B.Sc. (Honours) Examination 2018
Semester-V
Computer Science
Course : BCSC-53
(Operating System)

Time : 3 Hours **Full Marks : 40**

Questions are of value as indicated in the margin

Answer question No. **1** and **any four** from the rest.

1. a) What is a thread? What are the different fields of a thread?
   b) Differentiate between short-term and long-term scheduler.
   c) Briefly describe IPC. (1+2)+2+3=8

2. a) What is Semaphore?
   b) Give a solution to the producer-consumer problem with the help of semaphore.
   c) Why bounded waiting is necessary for process synchronization? 2+5+1=8

3. a) Briefly describe Priority CPU scheduling algorithm and its utility.
   b) The arrival time and CPU burst time of the processes in the system are as follows

Process	Arrival Time	Burst Time
P1	0	4
P2	0	6
P3	1	2
P4	3	5

   Calculate the average waiting time for shortest job first CPU scheduling.
   c) What is Critical section problem. 3+4+1=8

4. a) Briefly describe Resource-Allocation graph and its utility in deadlock.
   b) Briefly describe Safety algorithm. 3+5=8

5. a) What is the difference between Logical and Physical address space?
   b) Why are segmentation and paging sometime combined into one scheme?
   c) Consider a swapping system in which memory consist of the following hole sizes in memory order : 10 k, 4k, 20k, 18k, 7k, 9k, 12k and 15 k. Which hole is taken for successive segment request of
   i)12k
   ii) 10k
   iii) 9k
   for worst fit algorithm. 2+2+4=8

6. a) When does page fault occur? Describe the action taken by the OS when page fault occurs.
   b) Consider the following page reference string:
   1,5,6,2,1,2,3,7,6,3,2
   Find how many page faults would occur for the following FIFO page replacement algorithm? (1+3)+4=8

7. Write short notes on the following :
   a) Linked allocation of disk space
   b) Real Time OS
   c) Thrashing
   d) Demand paging 2×4=8

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