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Total No. of Questions: [09]

B. Tech. (ECE) (Semester – 5th)

OPERATING SYSTEMS

Subject Code: BCSEO1013

Paper ID: [18OE111319]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:

a. Process Synchronization
b. Context switching
c. Disadvantages of multi-processor systems
d. Process Control Block
e. Necessary Conditions for Deadlock
f. Process v/s Thread
g. Virtual Memory
h. Paging and Swapping
i. Causes for Thrashing
j. System Calls

Section – B **(5 marks each)**

Q2. Explain in brief about the functions of kernel and shell.

Q3. Explain Banker's deadlock-avoidance algorithm with an illustration

Q4. Memory partitions of 100kb, 500 kb, 200 kb, 300kb, 600 kb are available how would best, worst, first fit algorithm to place processes 212, 417, 112, 426 in order. Which is the best algorithm?

Q5. Describe any two disk scheduling algorithms with suitable example

Q6. Explain file system structure and its access methods.

Section – C **(10 marks each)**

Q7. What is Layered Structure of Operating System? Explain its services?

Q8. Consider following processes with length of CPU burst time in milliseconds

Process	Burst time
P1	5
P2	10
P3	2
P4	1

All process arrived in order p1, p2, p3, p4 all time zero

a. Draw Gantt charts illustrating execution of these processes for SJF and round robin (Quantum=1)
b) Calculate waiting time for each process for each scheduling algorithm
c) Calculate average waiting time for each scheduling algorithm

Q9. Explain different allocation methods for allocating disk space in detail.