

**AMIETE – CS/IT (Current & New Scheme)**

Time: 3 Hours

**June 2019**

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. Binary or executable files are  
(A) Regular files (B) Device files  
(C) Special files (D) Directory files
- b. In the LINUX system, the sources can normally be found under  
(A) arch/alpha/ (B) /usr/src/Linux  
(C) arch/1386/ (D) arch/nips/
- c. The device drivers for hard disks are contained in  
(A) drivers/isdn/ (B) drivers/char/  
(C) drivers/scsi/ (D) drivers/block/
- d. Which among the 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) dmsg  
(C) cmsg (D) cmsg
- 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 command in LINUX is used for description of any command?  
(A) help (B) man  
(C) detail (D) short

Code: AC72/AT72/AC117/AT117

Subject: LINUX INTERNALS

- i. Which of the following function is not available in UDP socket programming?  
(A) socket( ) (B) bind( )  
(C) accept( ) (D) close( )
- j. Which of the following is not a debugger?  
(A) DDD (B) DUMA  
(C) GDB (D) YMX

---

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

---

- Q.2** a. Define the LINUX operating system. Explain any five characteristics of LINUX operating system in detail. (8)
- b. Describe the directory structure of the LINUX sources with a suitable diagram. (8)
- Q.3** a. What do you understand by dynamic memory management in LINUX? How do we achieve this? (8)
- b. Discuss the concept of signals, interrupts and scheduler in process management. (8)
- Q.4** a. Differentiate static and dynamic memory allocation in the kernel segment. (8)
- b. What is paging under LINUX? Explain in detail. (8)
- Q.5** a. Discuss various forms of inter-process communication supported by LINUX. (8)
- b. Explain pipes which are used as classical method of IPC under LINUX. How does *ptrace* help in debugging? (8)
- Q.6** a. What is Virtual File System (VFS)? Draw and explain the layers involved in VFS. (8)
- b. How do we represent a file systems in LINUX kernel? Explain the process of mounting in LINUX kernel. (8)
- Q.7** a. Discuss character and block oriented devices in detail. (8)
- b. Illustrate the working of DMA controller. Give a suitable example of DMA operation stating the use of different transfer modes of DMA controller. (8)
- Q.8** a. Discuss the main functions of UDP and TCP in LINUX network implementation. (8)
- b. What is INET socket? Write the structure of INET socket. Why it is considered as a special part of a socket? (8)
- Q.9** a. What is debugging? Discuss various methods of debugging for LINUX kernel. (8)
- b. Discuss the Intel multi-processor specification. Also discuss the problems associated with multiprocessor systems. (8)