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10EC65

**Sixth Semester B.E. Degree Examination, June/July 2016**  
**Operating Systems**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

- 1 a. Define OS. What are the common tasks performed by an operating system? (08 Marks)
- b. Explain briefly, the different classes of operating system, with primary concern and key concepts. (08 Marks)
- c. What are the operations performed by Kernel when an interrupt occurs? (04 Marks)
- 2 a. Explain : (i) Monolithic OS and (ii) Microkernel OS Specifying advantages and dis-advantages in each case. (08 Marks)
- b. Define the following with respect to an operating system:  
(i) Policies and mechanisms. (ii) Portability and Extensibility (08 Marks)
- c. Briefly explain the concept of VMOS, with an example. (04 Marks)
- 3 a. Briefly explain four kinds of process interaction. (06 Marks)
- b. With state transition diagram, explain the state transition for a process. (06 Marks)
- c. What are the advantages of threads? Explain briefly Kernel-level and user-level threads, specifying advantages and disadvantages. (08 Marks)
- 4 a. Explain Kernel memory allocator methods. (10 Marks)
- b. What are the key features in static and dynamic memory allocation? (06 Marks)
- c. Explain briefly memory compaction with an example. (04 Marks)

**PART – B**

- 5 a. With reference to virtual memory, explain the following:  
(i) Demand paging (ii) Page replacement policies. (10 Marks)
- b. Explain UNIX virtual memory. (10 Marks)
- 6 a. Explain file operations performed by processes. (08 Marks)
- b. What are the facilities provided by file-system and IOCS? Write the layered architecture of the system. (06 Marks)
- c. Explain (i) Sequential file organization (ii) Direct file access organization. (06 Marks)
- 7 a. Define Turn-around-time. Compare average Turn-Around-Time, for the following set of process for FCFS and SRN scheduling. (08 Marks)

Process	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>
Arrival time	0	2	3	5	9
Service time	3	3	2	5	3

- b. Briefly explain process scheduling methods for real time applications. (06 Marks)
- c. Explain briefly, scheduling in UNIX. (06 Marks)
- 8 a. How interprocess communication is achieved through mail-box? What are its advantages? (08 Marks)
- b. Explain the following:
  - (i) Synchronous and asynchronous message passing.
  - (ii) Data – access synchronization.
  - (iii) Control synchronization. (12 Marks)

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Important Note : 1. On completing your answers, carefully draw diagonal cross lines on the remaining blank spaces.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.