Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech (Hons) Degree Examination July 2021 (2018 Admission)

Course Code: EC366

Course Name: REAL TIME OPERATING SYSTEMS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 15 marks. Marks

1 a) Differentiate between processes and threads. (3)

b) Briefly explain about multiprocessor scheduling concept. (3)

c) Compare layered, exo-kernel and hybrid kernel structures. (9)

2 a) Differentiate between batch and multitasking operating systems. (5)

b) Consider a multitasking system which uses FCFS scheduling algorithm. There are five tasks in the ready queue at a particular time ordered from T1 to T5. Table below gives the tasks and the corresponding service times Ts for each. Draw the Gantt chart for the processes and find the average turn around time and wait time. Also comment on CPU utilization. (10)

Task No.	Ts (time units)
T1	400
T2	150
T3	500
T4	200
T5	125

3 a) Differentiate user mode and kernel mode of operations. (3)

b) Explain about multi-level feedback queue scheduling and give its features. (5)

c) Explain about round robin scheduling algorithm. (7)

Draw the Gantt chart for the list of processes using RR algorithm with time quantum as 50 time units and also calculate the average turn around time.

Task no	Ts(time units)
T1	150
T2	100
T3	200

PART B

Answer any two full questions, each carries 15 marks.

4	a)	What are the causes for deadlock. Explain.	(3)
	b)	Explain the concept of demand paging.	(5)
	c)	Illustrate the producer- consumer problem with suitable code.	(7)
5	a)	Write short notes on semaphores and their types.	(6)
	b)	Describe about the different memory partitioning techniques	(9)
6	a)	What are the different ways of preventing deadlock.	(5)
	b)	Discuss about the various page replacement policies	(10)

PART C

Answer any two full questions, each carries 20 marks.

7	a)	Explain how any real time system is implemented using a simple example.	(8)
	b)	Describe about the disk scheduling algorithms- FCFS, SCAN and SSTF.	(12)
8	a)	Write short notes on Disk Caches	(6)
	b)	Compare and contrast Vxworks and µCOS.	(14)
9	a)	Discuss about the various I/O buffering schemes.	(12)
	b)	Prepare suitable requirements table for an RTOS control system used in adaptive cruise control.	(8)

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