*Regulation R18* *Subject code:2O5DE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

**B.Tech V Semester Supplementary Examinations, July 2022**

# OPERATING SYSTEMS

**(ECE)**

*Maximum Marks: 70* Date:07.07.2022 **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 an operating system.
2 Define system call.
3 Define short term scheduler
4 Define semaphore
5 Define segmentation
6 Define page frame
7 State FIFO page replacement policy
8 How can we say that a process is thrashing?
9 Define access right
10 How the access matrix implemented.

Part-B

Answer All the following questions. (10MX 5=50Marks)

11 Define an operating system? State and explain the basic functions or services of an operating system? [10]

OR

12 Discuss about operating system structure based on modules. [10]

13 Consider the following set of processes with the length of the CPU burst time given in milliseconds

| Process | BurstTime | 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, p5 all at time 0.

a) Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, anon pre-emptive 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?
d) Which of the schedules in part a results in the minimal average waiting time? [10]

OR

14 Discuss inter process communication with the help of communication models. [10]

15 a) Explain in detail about resource allocation graph with example. [5]
b) describe about deadlock prevention. [5]

OR

16 Distinguish between page table and inverted page table? [10]

17 Explain thrashing, what are the causes of thrashing & explain the working set model for the same. [10]

OR

18 Explain disk structure in detail. [10]

19 a) List the different file system allocation methods? [5]
b) Define protection in file system. How it is implemented? [5]

OR

20 Explain:
a) Capability based system [5] b) Language based protection. [5]