

APJ Abdul Kalam Technological University
Second Semester M.Tech Degree Examination May 2016
Ernakulam II Cluster

COMPUTER SCIENCE AND ENGINEERING

Specialization : COMPUTER SCIENCE AND ENGINEERING

05CS 6022 – REAL TIME SYSTEMS

Time : 3 hrs

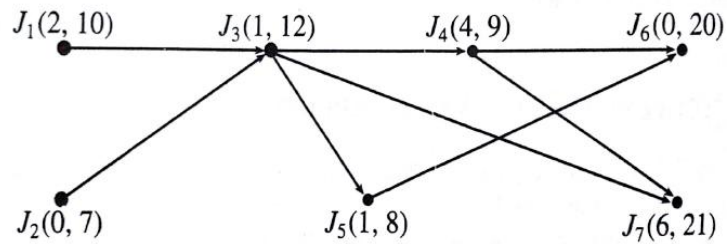
Max. Marks: 60

- I a) Suppose there is a stream of sporadic jobs whose inter release times are uniformly distributed from 8 to 11. Their execution times are uniformly distributed from 1 to 5. What are the parameters of the periodic task if such a task is used to model the stream? Also calculate the utilization of periodic task (3 marks)
- b) Compare the following terms with a suitable example. (4 marks)
- i. Release & Response Time
 - ii. Relative & Absolute deadline
- c) Consider the real-time program described by the psuedo code below. Names of jobs are in italic.

```
At 9 AM, start: have breakfast and go to office;
At 10 AM,
    if there is class,
        teach;
    Else, help students;
When teach or help is done, eat_lunch;
Until 2 PM, sleep;
If there is a seminar,
    If topic is interesting,
        listen;
    Else, read;
Else
    write in office;
When seminar is over, attend social hour;
discuss;
jog;
eat_dinner;
work a little more;
end_the_day;
```

Draw a task graph to capture the dependencies among jobs. (5 marks)

II. a) Calculate effective release time and effective deadline for the figure given below. (4 marks)



b) i. What are the constraints used to fix frame size? (2 marks)
ii. Choose an appropriate frame size for the set of tasks (6, 1), (10, 2), and (18, 2) (6 marks)

III. a) Compare fixed priority algorithm and dynamic priority algorithm. (10 marks)

b) Analysis the Optimality of RM and DM algorithms (8 marks)

OR

IV. a) Write the Schedulability test for fixed priority tasks with Short response times. (10 marks)

b) Discuss the maximum schedulable utilization (8 marks)

V. Explain Sporadic Servers. (18 marks)

OR

VI. Explain Scheduling Sporadic jobs (18 marks)