No. of Printed Pages : 3

MCS-041

01709

MCA (Revised)

Term-End Examination

June, 2014

MCS-041 : OPERATING SYSTEMS

Time : 3 hours *Maximum Marks : **100***

Weightage : 75%

Note : *Question No. **1** is **compulsory**. Attempt **any three** questions from the rest.*

1. (a) Give solution to Dining Philosophers problem using Monitors. **10**

(b) What is Kernel in OS ? Explain advantages of the micro Kernel approach to OS design compared to monolithic Kernel design approach. **5**

(c) Explain an Access - Matrix model of security with an example. **5**

(d) Explain Lamport's algorithm for ordering of events in a distributed environment with an example. **10**

(e) Explain inter process communication features in Window's 2000 OS. **10**

2. (a) What are different types of multiprocessor operating systems ? Explain any two multiprocessor OS in brief. **10**

(b) Draw the Gantt chart for FCFs and SJF policy, considering the following set of process that arrive at time 0, with the length of CPU time given in milliseconds. Also find the average waiting and average turn arround time. **10**

Process	Processing Time
P_1	05
P_2	04
P_3	06
P_4	02

3. (a) Explain the structure and components of the UNIX operating system in brief. **10**

(b) Explain concept and implementation of "Working set" model. **5**

(c) Explain Indexed disk storage allocation scheme with an example. **5**

4. (a) Consider the following page reference string : **10**

1, 2, 3, 2, 2, 3, 3, 4, 5, 6, 1, 1, 2, 3, 3.

How many page faults would occur for the following algorithms, assuming 3 frames ?

(i) FIFO Replacement

(ii) LRU Replacement

(iii) Optimal Replacement

(b) List and explain all the design issues involved in Distributed Systems. **10**

5. (a) What is need of mutual exclusion algorithm ? Explain Ricart and Agrawala's mutual exclusion algorithm for distributed operating system. **10**

(b) Explain **any two** of the following : **2x5=10**

(i) Thrashing

(ii) Authentication

(iii) Process scheduling

(iv) I/O management