53 (EC 716) OPSY

2013

(December)

OPERATING SYSTEM

Paper : EC 716

Full Marks : 100

Pass Marks : 30

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer ***any five*** *questions.*

1. *(a)* List and explain the following components of an operating system. 10

   (i) Process Management

   (ii) Main Memory Management

   (iii) Networking

   (b) Describe the various types of memories in memory hierarchy. 5

(c) What are the important features of an embedded OS. Explain them in detail. 5

2. (a) Explain the process states and process control block. 10

(b) Define CPU scheduling. Write scheduling criteria and explain priority scheduling with example. 10

3. (a) Apply SJF and RR scheduling to calculate average turnaround and waiting time on following data. 10

Process	Burst time	Arrival time
P_1	8	0
P_2	1	0
P_3	2	0
P_4	1	0
P_5	4	0

(b) Define a deadlock and explain the conditions for the occurrence of deadlocks. 10

4. *(a)* Write a short note on resource allocation graph with deadlock and without deadlock. 10

(b) A system with five processes P_0 through P_4 has three resources types *A*, *B* and *C* having 10, 5 and 7 instances respectively. Suppose at time t_o, snapshot of the system has been taken and is recorded as in Table below.

Process	Allocation	Maximum	Available
	A B C	A B C	A B C
P_0	0 1 0	7 5 3	3 3 2
P_1	2 0 0	3 2 2	
P_2	3 0 2	9 0 2	
P_3	2 1 1	2 2 2	
P_4	0 0 2	4 3 3	10

Examine whether the system is in safe state ?

5. *(a)* With a neat sketch, explain about segmentation and paging. 10

(b) Explain a three page replacement algorithm with example. 10

6. *(a)* Explain about disk scheduling 6

(b) Differentiate preemptive from non-preemptive scheduling. 4

(c) Explain *any two* disk scheduling algorithms with suitable example. 10

7. *(a)* Explain the different types of files and the file system structure. 10

(b) Write short notes on the following : 10

(i) Android Operating System

(ii) Contiguous Memory Allocation

(iii) Virus.