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B.E /B.Tech (Full Time) END SEMESTER EXAMINATIONS, April / May 2019

INFORMATION TECHNOLOGY

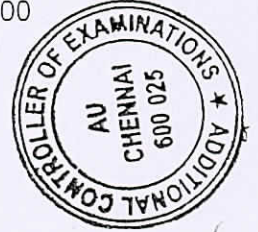
CS8074 UNIX Internals
(Regulations 2012)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)



1. Give the difference between interrupts and exceptions.
2. Give any two advantages of the buffer cache.
3. List the fields present in the in-core inode.
4. The way in which the free block numbers are maintained is different from how free inode numbers are maintained. Why?
5. Mention the syntax and use of the *dup* system call.
6. What is meant by mounting of file systems?
7. Give the syntax and use of the *wait* system call.
8. What is the use of a shell?
9. Mention the use of the following bits kept in the page table: Modify bit, copy on write bit.
10. What is the difference between the major number and the minor number of a device?

Part – B (5 x 16 = 80 marks)
(Question No.11 is Compulsory)

11. (i) Explain the architecture of the UNIX system kernel with a neat block diagram. (8)
(ii) Which are the fields that are kept in the buffer header? Explain the structure of the buffer pool. Give the algorithm for reading a disk block. (8)
12. a) Explain the *iget* algorithm for allocation of in-core inodes. (16)
(OR)
b) With an example, explain the *namei* algorithm used for converting a path name to an inode. (16)
13. a) Explain the implementation of the *creat* and the *write* system calls. (16)
(OR)
b) What are pipes? Explain how the kernel handles opening, reading, writing and closing pipes. (16)
14. a) (i) What comprise the context of a process? (8)
(ii) When does the kernel allocate a region for a process? Explain the algorithm for allocating a region for a process. (8)
(OR)

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- b) (i) Explain the algorithm for the implementation of the *fork* system call. (8)
(ii) Explain the system boot process. (8)

15. a) Explain the algorithms used by the kernel for opening and closing devices. (16)

(OR)

- b) Explain how the kernel manages space on the swap device, handles swapping of processes in and out of main memory. (16)

