

MODULE-1

- 1) What is BIST ?
- 2) Differentiate between hard real time tasks and soft real time tasks.
- 3) Differentiate between stimulus events and response events.
- 4) Enumerate the 4 tuples of real time task.
- 5) Compare and contrast relative and absolute deadline.
- 6) What do you mean by scheduling point?
- 7) Briefly mention the advantages of RMA over EDF.
- 8) Differentiate between valid and feasible schedules.
- 9) What do you mean by transient overloading? Comment EDF's performance under transient overloading.
- 10) What is clock driven scheduler and how it is different from the event driven scheduler?
- 11) Whether the following statement is true or false. Justify your answer. Safety-Critical real time systems do not have a fail-safe state
- 12) Can the following set of tasks be scheduled using EDF algorithm? Justify your answer.
 $T_1=(10,20)$, $T_2=(5,25)$, $T_3=(10,40)$
- 13) List the different type of timing constraints that can occur in a real time system.
- 14) It is difficult to achieve software fault tolerance as compared to hardware fault tolerance. Why?
- 15) Can we consider EDF as a dynamic priority scheduling algorithm for real time tasks?
- 16) What do you mean by transient overloading in EDF?
- 17) What is a "fail-safe state"? Since safety critical systems do not have a fail-safe state, how safety is guaranteed?
- 18) Explain scheduling point of a task scheduling algorithm. How the scheduling points are determined in (i) Clock driven , (ii)Event driven and (iii)Hybrid schedulers
- 19) Define safety-critical system with suitable example.
- 20) Differentiate between delay constraint and deadline constraint.
- 21) Differentiate between periodic and sporadic tasks.
- 22) What do you mean by optimal scheduler?
- 23) Differentiate between major cycle and minor cycle.
- 24) $T_1(e_1=10,p_1=20)$, $T_2(e_2=5,p_2=50)$, $T_3(e_3=10,p_3=35)$,determine the above task set is EDF schedulable or not.
- 25) For a foreground task $T_f(e_f=50 \text{ msec}, p_f=100 \text{ msec}, d_f=100 \text{ msec})$ and for the background task $T_b(e_b=1000 \text{ msec})$, Compute the completion time of the background task.
- 26) $T_1(e_1=10,p_1=50,d_1=35)$, $T_2(e_2=15,p_2=100,d_2=20)$, $T_3(e_3=20,p_3=200,d_3=200)$, Is this above task set is RMA schedulable? Justify and if not schedulable ,show the alternative algorithm for scheduling it.
- 27) Distinguish between hard, soft and firm real time systems.
- 28) What is fail-safe state of real time system?
- 29) What is the difference between task precedence and task sharing?
- 30) Distinguish between periodic, aperiodic and sporadic tasks.
- 31) How a real time system is different from other computer based system?
- 32) What is slack time?

- 33) What is the difference between hard real time systems and soft real time systems? Give examples of both types of systems.
- 34) Does Round Robin scheduling work for the real time applications? Justify in its favour or against.
- 35) How safety is guaranteed in case of systems that do not have a 'fail-safe' state?
- 36) Discuss the criteria for RMA schedulability.
- 37) What do you understand by Laxity of a task?
- 38) What is the sufficient condition for EDF schedulability of a set of periodic tasks whose period and deadline are different?
- 39) What is planning based scheduler? How it is different from best effort scheduler for scheduling of tasks?
- 40) Give an example of a soft real time task and non-real time task. Clarify the key differences between the characteristics of these two types of tasks.
- 41) Distinguish between execution time and response time of a task.

MODULE-2

- 1) How is deadlock avoided in PCP?
- 2) What is the difference between PIP and HLP?
- 3) Why clock synchronization is required?
- 4) Can a task undergo chain blocking in Highest Locker Protocol (HLP) ?
- 5) Under what circumstance the unbounded priority inversion occur?
- 6) What do you mean by critical region?
- 7) Explain why algorithms that can be satisfactorily used to schedule real time tasks in multiprocessors often are not satisfactory to schedule the real time tasks on distributed system and vice versa.
- 8) What is Byzantine clock?
- 9) What is unbounded priority inversion?
- 10) Define deadlock with example.
- 11) What is the use of Bin packing algorithm?
- 12) Why priority ceiling protocol is required? How can you compare it with other priority protocols?
- 13) Discuss the limitations of priority inheritance protocol (PIP) ?
- 14) Why clock synchronization is a critical issue in case of RTS?
- 15) Differentiate between avoidance related inversion and inheritance related inversion.
- 16) How a static task allocation algorithm is different from a dynamic one?
- 17) Can PIP and PCP be considered as greedy algorithms? Explain.
- 18) Why multiprocessor systems are called tightly coupled systems whereas, distributed systems are called as loosely coupled systems?
- 19) What is chain blocking? How is unbounded priority inversion avoided in PCP?
- 20) How task scheduling techniques can be used to achieve effective fault tolerance in real time systems?