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MCS-041

MCA (Revised)

Term-End Examination

00180 **December, 2017**

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) Describe the implementation of IPC using shared memory and message passing. Explain with neat diagrams. *10*

(b) Suppose the following jobs arrive for processing at the times indicated. Each job will run the listed amount of time. *10*

Job	Arrival Time	CPU Burst Time
1	0·0	8
2	0·4	4
3	1·0	1

(i) Give a Gantt chart illustrating the execution of these jobs, using the non-pre-emptive FCFS and SJF scheduling algorithms.

(ii) What is the turn around time and waiting time of each job for the above algorithms ?

(c) Explain various Multiprocessor Interconnection Networks. *10*

(d) Differentiate between SCAN and C-SCAN disk scheduling algorithms. Using an example, explain the steps. Also give a brief note on RAID. *10*

2. (a) Explain the structure of Unix and Windows Operating Systems. *10*

(b) Explain the different approaches for implementing mutual exclusion in a distributed environment. *10*

3. (a) Characterize deadlock in a system. Using a resource allocation graph, illustrate a deadlock and explain in detail. *10*

(b) Explain the design goals and design issues involved in a distributed system. *10*

4. (a) Describe memory management in Windows 2000. *10*

(b) Explain various schemes used for defining the logical structure of a directory. Describe the directory structure of Unix. *10*

5. (a) Differentiate between the following : *10*

(i) Internal and External Fragmentation

(ii) Demand paging and Demand segmentation

(iii) Fixed and Variable partition

(iv) First fit, Best fit and Worst fit

(b) Explain Take-Grant Model for security and protection of an operating system. *10*