(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0149   **Roll No.**

B. Tech.

(SEM. VIII) EXAMINATION, 2008-09
REAL TIME SYSTEM

Time : 3 Hours]   *[Total Marks : 100*

Note : (1)   Attempt all questions.

        (2)   All questions carry equal marks.

1   Attempt any **four** of the following question :   5×4

    (a)   Differentiate Real time systems from general purpose systems with suitable example.

    (b)   Elaborate the misconception that Real time computing is fast computing.

    (c)   Explain the desiging issue of caches for RTS.

    (d)   Discuss that traditional performance measures are not suitable for real time systems.

    (e)   Discuss different types of task with suitable example.

    (f)   Discuss with suitable illustration embedded real time systems.

2   Attempt any **two** of the following question :   10×2

    (a)   Differentiate between real time operating system and general purpose operating system.

(b) Why resource contention is considered as major issue in design of real time OS and how it can be reduced?

(c) Discuss the important features and designing details of HART OS.

3   Attempt any **two** of the following questions :   10×2

(a) Discuss superiority of Earliest Deadline First (EDF) over RM and its schedulability criterion and how it handles Precedence and Exclusion? Further, explain the requirement of Primary and Alternative tasks.

(b) Explain static and dynamic scheduling with example. Mention advantages and disadvantages of both. Finally list different types of Multiprocessor and Uniprocessor scheduling algorithms.

(c) Schedule the following task set according to 'Next Fit' and 'Bin Packing' algorithms and comment on superiority of any one of them.

	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	T_{11}
e_i	5	7	3	1	10	16	1	3	9	17	21
P_i	10	21	22	24	30	40	50	55	70	90	95

Having M = 4 classes with bounds $c_1=(0.48,1]$, $c_2=(0.32, 0.48]$, $c_3=(0.22, 0.32]$ and $c_4=(0.0, 0.022]$.

4   Attempt any **two** of the following questions :   10×2

(a) Describe VTCSMA protocols using flowchart and further mention its important features along with its variants.

    (b)   Discuss window protocol with LTTT in real time communication. Also comment on how it handles collisions.

    (c)   One cannot guarantee that the hardeware will not fail and software is bug free then comment on how meaningful is to talk about guaranteeing real time performance.

5   Attempt any **two** of the following questions :   **10×2**

    (a)   Discuss the requirement of concurrency control in general and optimistic concurrency control in general.

    (b)   Define Clock and different types of it that can be used in real time systems. Further, discuss clock synchronization.

    (c)   What is redundancy? Discuss main issues in Hardware Redundancy giving emphasis on voting.