suitable example. 07 07 0.5 (a) Write short note on: Programmable Logic controller (PLC). (b) What is speed control of D.C. motors? Explain steady state characteristics of DC motor. **07**
