

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 INTERNA**

- f. A wait queue is nothing more than a cyclical list containing pointers to 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)