University of Sargodha

BS 5th Term Examination 2019

Subject: Computer Science **Paper: Operating System (CMP:3621)**

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

Objective Part (Compulsory)

Q.NO.1:-Answer the following questions in 2-3 lines having 2 marks each [12x2=24]

1. What is multiprogramming
2. Explain long term scheduler
3. Under what circumstances do page faults occur?
4. Different types of Real-Time Scheduling?
5. What are types of threads?
6. What is a ready queue?
7. Differentiate between LFU Algorithm and MFU algorithms
8. What is the Processor Affinity
9. What is Semaphores
10. What is demand paging?
11. What is spooling ?
12. What are turnaround time and response time?

Subjective Part

Note: Attempt any three Questions. All carry equal marks [12x3=36]

Q.No.2. Compare the memory organization schemes of contiguous memory allocation, pure segmentation, and pure paging with respect to the following issues:

a. External fragmentation
b. Internal fragmentation
c. Ability to share code across processes

Q.No.3. a) Differentiate between Multiprocessors systems and Clustered Systems

b) Explain different types of System Calls.

Q.No.4 a) what is semaphore. How semaphore works for synchronizations of the processes?

b) Explain Process Creation and termination

Q.No.5. Consider the following page reference string: 4, 3, 1, 2,1,1,1, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. How many page faults would occur Optimal and Least Recently Used Page Replacement algorithms with (a) Five frames (b) Six frames. Remember that are frames are initially empty.

Q.No.6. Consider the following set of processes, with the length of the CPU burst given in milliseconds:

Process	Burst Time	Priority
P1	10	2
P2	8	1
P3	2	5
P4	9	3
P5	4	4

The Process are assumed to arrive in the order P1, P2, p3, p4, p5 all at time 0.

a) Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF, non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum= 1).

b) Obtain the average waiting time.