R20 Regulation *Subject code:3P3FD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Regular/Supplementary Examinations, March/April 2023

OPERATING SYSTEMS

(Information Technology)

Maximum Marks: 70 Date:12.04.2023 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)

1 Define System call.
2 What is system view?
3 Define process management.
4 List process states.
5 What is memory allocation.
6 List Page replacement algorithm.
7 List the different system calls for file operations.
8 What are different access methods in file.
9 Differentiate protection and security
10 Define deadlock.

Part-B

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

11 (a)What is a System call? Explain in detail the different types system call. 5M

(b)What is an operating system? Discuss computing environment. 5M

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

(b)With a neat sketch explain the operating system structure 5M

13 (a)Consider the following set of processes with the length of the CPU-burst time is given ms: 5M

Process	Burst Time	Arrival time
P1	8	0
P2	4	1
P3	9	2
P4	5	3
P5	3	4

Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, priority and RR(quantum=2)scheduling. Also calculate waiting time and turnaround time for each scheduling algorithms

(b) Explain about Inter process communication. 5M

OR

14 (a)What is a process? Discuss components of process and various states of a process with the help of a process state transition diagram 5M

(b)Explain about operation on Processes. 5M

15 (a)Consider a swapping system in which main memory contains the following hole sizes in memory order : 10K, 4K,20K,18K,7K,9K,12K and 15K.Which hole is taken for successive segment request of: 5M
i)12K ii)10K iii)9K for First- Fit. Repeat this exercise for Best-Fit, Worst-Fit and Next-Fit

(b)Suppose a 32-bit addressing system with 4KB pages. Answer the following
i)Show the structure of the logical address
ii)How many page directories have the system
iii) What is the size of the page directory entries?
iv)How many page tables have the system
v)What is the size of the page tables 5M

OR

16 (a)When do page faults occur? Consider the reference string: 5M
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)Explain about segmentation and paging. 5M

17 (a)Define a file system. Explain about file system Implementation. 5M
(b)Explain about access method. 5M

OR

18 (a)Discuss in detail free space management. Also discuss about keeping track of free disk space in detail. 5M
(b)What problems could occur of system allowed a file system to be mounted simultaneously at more than one location. 5M

19 (a)List and explain the conditions necessary and sufficient to produce a dead lock. 5M
(b)Consider the following and determine the possible resource allocation sequence. 5M

Process	Allocation	Maximum	Available
P0	0 1 0	0 0 0	0 0 0
P1	2 0 0	2 0 2	
P2	3 0 3	0 0 0	
P3	2 1 1	1 0 0	
P4	0 0 2	0 0 2	

OR

20 (a)Briefly explain different methods to implement access matrix 5M
(b)Describe the revocation of access rights with respect to operating system protection 5M