Rajiv Kumar

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- Oct 2017

B.Tech 7th Semester

COURSE CODE: 14B1WEC734　　　　　　　　　　　　　　MAX. MARKS:25

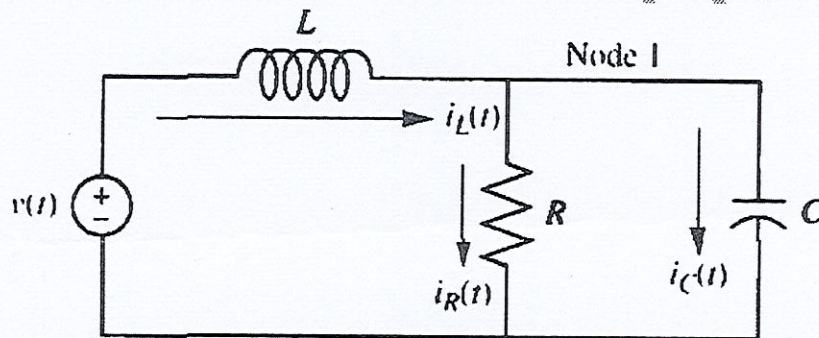COURSE NAME:NONLINEAR AND DIGITAL CONTROL SYSTEMS

COURSE CREDITS: 3-0-0　　　　　　　　MAX. TIME: One Hour Thirty Minutes

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q-1: Define the state of system.

　　Find the state space presentation of the following circuit. Also find the eigen values.

[5]

Q-2: Solve the following difference equation (assuming all the IC =0)

$$x(k+2) - \frac{3}{2}x(k+1) + \frac{1}{2}x(k) = 1(k)$$

Also find the impulse response. [5]

Q-3: A closed-loop control system must be designed for a damping ratio of about 0.7, and an undamped natural frequency of 10 rad/s. Select a suitable sampling period for the system if the system has a sensor delay of 0.02 sec. [5]

Q-4: a) What is Explain the Ackermann's Formula for Pole Placement.

b) Compare the full-state and reduced state observer. [6]

Q-5: Explain the phenomenon of – Jump resonance and Limit Cycle [4]