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TEST 3 EXAMINATIONS - May 2017

M.Tech. 2nd Semester and B.Tech 8th Sem. (ECE)

COURSE CODE: 12 M1WEC232 MAX. MARKS: 35

COURSE NAME: Real-Time Embedded Systems

COURSE CREDITS: 03 MAX. TIME: 2 HRS

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

Q-1: a) What are four ACID properties those are required by concurrency control protocol to maintain the integrity of the data. (2)

b) Explain the following ters with reference to the real-time data-base:

(i) Forward OCC, (ii) OCC Broadcast Commit (3)

Q-2: a) Given a temporal data item d=(10,2500 mSec, 100mSec) and the value of current time as 2700 mSec. Is the given data item absolutely valid? (3)

b) Let a relative consistency set R = {position, velocity, acceleration} and R_{rvi} = 100mSec and following data items: Position = (25m, 2500 mSec), Velocity=(300 m/s, 2550 mSec, 300 mSec), Velocity=(300m/s, 2550 mSec, 300 mSec), Acceleration = (20 m/s^2 , 2425 mSec, 200 mSec), Current time = 2600 mSec.

Are the given data items absolutely valid? Also, are the relatively consistent? (4)

Q-3: a) Explain the Integrated Services and Differentiated Services in the QoS models. (3)

b) Explain and give the proof of following theorem,

" The minimum time required to complete transmission of a frame using IEEE 802.5 Protocol is max (F,θ),

where F is the frame transmission time and θ is the propagation time.

(3)

Q-4: a) Explain the features of real-time operating systems. (3)

b) Explain the clock interrupt processing in real-time communication. (4)

Q-5: a) What are different types of real-time tasks? (2)

b) Explain and classify the performance and behavioral constraints. (3)

Q-6: a) What do you mean by the priority inversion. (2)

b) Explain the Priority Inversion Protocols and Priority Ceiling Protocols. (3)