32521/E 210

Reg. No. | | | | | | | | |

V Semester B.C.A.3 Degree Examination, Nov./Dec. 2016
OPERATING SYSTEM
(Fresh New Syllabus)

Time : 3 Hours Max. Marks : 80

Instruction : ***Draw*** *the diagrams* ***wherever*** *necessary.*

SECTION – A

I. 1) Answer **any ten** questions : **(10×2=20)**

a) What is the need for an operating system ? Give examples of a few commercially available operating systems.

b) Define the terms CPU scheduling and Throughput.

c) Define virtual memory.

d) Distinguish between a job and a process.

e) What are the benefits of cooperating process ?

f) Define mutual exclusion.

g) What are semaphores ? Mention its types.

h) Define fragmentation.

i) Define the terms logical memory and physical memory.

j) Mention different file operations.

k) Define the term Boot block.

l) List different approaches to authenticate a user.

P.T.O.

SECTION – B

II. Answer **any four** : **(4×5=20)**

2) List categories of OS service and explain any two of them in detail.

3) List out advantages and disadvantages of Real time systems.

4) What are process states ? Explain with state transition diagram.

5) What are critical Regions ? Explain with general syntax.

6) What is page fault ? Explain the procedure of handling page fault with neat diagram.

7) Explain various file attributes.

SECTION – C

III. Answer **any four** questions : **(4×10=40)**

8) a) Define and explain various CPU scheduling criteria that can be used in selecting a scheduling algorithm. **5**

b) The following table list out the sequence of processes entering the ready queue with their corresponding CPU burst times given in milliseconds.

Time quantum fixed is 5 milliseconds time slice.

Process	**CPU Burst time in milliseconds**
P_1	20
P_2	4
P_3	3

i) Draw Gantt chart illustrating execution of these processes using RR scheduling.

ii) Calculate average waiting time. **5**

9) a) What is a dead lock ? 2

b) Consider a system with 5 processes P_0 through P_4 and three resources types X with 4 instances, Y with 5 instances and Z with 6 instances. The following snap shot of the system has been taken.

	Allocation			Max			
	X	Y	Z		X	Y	Z
P_0	0	0	1	P_0	4	0	4
P_1	0	0	1	P_1	0	0	6
P_2	1	1	2	P_2	3	1	3
P_3	0	2	1	P_3	3	3	1
P_4	1	0	0	P_4	3	2	0

Using Banker's algorithm answer the following :

i) What is the content of available vector ?

ii) What is the content of need matrix ?

iii) Find the safe sequence, if the system is in a safe state. 8

10) a) Explain the terms First fit, best fit, worst fit with example. 5

b) Explain with neat diagram page allocation scheme. 5

11) Discuss different directory structures. 10

12) a) Explain access matrix method for protection of the system. 5

b) Explain disk formatting and boot block with respect to disk management. 5
