FACULTY OF INFORMATICS
MCA 2 Years Course - II Semester (Supply) Examination, April 2022

Subject: Operating Systems

Time: 3 Hours **Max. Marks: 70**

(Missing data, if any, may be suitably assumed)

Note: Answer any five questions from the following. All questions carry equal marks.

1 (a) What are system components and regular expressions. Explain in detail.
  (b) Define grep? Why A.W.K. give an example?

2 (a) Write about file permissions? Show how counting semaphores (i.e semaphores that can hold an arbitrary value) can be implemented using only binary or ordinary machine instructions.
  (b) Define CPU scheduling criteria. Consider the following set of processes, with the length of the CPU-burst time given in milliseconds.

Process	Burst time
P_1	10
P_2	1
P_3	2
P_4	1
P_5	5

The processes are assumed to have arrived in the order P_1, P_2, P_3, P_4 and P_5 all at time 0. Draw Gantt Chart illustrating the Execution of these processes using FCFS and SJF, under preemptive scheduling and calculate TAT of each process and waiting time of each process and response time of each process.

3 (a) List the memory management strategies with example architecture?
  (b) If L R U page replacement is used with four page frames and eight pages how many page fault will occur with the reference string 0 1 7 2 3 2 7 1 0 3 if the four frams are initially empty? Now repeat this problem for optimal.

4 (a) Define thrashing? Discuss paging.
  (b) What is page fault and how it is handled give an explanation.

5 (a) How many access methods are there in file and which one is the best access method give an example.
  (b) Illustrate file system implementation.

6 (a) Differ file system structure and mass storage structure.
  (b) Why allocation methods? Which method is the best method explain?

7 (a) Mentions the principles and domains of system protection.
  (b) Elaborate cryptography.

8 (a) What are the features of language based protection.
  (b) Tell about firewalling.

9 (a) Brief about design principles and kernel module.
   (b) Illustrate the case study of Linux systems.

10 (a) What is the design principals of windows 7 brief.
    (b) State the networking and programmer interface.

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