III B. Tech I Semester Supplementary Examinations, August - 2021
OPERATING SYSTEMS
(Common to Computer Science and Engineering, Information Technology)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
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PART –A   (14 Marks)

1. a) Differentiate the functionalities of Operating systems with respect to Command Line Interfacing and Graphical User Interfacing. [2M]

   b) Discuss the various measures used to select optimal process scheduling algorithm. [2M]

   c) Explain the effect of thrashing on system performance. [2M]

   d) Characterize the principles of deadlocks. [3M]

   e) Describe the structures on file system which stores the information about how to boot an Operating system? [3M]

   f) Write about the application structure in Android operating system. [2M]

PART –B   (56 Marks)

2. a) How operating system manages storage of computer system in terms of file system, mass-storage and I/O systems? Explain in detail. [7M]

   b) "System calls provide an interface to the services provided by OS". Justify this statement with examples of how system calls are used? [7M]

3. a) Explain the need for process creation. Other than this what kinds of operations are performed on process? Elaborate. [7M]

   b) The Processes={P1, P2, P3, P4, P5}; Burst time={6, 3, 8, 3, 4}; Arrival time={2, 5, 1, 0, 4}. Illustrate the implementation of FCFS and SJF CPU scheduling algorithms and compare the performance in terms of scheduling criteria. [7M]

4. a) Explain how paging organizes the physical address space of a process to be non-contiguous with an example and kind of hardware support extended? [7M]

   b) For the given reference string, explain the LRU page replacement algorithm and specify the importance of counters and stack. [7M]
   7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1.

5. a) Explain the implementation of Swap(), TestAndSet() instructions in ensuring the mutual exclusion requirement. Did they ensure bounded waiting also? Discuss. [7M]

   b) Explain the role of Allocation, Available and Need matrices in finding the safe state of system. Give example. [7M]

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6. a) Explain the importance of types of access and access control in providing protection to the system files. [7M]

   b) Describe the importance of device drivers in File system and application I/O Interface. [7M]

7. Explain the Following: [14M]
   i) Linux systems: Process Communication and synchronization
   ii) Android system: Architecture and Services.

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