University of Sargodha

M. Sc. I. T, 2nd Term Exam 2014.

Subject: Information Technology **Paper: Operating System (CMP: 3611)**

Time Allowed: 2:30 Hour **Session: 2013-15** **Maximum Marks: 80**

Objective Part Compulsory

Q. No. 1:- Attempt all short questions each requiring answer in 2 - 3 lines only having 2 marks each. [32 Marks]

1. What is ISR?
2. Differentiate between a trap and an interrupt?
3. What are clustered system?
4. What do you know about process and program?
5. How parent and child share the address space(memory) after fork?
6. Differentiate between preemptive and non preemptive multitasking.
7. Differentiate between user level threads and kernel level threads.
8. What are multilevel feedback queues?
9. List the various criteria must be considered in making a good scheduling algorithm?
10. What is critical section?
11. What is deadlock?
12. What is hold and wait condition?
13. What is dynamic loading?
14. What is memory management unit?
15. List three effects that indicate the security threats
16. What effect does increasing the page size have?

Subjective Part

Note: Attempt any four questions. [12 x 4 =48]

Q.No.2:- Consider the following snapshot of a system of 5 processes, P0 through P4 and four resource types, A, B, C, and D. Use the *banker's algorithm* to determine if the system is in a *safe state* by providing a *safe sequence*. If the system is not in a safe state, describe why it is so. Show all your work.

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	1	1	2	0	1	1	2	1	5	2	0
P1	0	0	5	0	1	7	5	0				
P2	1	0	5	4	2	2	5	6				
P3	0	1	2	0	0	6	5	3				
P4	0	2	4	2	0	6	5	6				

Q.No.3:-a) Explain multithreading models.

b) Describe the difference between symmetric and asymmetric multiprocessing. What are three advantages and one disadvantage of multiprocessor systems?

Q.No.4:- a) Explain process control block

b) Describe the actions taken by a kernel to context switch between kernel level threads.

Q.No.5:-a) What is critical section problem. Explain three requirements of critical section Problems.

b) Define the segmentation

Q.No.6:-Consider the following page reference string

8,2,5,1,2,8,4,6,1,7,2,1,6,1,8,7,8,2,1,7

By using the LRU,FIFO and Optimal replacement algorithms how many page faults would occurred. Assuming three , four and five frames.

Q.No.7:-a) Differentiate between the Multi-Level queue and Multi-level feedback Queue Scheduling.

b) Explain the Monitors.