T.E. Sem V CBGS
Computer Engg.
Operating Systems

11/05/2016
3 p.m. to 6 p.m.

QP Code : 31049

(3 Hours) **[Total Marks : 80**

N.B. (1) Question **No. 1 is compulsory**
(2) Attempt any three questions from remaining questions.
(3) Assume Suitable data if required

1. (a) What is mutual exclusion? Explain its Significance. 5
   (b) Discuss various scheduling Criteria. 5
   (c) Explain services provided by operating system. 5
   (d) Write short note on system calls. 5

2. (a) What is deadlock? Explain the necessary and sufficient conditions for the deadlock. Suggest techniques to avoid deadlock. 10
   (b) Differentiate the following : 10
   i) Process vs Thread ii) Preemptive vsNon-Preemptive Scheduling

3. (a) Explain the following in brief : 10
   i) Process Synchronisation ii) Inter-Process Communication (IPC)
   (b) Discuss partition selection algorithm in brief. Given memoy partition of 150k, 500k, 200k, 300k & 550k (in order), how would each of the first fit, best fit and worst fit algorithm place the processes of 220k, 430k, 110k & 425k (in order). Which algorithm makes the most efficient use of memory? 10

4. (a) Find AWT, ATAT, ART and AWTAT for the following set of processes with CPU burst time in ms. Assume that all processes arrive at time 0. 10
   (P1-19), (P2-7), (P3-3)
   i) FCFS with order P2, P3, P1
   ii) Round Robin (Quantum = 2ms)
   (b) Explain paging hardware with TLB along - with protection bits in page table. 10

5. (a) Explain various allocation methods with reference to file system? 10
   (b) Calculate hit and miss percentage for the following string using page replacement policies FIFO, LRU and Optimal. Compare it for the frame size 3 and 4. 10
   2,0,3,0,4,2,3,0,3,2,7,2,0,7,5,0,7,5,7,0

6. Write short note on the following : (Any Two) 20
   (a) File management in Linux
   (b) Belady's anomaly
   (c) Case study of windows operating system
   (d) Virtual memory
