Code: AC72/AT72/AC117/AT117   **Subject: LINUX INTERNALS**

AMIETE – CS/IT (Current & New Scheme)

Time: 3 Hours   **December 2016**   **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. UNIX is portable because it is written in

   (A) Java   **(B)** Assembly language

   (C) C^{++} language   **(D)** C language

   b. How applications communicates with kernel?

   (A) Not disclosed by linux team   **(B)** SSL

   (C) System calls   **(D)** Shell

   c. Lp0 device file is used to access?

   (A) Tape drive   **(B)** Printer

   (C) Floppy drive   **(D)** Mouse

   d. Which among following is considered as super daemon?

   (A) sysinit   **(B)** grep

   (C) init   **(D)** locate

   e. Kernel minimizes the frequency of disk access by keeping a pool of internal data buffer which helps to increase the response time, this is known as?

   (A) Buffer cache   **(B)** Spooling

   (C) Pooling   **(D)** Virtual Memory Module

   f. Which command is concerned with LINUX kernel log messages?

   (A) dmsg   **(B)** dmesg

   (C) cmsg   **(D)** cmesg

   g. Lines in a run control file that begin with a # sign are

   (A) Numbers   **(B)** Executables

   (C) Comments   **(D)** None of these

   h. Which is not a valid file type in LINUX?

   (A) Socket   **(B)** FIFO

   (C) Softlink   **(D)** Inode

   i. Which of the following function is not available in UDP socket programming:

   (A) socket( )   **(B)** bind( )

   (C) accept( )   **(D)** close( )

j. In LINUX, a device driver can work without the
   (A) Major number   **(B)** Minor number
   (C) Device file name   **(D)** None of these

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

Q.2 a. What is LINUX? Discuss the essential characteristics of LINUX operating system in brief.   **(10)**

b. What do you understand by a Linux distribution, name any three Linux distributions?   **(6)**

Q.3 a. How the dynamic memory management is accomplished in LINUX? Discuss with suitable examples.   **(8)**

b. What is an interrupt? Explain the types of interrupts in process management?
                                                                            (8)

Q.4 a. What is virtual address spacing? Discuss the process of linear address conversion to physical address in the architecture-independent model.   **(8)**

b. Describe the purpose of virtual memory areas. What are the types of data structures used to create virtual memory areas?   **(8)**

Q.5 a. How the data is exchanged using communication via file mechanism? Discuss the two variants of locking entire files.   **(8)**

b. What is socket programming? Write down the programming syntax of *socket descriptor, bind( )* function and *connect( )* function.   **(8)**

Q.6 a. Draw the basic schematic structure of a UNIX file system and discuss the basic arrangement of a typical UNIX inode table.   **(8)**

b. Discuss ext2 file system in brief with suitable schematic diagrams?   **(8)**

Q.7 a. What is a DMA controller? Explain the various transfer mode of DMA controller.   **(8)**

b. What do you understand by a device driver? Explain the working of PC speaker driver which supports the output of sound samples to the internal speaker connected to the parallel interface.   **(8)**

Q.8 a. What is UDP? How does it find the destination socket for the packet? Describe its functions in detail.   **(8)**

b. Write short notes on the following: **(4x2)**
   (i) TCP   (ii) Ethernet

Q.9 a. Explain the working of PCMCIA card manager. Also, discuss the functions of PCMCIA card manager.   **(8)**

b. What is a debugger? Why *printk( )* is considered as the best debugger? **(8)**