

AMIETE – CS/IT (NEW SCHEME)

Time: 3 Hours

JUNE 2012

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

- a. A _____ call is the transition of a process from user mode to system mode.
- (A) C (B) kernal
(C) system (D) none of the above
- b. The kernel functions are divided into following groups
- (A) Process management and file system
(B) interprocess communication and memory management
(C) initialization and not yet implemented system calls
(D) All of the above
- c. The concept used in older variants of Unix where the entire memory for a process is written to disk is called
- (A) swapping (B) paging
(C) copy-on-write (D) none of the above
- d. The second extended file system ext2 supports file system up to ____ characters
- (A) 511 (B) 256
(C) 255 (D) None of the above
- e. The interrupt routines become active when the hardware signals an exception condition, which may be new characters input from the keyboard or the clock generator issuing a signal every _____.
- (A) milliseconds (B) 10 milliseconds
(C) 100 milliseconds (D) none of the above

Code: AC72/AT72**Subject: LINUX INTERNALS**

- f. A wait queue is nothing more than a cyclical list containing pointers to the process table as its elements.
- (A) false (B) true
- g. From a programming point of view, files are simply ___ flows of specified content containing no other structure.
- (A) data (B) logical
(C) None of the above (D) physical
- h. The basic idea of _____ is to initialize the card during the first access and adjust the parameters such as basic address, IRQ, and DMA channels during the boot.
- (A) PnP (B) CnC
(C) None of the above (D) Both (A) & (B)
- i. In LINUX, protocols such as _____ are accesses via an abstract interface.
- (A) TCP (B) UDP
(C) None of the above (D) Both (A) & (B)
- j. Full form for SMP is:
- (A) Symmetric Multiprocessing (B) Simultaneous Memory Placements
(C) Simple Memory Processing (D) Several Multiprocessings

**Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.**

- Q.2** a. What are the advantages of LINUX and what are the practical aspects associated with LINUX? (12)
- b. How paging differs from swapping? (4)
- Q.3** a. Distinguish between the file structure and the inode structure. (4)
- b. Briefly describe the six main algorithms for process management in LINUX. (12)
- Q.4** a. "A multitasking system like LINUX makes particular demands on memory management". Explain. (10)
- b. Describe how offloading of RAM to secondary memory evolved and also explain the two ways it can be performed under LINUX. (6)

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- Q.5** a. Explain uses of pipes. (4)
- b. What's the difference between connectionless and connection oriented data exchange? (4)
- c. Explain the concept of communication via files in LINUX. (8)
- Q.6** a. Describe the structure of a typical Unix inode through a diagram. (8)
- b. Describe the structure of a directory entry in the ext2 File System. How is an entry deleted? (8)
- Q.7** a. What is a Device Driver and what does it do? Where does a device driver run? What special attention must be taken while implementing a device driver? (8)
- b. What are the advantages of reloading a driver dynamically? (8)
- Q.8** a. State the support for network communications under LINUX. Can LINUX achieve more than UNIX as far as network implementation is concerned? (9)
- b. Write the steps in the flow of the outgoing packet stream of IP. (7)
- Q.9** a. In the development of the multi-processor LINUX system, a decision was made to maintain three basic rules, on the one hand to facilitate the first implementation, on the other to allow a simple integration of existing code. What are these basic rules? (9)
- b. Explain with the help of diagram the hardware overview of a typical SMP system with two processors. (7)