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_1	P_2	P_3	P_4	P_5
Burst time	10	1	2	1	5
Priority	3	1	3	4	5

(15 Marks)

b. Define System call. Classify the types of system calls. **(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)**

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_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				

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_1 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)**

OR

6 a. Explain the UNIX file system with a neat diagram. **(10 Marks)**
b. Write differences between absolute pathname and relative pathname along with necessary examples. **(10 Marks)**

Module-4

7 a. Write a shell script to count the number of uppercase, small case, digit or special symbol using case conditional statement by taking input string. **(10 Marks)**
b. What is a process? Explain the mechanism of process creation and states of a process. **(10 Marks)**

OR

8 a. Write short notes on :
(i) at (ii) batch (iii) crm (iv) test (v) expr **(10 Marks)**
b. Write a shell script to display the calendar for current month with current date replaced by * or ** depending on whether the date has one digit or two digits. **(10 Marks)**

Module-5

9 a. Write short notes on :
(i) export (ii) eval (iii) exec **(10 Marks)**
b. Write an awk script to delete duplicate line from text.file. The order of original lines must remain unchanged. **(10 Marks)**

OR

10 a. What is awk? Explain the built-in variables used by awk. **(10 Marks)**
b. Explain the associative array in awk with an example. Also explain environment array. **(10 Marks)**

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