

**AMIETE – CS/IT (NEW SCHEME)**

Time: 3 Hours

**DECEMBER 2011**

Max. Marks: 100

**NOTE: There are 9 Questions in all.**

- Please write your Roll No. at the space provided on each page immediately after receiving the Question Paper.
- 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. The full form for POSIX is:
- (A) Post Operating System for UNIX  
(B) Pennsylvanian Operating System Interface for UNIX  
(C) Portable Operating System Interface for UNIX  
(D) None of the above.
- b. How many entries are made in the Kernel for each file used in the system?
- (A) Three (B) Two  
(C) One (D) Four
- c. The kernel uses \_\_\_\_\_ to abort processes or to switch interactive programs to a defined state.
- (A) signals (B) nice  
(C) pause (D) timers
- d. Communication via \_\_\_\_ is the oldest way of exchanging data between programs.
- (A) directories (B) folders  
(C) files (D) None of the above
- e. The kernel threads that write the buffer back to hard disk are
- (A) Bdflush (B) Kupdate  
(C) Both (A) and (B) (D) None of the above
- f. 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) and (B)

- g. The first version of LINUX kernel became available on the internet in \_\_\_\_\_
- (A) 1991 (B) 1981  
(C) 2001 (D) None of the above
- h. LINUX does not support more than one format for executable files
- (A) True (B) False
- i. In order to implement SMP in the LINUX kernel, changes should be made
- (A) portable port (B) processor specific port  
(C) Both (A) and (B) (D) None of the above
- j. All the information which is essential for managing the file system is held in:
- (A) Data block (B) Inode block  
(C) Boot block (D) Super block

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

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- Q.2** a. How LINUX is distributed? Explain. (7)
- b. Describe the nine groups of drivers used in LINUX along with the subdirectories in which they are stored. (9)
- Q.3** a. Describe any four important states in a process. (8)
- b. Explain the meaning of the system call *pause*. Can the process be reactivated once it is interrupted? (8)
- Q.4** a. What are bdfush and kupdate? How are they used? What is the advantage of the combination of bdfush and kupdate? (8)
- b. Describe the process of Static Memory Allocation in the kernel segment. (8)
- Q.5** a. What is race condition? (4)
- b. Draw a diagram depicting a deadlock scenario when locking files. (4)
- c. Explain ipcs and ipcrm commands with the help of an example. (8)
- Q.6** a. Explain different layers in the LINUX file system with the help of a diagram. (8)
- b. Describe DEntry operations. (8)

- Q.7** a. What are the device drivers? What role does OS play vis-à-vis device drivers? (8)
- b. Briefly describe different transfer operation modes supported by the DMA controller. (8)
- Q.8** a. Describe the demands of network communication on an operating system and their implementation in LINUX. (8)
- b. What are the differences between SLIP and PLIP? (8)
- Q.9** a. State three basic rules that were considered during the development of multiprocessor LINUX kernel system. (8)
- b. What is the need for coding Atomic Operations in the header file asm/atomic.h? How are the atomic data type variables defined, accessed, changed and tested? (8)