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PAPER CODE	U313-295(RE)

December 2023 (REEXAM)

TY (SEMESTER - I)

COURSE NAME: Operating system Branch: E&TC COURSE CODE: ETUA31204

(PATTERN 2020)

Time: [2 Hrs] **[Max. Marks: 60]**

(*) Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data wherever required**
4) **All questions are compulsory. Solve any two sub questions each from each Question 1 ,2, 3,4,5, and 6 respectively**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) suggest any one application of monolithic, microkernel and decoupled structure of operating system	[5]	C01	Apply
	b) How operating system provides protection from application programs?	[5]	CO1	Apply
	c) bring out the significance of system calls in OS with the help of any two system calls.	[5]	CO1	Apply
Q2	a) How scheduler uses the information from PCB for scheduling the processes?	[5]	CO2	Apply
	b) Compare and contrast preemptive and non-preemptive scheduling algorithms. What are the advantages and disadvantages of each?	[5]	CO2	Analyze
	c) suggest any one application where SJF and FCFS algorithm will be suitable	[5]	CO2	Apply
Q3.	a) Explain any three criterions for making an application to run parallel.	[5]	CO3	Analyze
	b) Contrast Asymmetric and Symmetric multiprocessing with pros and cons.	[5]	CO3	Analyze
	c) How does a hypervisor manage multiple guest operating systems on a single physical machine?	[5]	CO3	Understand
Q.4	a) Illustrate race condition with producer consumer problem.	[5]	C04	Analyze
	b) Analyze resource allocation graph with example.	[5]	CO4	Analyze

	c) illustrate the solution to classic dinning philosopher's problem	[5]	CO4	Analyze
Q.5	a) Illustrate the process of converting logical address into physical address.	[5]	C05	Apply
	b) Consider a program consists of five segments: S0 = 600, S1 = 14 KB, S2= 100KB, S3 =580 KB, and S4 = 96 KB. Assume at that time, the available free space partitions of memory are 1200–1805, 50 – 150, 220-234, and 2500-3180. Find the following: 1. Draw logical physical maps and segment table? 2. Allocate space for each segment in memory? 3. Calculate the external fragmentation and the internal fragmentation?	[5]	CO5	Apply
	c) Consider the following page reference string 1,2,3,4,2,1,5,6,1,2,3,7,6,3,2,1,3,6. The number of page frames=3. Calculate the page faults and page hit ratio for: 1. FIFO 2. LRU	[5]	CO5	Apply
Q.6)	a) Appraise benefit of RAID structure of disk management	[5]	C06	Evaluate
	b) Summarize disk scheduling algorithms with their suitability for an allocation scenario in brief.	[5]	CO6	Evaluate
	c) Argue with the pros and Cons of file allocation methods	[5]	CO6	Evaluate