2016

(October)

COMPUTER APPLICATION

(Honours)

(Operating System and Introduction to Linux)

(BCA–303)

Marks : 45

Time : 2 hours

The figures in the margin indicate full marks for the questions

Answer **one** question from each Unit

UNIT—I

1. *(a)* What is an operating system? 2

(b) Differentiate between simple batch system and time-sharing system. 4

(c) What is the utility and advantage of a virtual machine? 3

2. *(a)* Explain the working of a system call with the help of an example. 4

(b) Write a short note on real-time systems. 2

(c) Differentiate between user mode and kernel mode. 3

UNIT—II

3. *(a)* What is a process? How is a process represented in the operating system? 1+3=4

(b) How is a thread different from a process? 2

(c) Describe the working of Shortest Job First (SJF) scheduling algorithm. 3

4. *(a)* With the help of a labelled diagram, briefly explain the different states a process undergoes. 4

(b) How does the CPU switch from one process to another? 2

(c) Explain any method used for interprocess communication. 3

5. *(a)*

(b)

(c)

6. *(a)*

(b)

(c)

7. *(a)*

(b)

8. *(a)*

UNIT—III

5. *(a)* What is meant by critical section? State the requirements for a solution to the critical section problem. 2+2=4

(b) What is a semaphore? Using pseudocode, describe its two operations. 1+2=3

(c) Describe how locks can be used to solve the critical section problem. 2

6. *(a)* What is mutual exclusion? 2

(b) State Dining Philosophers Problem. How can it be solved? 2+3=5

(c) What is busy waiting? Why is it disadvantageous? 1+1=2

UNIT—IV

7. *(a)* Differentiate between logical and physical address spaces. 2

(b) What is paging and why is it required? With the help of a diagram, explain how paging can be implemented. 2+5=7

8. *(a)* What is meant by page fault? What are the steps required to handle a page fault? 1+3=4

(b) Write a short note on Least Recently Used (LRU) page replacement algorithm. 3

(c) Differentiate between external fragmentation and internal fragmentation. 2

UNIT—V

9. (a) Explain any *two* commands with the help of an example of each : 2×2=4

chown, chmod, cmp

(b) Write short notes on directory file and device file. 1½+1½=3

(c) With the help of examples, differentiate between relative and absolute pathnames. 2

10. (a) What is the purpose of the vim editor? Differentiate amongst the command, input and ex-modes found in vim editor. 1+3=4

(b) What is piping? Briefly explain piping with an appropriate example. 1+2=3

(c) Explain any *two* commands with the help of an example of each : 1×2=2

rmdir, ls, cat

★ ★ ★