



R20 Regulation **Subject code: 3P3EF**
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)
B.Tech III Semester Regular Examinations, February 2022
OPERATING SYSTEMS
(Common to CSE, CSE(AI&ML) and CSE(DS))

Maximum Marks: 70

Date: 26.02.2022 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 inter process communication?
- 2 How does an interrupt differ from a trap?
- 3 Compare the FCFS, SSTF and SCAN disk scheduling.
- 4 Compare static and dynamic linking.
- 5 What is the cause of Thrashing? How does the system detect thrashing?
- 6 Define Lazy Swapper.
- 7 Examine in detail about Directory and disk structure.
- 8 Define Free-space management.
- 9 Write about the solutions on classical problem synchronization.
- 10 Define critical region and monitors.

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 Identify the difference between symmetric and asymmetric multiprocessing. Discuss the advantages and disadvantages of multiprocessor systems.

10M

OR

- 12 Categorize the various types of system calls and explain with examples.
- 13 Consider the following set of processes, with the length of the CPU burst time in given ms:

10M

10M

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

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

OR

- 14 a) Explain about inter process communication. 5M
 b) Describe about semaphores and monitors. 5M
 15 Explain any three page replacement algorithm with an example. Compare your algorithm with respect to page faults 10M

OR

- 16 Illustrate the Virtual memory components of Windows OS. Discuss the Frames and thrashing process in detail. 10M
 17 Explain dynamic storage allocation algorithm. The process and their memory requirement is given as follows: 10M

Process	P1	P2	P3	P4
Memory Requirement	90K	20K	50K	200K

The available free blocks of memory is as follows:
 Block

Memory Location	20567	30045	1002325	1509876	2006756
Memory block size	50K	100k	90K	200K	50K

Find the internal and external fragmentation for First fit, Best fit, Worst fit and tabulate the results

OR

- 18 Explain in detail about implementation of directory and disc structure. 10M
 19 Analyze in detail the concept of Deadlock with relevant examples to explain its types. 10M

OR

- 20 Elaborate on the implementation of Access Matrix, Access Control and Access Rights revocation. 10M