VASAVI COLLEGE OF ENGINEERING *(AUTONOMOUS)*, HYDERABAD
Accredited by NAAC with A++ Grade
B.E. VI-Semester Main & Backlog Examinations, June-2022
Introduction to Operating Systems (OE-IV)

Time: **3 hours**   Max. Marks: **60**

*Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	"Operating system is a control program"-Justify this statement with suitable functionality of OS.	2	2	1	1,2
2.	Define a Process and list the typical elements of the Process Control Block.	2	1	1	1,2
3.	Give a list of page replacement policies.	2	1	2	1,2
4.	Give a list of contiguous memory allocation strategies for processes.	2	1	2	1,2
5.	What is FAT?	2	2	3	1,2
6.	List different types of Files. Write the extension used for each file type.	2	1	3	1,2
7.	What are the four conditions that need to be met for a deadlock to occur?	2	1	4	1,2
8.	What is a resource allocation graph?	2	2	4	1,2
9.	Give a list of disk scheduling algorithms.	2	1	5	1,2
10.	What is meant by disk scheduling?	2	2	5	1,2

Part-B (5×8 = 40 Marks)

		M	L	CO	PO
11. a)	Consider the following table of arrival time and burst time for processes P0, P1, P2 and P3. The Round-robin scheduling algorithm is used. Scheduling is carried out with 5ms of time quantum. If all the processes arrive at time 0, what is the average waiting time for the four processes?	4	3	1	1,2,3

Process	Burst Time
P0	15
P1	22
P2	9
P3	11

		M	L	CO	PO
b)	Consider the processes P1, P2, P3, P4 given in the below table, arrives for execution in the same order, with Arrival Time 0, and given Burst Time, find the average waiting time using the SJF scheduling algorithm.	4	3	1	1,2,3

Process time	Burst Time
P1	21
P2	3
P3	6
P4	2

		M	L	CO	PO
12. a)	Explain first-fit memory allocation strategy.	4	2	2	1,2
b)	Explain LRU page replacement algorithm.	4	2	2	1,2

			M	L	CO	PO
13.	a)	With the help of a neat diagram, explain the linked allocation of disk space for files.	4	2	3	1,2
	b)	With the help of a neat diagram, explain the indexed allocation of disk space for files.	4	2	3	1,2
14.	a)	Consider the following Resource Allocation Graph. Find if the system is in a deadlock state otherwise find a safe sequence.	4	3	4	1,2,3
	b)	Differentiate between deadlock prevention and deadlock avoidance.	4	3	4	1,2
15.	a)	Find the total number of head movements using FCFS disk scheduling algorithm if given seek sequence is 120, 99, 21, 20, 88, 11, 43, 114. The Initial head point is 45.	4	3	5	1,2,3
	b)	Find the total number of head movements using SCAN disk scheduling algorithm if given seek sequence is 82, 170, 43, 40, 24, 16, 190. The Initial head point is 50.	4	3	5	1,2,3
16.	a)	Describe about Process Life cycle with a neat diagram.	4	2	1	1,2
	b)	A process required memory space of 300MB. Available Holes in memory is 200MB, 450MB, 150MB, 500MB and 350MB. By using the following storage techniques. 1. First fit 2. Best fit 3. Worst fit Which hole will allocate? Why?	4	3	2	1,2
17.		Answer any *two* of the following:				
	a)	How many blocks are required to be allocated for a file of size 10KB, if the disk block size is 4KB?	4	3	3	1,2,3
	b)	Explain Banker's algorithm.	4	2	4	1,2
	c)	Write a short note on application IO interface.	4	1	5	1,2

M : Marks;   L: Bloom's Taxonomy Level;   CO; Course Outcome;   PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%

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