

**B.Tech. - VIEP - COMPUTER SCIENCE AND  
ENGINEERING (BTCSVI)****Term-End Examination**

00653

**December, 2016****BICS-019 : OPERATING SYSTEMS***Time : 3 hours**Maximum Marks : 70*

*Note : Question no. 1 is compulsory. Answer any six questions from the rest. All questions carry equal marks.*

1. There are four processes :  $P_1$ ,  $P_2$ ,  $P_3$  and  $P_4$ . The processing time (CPU time) of each process is given below :

Process	Processing Time
$P_1$	15
$P_2$	20
$P_3$	17
$P_4$	10

The arrival time of each process for execution is the same, i.e., zero. Calculate the average waiting time and the turnaround time of the above processes for the following scheduling algorithms : 10

(a) SJF

(b) FCFS

2. Write an algorithm for solving producer and consumer problems with a bounded buffer and explain the logic of the algorithm. Justify that it will not lead to starvation. 10
  
3. List and explain the four necessary conditions that must hold simultaneously for a deadlock to occur. Explain the different mechanism to avoid deadlocks. 10
  
4. Discuss the hardware support for (a) paging, and (b) segmentation. 10
  
5. What are the two widely used methods for allocating disk spaces to files ? Discuss the merits and demerits of each method. 10
  
6. What is the cause of thrashing ? How does the working set model prevent thrashing ? Explain it with the help of an example. 10
  
7. (a) What are the different file organization methods ? Discuss the merits and demerits of any two methods. 6
  
- (b) Explain the structure of an executable file in the Unix operating system. 4

8. (a) What are the tasks performed by the following? 4
- (i) Memory management part of an operating system
  - (ii) Device Driver
- (b) Explain the following terms : 6
- (i) Authentication and Authorization
  - (ii) Race Condition
  - (iii) Process Control Block
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