

**S.D.E.**  
**B.B.A. (2006 Course) Sem-VI : SUMMER - 2019**  
**SUBJECT: ELECTIVE-III: e) OPERATING SYSTEMS (SYSTEMS)**

Day : Tuesday  
Date : 07/05/2019

Time 10.00 AM TO 1.00 PM  
Max. Marks: 80

**S-2019-4936**

**N.B.**

- 1) Attempt **ANY FIVE** questions from Section-I and **ANY TWO** from section-II.
- 2) Figures to the right indicate **FULL** marks.
- 3) Both the sections should be written in **SAME** answer book.

**SECTION-I**

- Q.1** Explain various structures of operating system with help of suitable diagrams. **(10)**
- Q.2** Differentiate between : **(10)**  
i) Implicit tasking & Explicit tasking  
ii) Online operating systems & Real time operating systems
- Q.3** Discuss the memory management with linked list and bit map. **(10)**
- Q.4** What is a file? Give types of it. Also explain possible operations on a file. **(10)**
- Q.5** What do you mean by interrupt? Give the need and types of interrupt. **(10)**
- Q.6** Describe concept of mutual exclusion in brief. **(10)**
- Q.7** Write short notes on **ANY TWO** of the following: **(10)**  
a) Principles of I/O hardware  
b) Virtual memory  
c) Free space management

**SECTION-II**

- Q.8** Explain the following page replacement algorithms with their merits and demerits. **(15)**  
i) Optimal page replacement algorithm  
ii) Second chance page replacement algorithm  
iii) LRU page replacement algorithm
- Q.9** What is deadlock? State the necessary conditions for deadlock. How can we recover from deadlock? **(15)**
- Q.10** Consider the following case: **(15)**

Processes	Runtime (min.)	In time (am)
P1	7	10:00
P2	2	10:02
P3	4	10:03
P4	2	10:04

Calculate average waiting time and turnaround time in case of:

- i) First come first served
- ii) Shortest job first

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