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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) Microkernal 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 | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| 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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