Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER I (NEW) - • EXAMINATION - SUMMER 2016 Subject Code: 2710312 Date:18/05/2016 Subject Name: INTELLIGENT SYSTEMS AND CONTROL Time: 02:30 pm to 05:00 pm **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** Discuss about rationale for Using neural networks in Engineering. 07 (a) **(b)** Discuss about rationale for Using fuzzy logic in Engineering. 07 **Q.2 07** Consider the network of Figure:1 with the initial values as indicated. The (a) desired values of the output are d0 = 0 d1 = 1. Show two iterations of learning of the network using back propagation. The activation function of the first layer is a sigmoid and activation function of the output is a linear function. (b) Give explanation on Delta training rule in detail. 07 Give explanation on Supervised and Unsupervised Learning Networks in **(b)** 07 detail. Give explanation on RADIAL BASIS FUNCTION NETWORK (RBFN) in Q.3 14 detail and also discuss its training rules with suitable example. OR Give explanation on KOHONEN SELF-ORGANIZATION NETWORK in 14 Q.3 detail and also discuss its training rules with suitable example. Discuss about Mamdani implication method of fuzzy inference with suitable **Q.4** 14 example in detail. OR Discuss about stability of fuzzy control systems with stability theorems in 0.4 14 detail. Give explanation on process reaction curve and relay identification for auto 14 Q.5 tuning of PID controller with necessary derivations in detail. OR **Q.5** Discuss about FUZZY PID controller structure, its design and its 14 implementation in detail.

