JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATIONS April 2019
B.Tech (ECE) 4th year

Dr Rayi

Course Code: 18B1WEC831 MAX. MARKS: 35
Course Name: Networked Embedded Control Systems
Course Credits: 03 MAX.1.5 hrs

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*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated in square brackets against each question.*

Qu.1: (a) Derive the stability criterion of the closed-loop networked predictive control system having constant network delay. (CO-3) 2.5

(b) Describe networked predictive control system with giving details of control prediction generator and network delay compensator. (CO-3) 2.5

Qu.2: (a) Explain the following in intelligent space: (CO-1)
(i) Edge detection for boundary detection
(ii) Path tracking using quadratic curve fitting
(iii) Impact of network delay on the performance of intelligent space 1.5+1.5+2=5

Qu.3:(a) Differentiate between the embedded system and cyber-physical systems (CPS).(CO-2) 2.5

(b) Define CPS and explain the following terms related with CPS:
Cyber space, Physical space, Object domain and Real space (CO-2) 2.5

Qu.4: (a) With help of an example explain the dumb behavior of the sensor nodes (CO-2) 2.5

(b) With reference to WSN, explain the following detection scheme:
(i) Single source single object detection scheme, (ii) Single source multiple object scheme(CO-2) 2.5

Qu.5: (a) Explain different type of actuators. Also explain, in what way actuator is related with the control systems. (CO-2) 2.5

(b) In case of IoT, explain: (i) network configuration, (ii) impact of mobility on addressing (CO-2) 2.5