

**M.Tech. IN ADVANCED INFORMATION  
TECHNOLOGY – SOFTWARE TECHNOLOGY  
(MTECHST)**

**Term-End Examination**

**December, 2014**

**MIN-003 : COMPUTING SYSTEMS-I**

*Time : 3 hours*

*Maximum Marks : 100*

**Note :**

- (i) *Section I is **compulsory** and carries 30 marks. Answer all the questions.*
- (ii) *Section II carries 70 marks. Answer any **five** questions.*
- (iii) *Assume suitable data wherever required.*
- (iv) *Draw suitable sketches wherever required.*
- (v) *Italicized figures to the right indicate maximum marks.*

**SECTION I**

1. Solve the following case study : 5×6=30

Consider a multiprocessor system and a multithreaded program written using the many to many threading model. Let the number of user-level threads in program be more than the number of processors in the system. Discuss the

performance implications of the following scenarios :

- (a) The number of kernel threads allocated to the program is less than the number of processors.
- (b) The number of kernel threads allocated to the program is equal to the number of processors.
- (c) The number of kernel threads allocated to the program is greater than the number of processors but less than the number of user-level threads.
- (d) The number of user-level threads allocated to the program is greater than the number of processors.
- (e) The number of kernel threads allocated to the program is equal to the number of processors and equal to the number of user-level threads.

## SECTION II

2. Explain data backup, restore and disaster recovery in Linux with suitable commands.  $4+5+5=14$
3. (a) What is Active Directory ? Explain the steps to implement Active Directory and Domain Controller in Windows Server 2003.  $3+5=8$
- (b) Discuss about the major challenges and issue of multi-core architectures. Explain with example. 6
4. (a) Explain the features of IIS in Windows 2003. State the procedure for implementing Web Services using IIS.  $5+5=10$
- (b) List and explain the key characteristics of a computer family. 4
5. (a) How are files stored in Linux environment ? Explain Default Directories in Linux with their purpose.  $4+6=10$
- (b) Explain Services in Linux and mentioned the commands. 4
6. What are the benefits and the disadvantages of each of the following ?  $6+4+4=14$
- (a) Synchronous and asynchronous communications
- (b) Automatic and explicit buffering
- (c) Send by copy and send by reference

7. (a) Provide two programming examples in which multithreading does not provide better performance than a single-threaded solution. 8
- (b) Why is it important for the scheduler to distinguish I/O-bound programs from CPU-bound programs? 6
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