Regulation R20 *Subject code:* 3O7BA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VII Semester Supplementary Examinations, April 2024

OPERATING SYSTEM

(EEE)

Maximum Marks: 70 Date:25.04.2024 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Total 10 questions it consists.
4. Part B each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)

1 Define operating system.
2 How does an interrupt differ from a trap?
3 Specify about preemption and non-preemption?
4 Define fault tolerance.
5 What is the use of Valid-Invalid Bits in paging?
6 What do you mean by Thrashing?
7 Define the term Disk Bandwidth.
8 What is TLB (Table Look-ahead Buffer)?
9 What is critical section problem?
10 What is mean by Access control?

Part- B

Answer All the following questions. (5X10M=50Marks)

11 What is the significance of I/O services in an operating system? [10]

OR

12 Explain in detail about Process, memory and storage management along with protection and security provided by Operating Systems. [10]

13 What is Process Scheduling. Explain any two scheduling algorithms with an example. [10]

OR

14 Consider the following set of processes, with the length of the CPU burst time in given ms: [10]

PROCESS	Burst time	priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1,P2,P3,P4 all at time 0.

A) Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, non-preemptive, priority (a smaller priority number implies a higher priority) and RR (quantum=1) scheduling.
b) What is the turnaround time of each process for each of the scheduling algorithms in part?
C) What is the waiting time of each process for each of the scheduling algorithms in part? Which of the schedules in part a result in the minimal average waiting time?

15 Consider the following snapshot of a system. [10]

PROCESS	ALLOCATION			MAX			AVAILABLE		
	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	3	3	2
P2	2	0	0	3	2	2			
P3	3	0	2	9	0	2			
P4	2	1	1	2	2	2			
P5	0	0	2	4	3	3			

And answer the following Questions
a) compute the need matrix
b) Is the system in a safe state?
c) if a request from process P1 arrives for (1,0,2), can the request be granted immediately?

OR

16 Define the concept of segmentation. Explain the limitations of pure paging and pure segmentation? [10]

17 Describe Process Control Block with an Example. [10]

OR

18 Explain the role of the "open," "lseek" "stat" "ioctl" & "close," system calls in a file system. [10]

19 a) Explain the access methods of files. [5]
b) Briefly outline the directory overview. [5]

OR

20 Elaborate on the implementation of Access Matrix, Access Control and Access Rights Revocation. [10]