

# CBCS SCHEME

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20MCA12

## First Semester MCA Degree Examination, Jan./Feb. 2021 Operating System with Unix

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. What are the various services of an operating system? Explain briefly. (10 Marks)
- b. Define process. Explain the five state process model with a neat diagram. (10 Marks)

OR

- 2 a. Calculate the average waiting time, turn around time for (i) SJF (ii) Priority scheduling and (iii) Round Robin [quantum = 2 ms] with the following set of processes.

Process	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>
Burst time	10	1	2	1	5
Priority	3	1	3	4	5

- b. Define System call. Classify the types of system calls. (15 Marks)

(05 Marks)

### Module-2

- 3 a. What is demand paging? Explain how TLB improves the performance of demand paging with neat diagram. (10 Marks)

- b. Consider following page reference string :

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

How many page fault would occur in the case (i) FIFO (ii) Optimal page replacement (iii) LRU. Assume there are 3 frames. (10 Marks)

(10 Marks)

OR

- 4 a. Consider the following snapshot of a system

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P <sub>0</sub>	0	0	1	2	0	0	1	2	1	5	2	0
P <sub>1</sub>	1	0	0	0	1	7	5	0				
P <sub>2</sub>	1	3	5	4	2	3	5	6				
P <sub>3</sub>	0	6	3	2	0	6	5	2				
P <sub>4</sub>	0	0	1	4	0	6	5	6				

Answer the following questions using Banker's algorithm.

- (i) What is the content of the matrix need? (07 Marks)
- (ii) If a request from process P<sub>1</sub> arrives for (0, 4, 2, 0) can the request be granted immediately? (08 Marks)
- b. What is deadlock? What are the necessary conditions for a deadlock to occur? (05 Marks)

### Module-3

- 5 a. Differentiate hard link with soft link. (10 Marks)
- b. Explain the following in detail with example:  
(i) chmod (ii) ls (iii) mkdir (iv) chgrp (04 Marks)
- c. Discuss the different modes of Vi editor. (06 Marks)