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B. E. (Fifth Semester) Examination, April-May/ Nov.-Dec. 2020

(New Scheme)

(IT Branch)

OPERATING SYSTEM

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Attempt any two parts from parts (a), (b) and (c) of each question. Each part carries equal 8 marks.

Unit-I

1. (a) Explain various services provided by O.S. What do you mean by command interpreter and system calls?

(b) Differentiate between multiprogramming, time sharing and real time systems. Also give 2 examples of each.

(c) Write merits and demerits of contiguous, linked and indexed allocation for the file system.

Unit-II

2. (a) What is Process? Explain PCB and Process states.

(b) What is Scheduler? Explain different characteristic of scheduling.

(c) Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 10, 6, 2, 4 and 8 minutes. Their priorities are 3, 5, 2, 1 and 4 respectively with 5 being the highest priority. Determine turn around time for the following :

(i) Round robin (Time quantum 2 min)

(ii) Priority scheduling

(iii) FCFS (Run in order 10, 6, 2, 4, 8)

(iv) Shortest job first

Unit-III

3. (a) Write short notes on Segmentation, Page Offset, Shared pages & Compaction.

(b) A computer has 4 page frames. The time of loading, time of last access and the R and M bits for each page are as shown below :

Page	Loaded	Last Ref	R	M
0	126	286	0	0
1	245	262	1	0
2	120	275	0	1
3	170	281	1	1

Which page will NRU, FIFO, LRU and second chance replace?

(c) What is Demand Paging? Explain performance of demand paging.

Unit-IV

4. (a) Explain Reader / Writer problem. Give the suggestion to solve the problem.

(b) Consider the following snapshot of a system.

	Allocation	Max	Available
P0	0 0 1 2	0 0 1 2	1 5 2 0
P1	1 0 0 0	1 7 5 0	
P2	1 3 5 4	2 3 5 6	
P3	0 6 3 2	0 6 5 2	
P4	0 0 1 4	0 6 5 6	

Using banker's algorithm / safety algorithm to solve the following :

(i) Is the system safe state.

(ii) Construct Need matrix

(iii) If request process P1 arrives for (0 4 2 0) can it be immediately granted.

(c) Explain different deadlock recovery methods.

Unit-V

5. (a) Write short notes on Device driver, Device controller, DMA, Interrupt handler.

(b) Compare the features of MS DOS, MS Windows, LINUX & UNIX operating systems.

(c) Explain Distributed file system.