(i) Printed Pages: 3 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 9 4 0

Exam. Code : 0 0 3 0

Bachelor of Computer Applications 4th Semester

1048

OPERATING SYSTEM CONCEPTS AND LINUX

Paper—BCA-16-404

Time Allowed : Three Hours] [Maximum Marks : 65

Note :— Attempt ***five*** questions in all including Q. **9** in Section-E, which is compulsory and taking ***one*** each from Sections-A, B, C and D.

SECTION—A

1. (a) List out different services than an operating system provides. Explain any two.

   (b) Draw a state transition diagram showing the most important states and explain the purpose of each and how they relate. 7,6

2. Given the following processes and burst times :

Process	Burst time
P_1	10
P_2	6
P_3	23
P_4	9
P_5	31
P_6	3
P_7	19

Calculate the average wait time when each of the following scheduling algorithms is used (assume that a quantum of 8 is being used) :

- Non Pre-Emptive, First Come, First Serve
- Round Robin
- Shortest Job First. 13

SECTION—B

3. What are the conditions that characterize deadlock ? Explain the occurrence and avoidance of deadlock graphically among 3 processes and 3 resources. Discuss Banker's algorithm for deadlock avoidance. 13

4. Consider the following page reference string :

   1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.

   How many page faults would occur for the following page replacement algorithms assuming 3 and 5 frames ?

   (a) LRU

   (b) Optimal. 13

SECTION—C

5. (a) Explain the use of the following wildcard characters in file name generation giving an example of each one. "*", "[]", "." and "?".

   (b) What is a regular expression ? Explain the use of regular expression with the '*grep*' filter and the *–n, –c, –v* options of '*grep*', by taking examples. 7,6

6. Explain the following Linux commands with examples : chmod, umask, tee, cut, sort, who. 13

SECTION—D

7. (a) What is a Linux file system ? Explain mounting and un-mounting of file system.

   (b) Explain the procedure in Linux to create hard disk partitions and formatting these partitions. 7,6

8. (a) Describe the working and usage of the '*vi*' editor in Linux with the help of Add, Delete, Copy, Find and Replace commands.

   (b) Explain the use of 'tar' command to take backups in Linux. 7,6

SECTION—E

(Compulsory Question)

9. (a) What is meant by non-preemptive scheduling ?

   (b) Differentiate between multiprogramming and multiprocessing.

   (c) Why we need mapping from logical address to physical address space ?

   (d) Explain how process is managed on Linux platform.

   (e) How do you change group ownership in Linux ?

   (f) What is a Linux kernel ? 5×2, 3=13