University of Sargodha

BS 4th Term Examination 2016

Subject: Software Engineering **Paper: Operating System (CMP: 3621)**

Time Allowed: 2:30 Hours **Maximum Marks: 60**

Note: **Objective part is compulsory. Attempt any three questions from subjective part.**

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (2*12)

i. What is Preemptive Scheduling?
ii. Differentiate between Short Term and Long Term Scheduler.
iii. What is Page Fault?
iv. Define Spin clock?
v. Which of the following scheduling algorithms can lead to starvation? FIFO, Shortest Job First, Priority, Round Robin.
vi. What is System Call?
vii. Differentiate between internal and external fragmentation.
viii. Define Hit Ratio.
ix. What are necessary conditions of deadlock?
x. What is critical section?
xi. What is virtual machine?
xii. What are the capacities of queues in message passing system?

Subjective Part (3*12)

Q.2. a) Find out total Turn-around time and total Waiting time using Shortest Remaining Time First scheduling algorithm. [7]

Process	Arrival Time	CPU Burst
P0	1	6
P1	3	8
P2	5	1
P3	6	3
P4	7	6

b) Differentiate between User-level Threads and Kernel-level Threads. Explain Multi-threading models in detail. [5]

Q.3. a) Write down solution for Reader/Writer problem using Semaphores with Reader having priority. [7]

b) Write down the solution of Dining Philosopher Problem using Semaphores. [5]

Q. 4. Find out the total page faults using LFU and Optimal algorithms for following page trace. Consider that only 3 frames are available [6,6]

1 2 3 4 1 2 3 5 1 3 2 1 4 5 6 3 2

Q.5. a) What is Deadlock? Explain in detail how deadlock can be prevented? [8]

b) What is Fragmentation With what type of Fragmentation does Paging and Segmentation suffer from? [4]

Q.6. a) Define File? Explain Access Methods in Files? [8]

b) What is TLB (Associative Memory)? Why is it used? Draw the hardware support required for TLB? [4]