ROLL NO. _____

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

AMIETE – CS/IT (Current & New Scheme)

Time: 3 Hours **DECEMBER 2015** **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. In Linux, a task is a generalization of the usual _____ concept.
(A) Thread **(B)** Class
(C) Process **(D)** Program

b. How many inode entries are made in the kernel for each file used in the system?
(A) Three **(B)** Two
(C) One **(D)** Four

c. The expansion for Linux kernel acronym LILO is:
(A) Last In Last Out **(B)** LInux LOader
(C) Last In Linux Out **(D)** LInux Last Out

d. The simplest variant of connectionless data exchange are:
(A) Signals **(B)** Semaphores
(C) Message Queues **(D)** None of these

e. 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

f. In……mode, the driver constantly interrogates the hardware.
(A) Interrupt **(B)** Polling
(C) Both **(A)** and **(B)** **(D)** None of these

g. Two important attribute of a process in Linux
(A) PID, PPID **(B)** SID, SSID
(C) ID, VID **(D)** INIT, GETTY

h. The first version of Linux kernel was available on the internet in
(A) January 1992 **(B)** October 1989
(C) November 1991 **(D)** December 1990

i. LINUX Kernal is written in which languages?
(A) C and C++ **(B)** C# and C
(C) Only C **(D)** C and Assembly Language

j. Files are held on block devices, which can process requests to read or write blocks of data. Which of the following combination specifies the valid block sizes for any given device?
(A) 512, 1024, 2048, 4096 **(B)** 128, 512, 1024, 2048
(C) 512, 1024, 2048, 4096, 8192 **(D)** 64, 128, 512, 1024, 2048

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

Q.2 a. Provide a list of 14 main characteristics of LINUX (no description required) **(7)**

b. What are the strengths and drawbacks of LINUX? **(9)**

Q.3 a. Distinguish between the file structure and inode structure. **(6)**

b. Explain the system call nice. **(6)**

c. Describe any four important states in a process. **(4)**

Q.4 a. What are bdflush and kupdate and how are they used? What is the advantage of the combination of bdflush and kupdate? **(8)**

b. Provide a complete list of memory page flags along with the respective descriptions. **(8)**

Q.5 a. Discuss how Shared Memory is used for inter process communication. **(8)**

b. What is the purpose of socket programming? What is the advantage of using socket? Illustrate with an example. **(8)**

Q.6 a. Describe the two algorithms used by Ext2 file system to limit the fragmentation of files? **(4)**

b. Discuss about the Superblock of the Ext2 file system. **(4)**

c. 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 special attention must be taken while implementing a device driver? **(8)**

b. How many broad types of devices are allowed in LINUX? Describe them. **(4)**

c. Briefly describe four different transfer operation modes supported by the DMA controller. **(4)**

Q.8 a. Briefly explain the layer model of the network implementation using TCP/IP. **(8)**

b. What are the differences between SLIP and PLIP? **(8)**

Q.9 a. List the eight Macros for modules along with their functions. **(8)**

b. Explain using diagram the symmetric multiprocessing (SMP) system with two processors. **(8)**