



R20 Regulation **Subject code: 3P3FD**
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
 (Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, February 2024
OPERATING SYSTEMS
(IT)

Maximum Marks: 70

Date: 28.02.2024 Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. 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)		CO	Bloom Tx
1	Is OS a resource Manager? If so justify your answer	1	L2
2	What is system view?	1	L1
3	Is the context switching is an overhead? Justify your answer	2	L2
4	How to overcome busy waiting using Semaphore operations	2	L2
5	How to resolve thrashing problem?	3	L1
6	Why are page sizes always powers of 2?	3	L1
7	List the different system calls for file operations.	4	L2
8	Differentiate seek time and rotational latency	4	L2
9	Differentiate protection and security	5	L2
10	Does deadlock prevention often result in poor resource utilization?	5	L1

Part-B

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

11	(a)What is a System call? Explain in detail the system call sequence to copy the contents of one file to another file.	5M	1	L2
	(b)What is an operating system? Discuss the difficulties involved in writing an operating system for a real time environment. Give examples.	5M		L2
	OR			
12	(a)List five services provided by an operating system, and explain how each creates convince for users. In which cases would it be impossible for user level programs to provide these services? Explain your answer.	5M	1	L2
	(b)With a neat sketch explain the operating system structure.	5M		L2

13	Consider the following set of processes with the length of the CPU-burst time is given ms: <table><tr><td>Process</td><td>Burst Time</td><td>Arrival time</td></tr><tr><td>P1</td><td>8</td><td>0</td></tr><tr><td>P2</td><td>4</td><td>1</td></tr><tr><td>P3</td><td>9</td><td>2</td></tr><tr><td>P4</td><td>5</td><td>3</td></tr><tr><td>P5</td><td>3</td><td>4</td></tr></table> Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF and RR(quantum=2)scheduling. Also calculate waiting time and turnaround time for each scheduling algorithms.	Process	Burst Time	Arrival time	P1	8	0	P2	4	1	P3	9	2	P4	5	3	P5	3	4	10M	2	L3
Process	Burst Time	Arrival time																				
P1	8	0																				
P2	4	1																				
P3	9	2																				
P4	5	3																				
P5	3	4																				
OR																						
14	What is a process? Discuss components of process and various states of a process with the help of a process state transition diagram.	10M	2	L2																		
15	Explain page replacement algorithm in detail with example.	10M	3	L2																		
OR																						
16	(a)When do page faults occur? Consider the reference string: 1,2,3,4,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6. How many page faults and page fault rate occur for the FIFO, LRU and optimal replacement algorithms, assuming one, two, three, four page frames (b) Why are segmentation and paging sometimes combined into one scheme	5M 																				