Code No: R2021052 **R20** SET - 1

II B. Tech I Semester Regular Examinations, Feb/March - 2022
OPERATING SYSTEMS
(Com to CSE, CST, IT, CSE (CS), IOTCSBT, IOT, CS)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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1 a) i) Explain operating system goals from user's view and system's view.
ii)List various services of Operating System [7M]

b) i)What is operating system? Explain multiprogramming and time sharing systems.
ii) Explain briefly about system calls with suitable examples. [7M]

Or

2 a) i)Explain the concept of multiprocessor and Multicore organization
ii) What are the major activities of an operating system with regard to file management? [7M]

b) i)State and explain various types of computer systems.
ii) Explain about the dual mode operation in OS with a neat block diagram. [7M]

3 a) What is a process? Explain Process states and process scheduler. [7M]

b) What is Semaphore? How can we achieve the synchronization using semaphore for producer consumer problem? [7M]

Or

4 a) Consider the following four processes, with the length of the CPU burst time given in the following:

Process	Arrival Time(ms)	Burst Time (ms)
P1	1	6
P2	1	5
P3	2	5
P4	2	3

Find Average Waiting Time and Turnaround time for given Process using FCFS and SJF Algorithms? [9M]

b) Explain about Inter Process communication, in client – server systems. [5M]

5 a) What are the disadvantages of single contiguous memory allocation? Explain. MVT and MFT techniques with examples. [7M]

b) Consider the page reference string 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 With Five Frames. How many page faults would occur for the FIFO, Optimal page replacement algorithms? [7M]

Or

6 a) i) Compare and Contrast Free space management and Swap space management.
ii)What is virtual memory? Discuss the benefits of virtual memory techniques. [7M]

b) Discuss clearly about the following:
i)Structure of page table ii)LFU Page replacement algorithm [7M]

7 a) A system has 3 devices D1, D2 and D3 and 3 processes P1, P2 and P3. P1 is holding D1 and waiting for D3. P2 is holding D2 and waiting for D1. P3 is holding D3 and waiting for D2. Draw resource allocation graph and wait-for graph. Is the system in deadlock state or not? Explain. [7M]

b) Write about various disk scheduling algorithms and compare the number of head moves to schedule the requests with an example. [7M]

Or

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8 a) Explain about the banker's algorithm for deadlock avoidance. [7M]

b) Discuss various types of Disk storage attachments and RAID structures. [7M]

9 a) In the capability-based system, describe the techniques, which can be used to protect the capabilities from unauthorized modification. [7M]

b) Write the principles of protection? And explain the access matrix in detail. [7M]

Or

10 a) What is meant by authentication? Why simple password protection is the most common authentication scheme in use today? Discuss the weakness inherent in the password protection scheme. [7M]

b) How to implement security detense with fire walls? Explain its design and working principle in systems protection. [7M]