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B. E. (Fifth Semester) Examination, April-May 2021

(CSE Engg. Branch)

OPERATING SYSTEM

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Part (a) of every question is compulsory. Attempt any* ***two*** *from (b), (c) and (d). Assume if any data is missing.*

Unit-I

1. (a) Write down the difference between multitasking and multiprograming operating system. 2

   (b) Briefly explain objectives and functions of operating system. 7

(c) Explain the real time operating system with its advantages and disadvantages. 7

(d) Explain Various System Components of OS. 7

Unit-II

2. (a) What is PCB? 2

(b) Explain Short Term, Long Term and Medium Term Scheduluer. 7

(c) Write down the different CPU scheduling criterias. 7

(d) Consider the following set of processes, with the length of the CPU-burst time given in milliseconds : 7

Process	Burst time
P_1	24
P_2	3
P_3	3

The process are assumed to have arrived in the order P_1, P_2, P_3 all at time 0 (zero) :

(i) Draw a Gantt-chart illustrating the execution of these processes using FCFS.

(ii) Compute waiting times for the processes and average waiting time.

(iii) What if the processes arrive in the order P_2, P_3, P_1

Unit-III

3. (a) Write the conditions for a deadlock. 2

(b) What is deadlok? Give the various methods to avoid the deadlock. 7

(c) Write down the two methods for handling deadlocks. 7

(d) Consider the following snapshot of a system : 7

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P_0	0	0	1	2	0	0	1	2	1	5	2	0
P_1	1	0	0	0	1	7	5	0				
P_2	1	3	5	4	2	3	5	6				
P_3	0	6	3	2	0	6	5	2				
P_4	0	0	1	4	0	6	5	6				

Using Banker's algorithm, answer the following questions :

(i) What is the content of matrix NEED?

(ii) Is the system in a safe state?

(iii) If a request from process P_1 arrives for (0, 4, 2, 0) can the request be granted immediately?

Unit-IV

4. (a) Define logical and physical address space. 2

(b) Define Fragmentation. Explain Internal and External Fragmentation. 7

(c) Explain demand paging with an example. 7

(d) For the partitions of 100 K, 500 K, 200 K, 300 K and 600 K (in-order)
Place the processes of size 212 K, 417 K, 112 K, 426 K (in-order) according to best fit algorithm, 200 K is reserve for OS. Also make PDT? 7

Unit-V

5. (a) What is file? Write down the different file attributes. 2

(b) Explain buffering mechanism with its type. 7

(c) Write a short notes on : 7

(i) Single-level Directory

(ii) Tree-level Directory

(d) Explain any one file allocation method with proper example. 7