

B.TECH DEGREE EXAMINATIONS: MAY/JUNE 2013

Seventh Semester

INFORMATION TECHNOLOGY

ITY120: Real Time Systems

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The filtering used to improve the accuracy of measurements and to estimate model parameters in the presence of noise and uncertainty
 - a) Kalman filtering
 - b) Analog Filtering
 - c) Low Pass filtering
 - d) Digital Filtering
2. Hard Real Time systems require that their operations must be completed within their.....
 - a) Response Time
 - b) Absolute Deadline
 - c) Deadline
 - d) Relative Deadline
3. The function which gives the usefulness of the result produced by the job as a function of its tardiness is called
 - a) Real time function
 - b) Laxity Function
 - c) Critical function
 - d) validation function
4. The Processors are often called asand..... resources.
 - a) Servers, active
 - b) Servers, passive
 - c) Controllers, active
 - d) Controllers, passive
5. Scheduling algorithm can be
 - a) Preemptive
 - b) Non preemptive
 - c) Both
 - d) Neither a nor b
6. The nonpreemptive version of the total bandwidth server algorithm is called
 - a) virtual clock algorithm
 - b) EDF algorithm
 - c) Dynamic algorithm
 - d) Rate monotonic algorithm
7. A good resource access-control protocol should control priority inversion and
 - a) avoid blocking
 - b) Prevent preempting
 - c) Reduce timing
 - d) Prevent deadlock
8. Athat has an infinite number of units has no effect on the timing behavior
 - a) Resource
 - b) Microprocessor
 - c) Schedule
 - d) All the above

9. ----- protocol is a non greedy inter processor synchronisation protocols
- a) Phase Modification Protocol b) Priority Inheritance
c) Rate Monotonic First-Fit d) Release Guard
10. ----- algorithms extend a first fit algorithm to achieve higher schedulable utilisations.
- a) RMST and RMGT b) EDF and RG
c) PMP and RG d) EDF and MPCP

PART B (10 x 2 = 20 Marks)

11. Write the relationship between the sampling rate and the bandwidth.
12. Define the term Tardiness.
13. When is the hard real time scheduling algorithm said to be optimal?
14. What is deterministic scheduling?
15. What is schedulability test?
16. What are sporadic servers?
17. Explain what is meant by non pre emptive critical section protocol.
18. Write down the rules of Basic Stack-Based, Preemption-Ceiling Protocol.
19. What are the steps involved in scheduling real time tasks in static multiprocessor systems?
20. What are the approaches to synchronising the end to end tasks in multiprocessor systems?

PART C (5 x 14 = 70 Marks)

21. a) Explain the control hierarchy with any one example.

(OR)

- b) Compare the hard and soft real time systems with respect to timing constraints.

22. a) Explain about
a. Tiny OS architecture and
b. Scheduling schemes/algorithms used in Tiny OS,

(OR)

- b) Explain with diagrams precedence graphs and task graphs.

23. a) Explain the Background execution and polling methods for scheduling aperiodic jobs.

(OR)

b) Explain a method for schedulability test for fixed-priority tasks with arbitrary response times.

24. a) Describe Priority inheritance rule with respect to multiple resource access.

(OR)

b) Explain the Basic Priority Ceiling Protocol..

25. a) Explain with diagram, non preemptive EDF algorithm for multiple processors.

(OR)

b) Explain the weighted round robin service for packet scheduling in networks.
