AMIETE – CS/IT (NEW SCHEME) - Code: AC72/AT7

Subject: LINUX INTERNALS

Time: 3 Hours **JUNE 2011** Max. Marks: 100

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. The full form for LDP is:

(A) LINUX Document Process
(B) Linear Decimal Programming
(C) LINUX Document Project
(D) Lower Division Process

b. LINUX Kernal is written in which languages?

(A) C and C++ (B) C# and C
(C) Only C (D) C and Assembler

c. The system call _____ enables a process to change its executing program

(A) execve (B) nice
(C) pause (D) getuid

d. The expansion for ddr is:

(A) Digital Double Rate (B) Data Double Rate
(C) Double Data Rate (D) None of the above

e. The available methods for connection-oriented data exchange are pipes, named pipes, also known as:

(A) LILO (B) FIFO
(C) FILO (D) LIFO

f. In the Ext2 file system, directories are administered using a _____

(A) Doubly linked list   **(B)** Singly linked list
(C) Either of the above   **(D)** None of the above

g. Since DMA controller works independently of the processor, it only recognizes the _____ addresses.

(A) Physical   **(B)** Logical
(C) Encoded   **(D)** None of the above

h. The simplest variant of connectionless data exchange are:

(A) Signals   **(B)** Semaphores
(C) Message Queues   **(D)** None of the above

i. *gdb* is the name for:

(A) Garbage Data Base   **(B)** Get data byte
(C) Global data bin   **(D)** Debugger

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. Describe the history of LINUX. **(4)**

     b. What are the strengths and drawbacks of LINUX? **(8)**

     c. State the protocols that can be integrated into local UNIX network. **(4)**

Q.3 a. How system calls are implemented under UNIX? **(8)**

     b. Explain the meaning of the system call *pause*. **(4)**

     c. What do you understand by Timer interrupt? **(4)**

Q.4 a. Describe how abstract process of virtual memory was introduced during the development of LINUX. **(8)**

     b. How is memory allocated in the kernel segment during booting? **(8)**

Q.5 a. Describe shared memory as a form of IPC – with one advantage and one disadvantage. **(12)**

b. Draw a diagram depicting a deadlock scenario when locking files.

Q.6 a. Describe the two algorithms used by *Ext2* file system to limit the fragmentation of files? **(8)**

b. What entries are kept in the directory cache? Why? **(8)**

Q.7 a. What are the advantages of reloading drivers dynamically? **(8)**

b. Write a code outline for essential components of a dynamically loading driver. What basic rules must be followed while using a dynamically loading driver?
(4+4)

Q.8 a. Describe the layer model of the network implementation. **(8)**

b. What is the general structure of a socket address? **(8)**

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

b. Explain with the help of a diagram depicting the Daemon for dynamic loading and unloading of modules. **(8)**