

S.D.E.

**B.C.A. (2004 COURSE SEM- III : WINTER - 2017**  
**SUBJECT: COMPUTER ARCHITECTURE & OPERATING SYSTEM**

Day: **Wednesday**  
Date: **20/12/2017**

**W-2017-4159**

Time: **10.00 AM TO 1.00 PM**  
Max. Marks: 80

**N.B.:**

- 1) Attempt any **FIVE** questions from Section –I and any **TWO** questions from Section –II.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.

**SECTION-I**

- Q.1** Differentiate between: (10)  
i) Implicit tasking and Explicit tasking  
ii) CISC and RISC
- Q.2** Explain the stack organization in detail. (10)
- Q.3** Explain need and working of virtual memory in detail. (10)
- Q.4** Discuss various views of operating systems. (10)
- Q.5** Explain the terms: (10)  
i) Process control block                      ii) Process state transition
- Q.6** What is semaphore? Explain characteristics and queuing implementation of semaphore. (10)
- Q.7** Write short notes on any **TWO** of the following: (10)  
a) Conditional critical region  
b) LRU page replacement algorithm  
c) Peripheral devices

**SECTION-II**

- Q.8** Consider the following case: (15)

Process	In time (am)	Execution time (min.)
P <sub>1</sub>	10.00	7
P <sub>2</sub>	10.02	2
P <sub>3</sub>	10.04	1
P <sub>4</sub>	10.08	5

Calculate average waiting and turnaround time in case of:  
i) First come first served                      ii) Shortest job first

- Q.9** What is DMA? Explain the DMA transfer with help of DMA controller. (15)
- Q.10** What is need of cache memory? Explain various mapping techniques associated with cache memory in brief. (15)