

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

Time: 3 Hours

**June 2018**

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 half an hour 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) C language  
(C) Assembly language (D) Python
- b. The part of the Unix operating system that interacts with the hardware is called  
(A) VI editor (B) The shell  
(C) Linux (D) The kernel
- c. Multiple Unix commands can be put into a file to form a program. This is called a  
(A) pipe (B) link  
(C) script (D) shell
- d. How many links are created when we create a directory file?  
(A) 1 (B) 2  
(C) 3 (D) 4
- e. Which file contains the filesystems to be automatically mounted during boot?  
(A) /etc/mount (B) /etc/fstab  
(C) /etc/inittab (D) /etc/boot
- f. Which of the following are not system calls?  
(A) chmod (B) lseek  
(C) open (D) getc
- g. Process information in the current shell can be obtained by using  
(A) process (B) display  
(C) ps (D) info
- h. The purpose of the PATH environment variable is  
(A) Contains the current working directory  
(B) The sequence of directories to be searched when entering a command  
(C) Used to change directories  
(D) To show the usage history of the directories

- i. Which of the following features of UNIX may be used for inter process communication?  
(A) Signals (B) Pipes  
(C) Semaphore (D) All of these
- j. Which of the following is not true about daemons  
(A) Daemons are processes that live for a long time  
(B) Daemons are terminated when system is shut down  
(C) Daemons have controlling terminal  
(D) Daemons are started when the system is bootstrapped

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

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- Q.2** a. Describe the architecture of UNIX operating system. Briefly define the working of shell and kernel in UNIX operating system. (8)  
b. Discuss any four functions with syntax available for file I/O in UNIX system. (8)
- Q.3** a. What are the various file types available in UNIX system? Explain each file type briefly. (8)  
b. Write short notes on the following: (4×2)  
(i) chmod  
(ii) chown
- Q.4** a. What is the goal of buffering provided by the standard I/O library? Also explain the various types of buffering of standard I/O. (8)  
b. What do you understand by a password file? Discuss the various fields contained in *passwd* structure defined in *<pwd.h>*. (8)
- Q.5** a. Write a syntax of creating a child process by `fork( )` function. Point out the differences between the parent and child processes. (8)  
b. How the race conditions are occurred when multiple processes are trying to do something with shared data? Discuss the techniques which can avoid race conditions. (8)
- Q.6** a. Write the working of *malloc*, *calloc* and *realloc* memory allocation techniques with syntax. (8)  
b. What do you understand by a session? Explain the arrangement of processes into process groups and sessions. (8)

- Q.7** a. What is UNIX system signal *SIG*? Write the numerous conditions that can generated a signal. (8)
- b. Write short notes on the following: (4×2)
- (i) Interrupted System Calls
  - (ii) alarm( ) function
- Q.8** a. Explain the working of BSD syslog facility. How does it generate the log messages? (8)
- b. What is a terminal? Discuss the working of canonical mode and noncanonical mode of terminals in detail. (8)
- Q.9** a. What is the difference between pipe and named pipe? How the named pipes can be used to duplicate output streams? (8)
- b. What is a semaphore? How do we get access to shared data objects for multiple processes using semaphores? (8)