

32521/E 210

Reg. No.

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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)
- What is the need for an operating system ? Give examples of a few commercially available operating systems.
 - Define the terms CPU scheduling and Throughput.
 - Define virtual memory.
 - Distinguish between a job and a process.
 - What are the benefits of cooperating process ?
 - Define mutual exclusion.
 - What are semaphores ? Mention its types.
 - Define fragmentation.
 - Define the terms logical memory and physical memory.
 - Mention different file operations.
 - Define the term Boot block.
 - List different approaches to authenticate a user.

P.T.O.



SECTION – B

II. Answer any four : (4x5=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

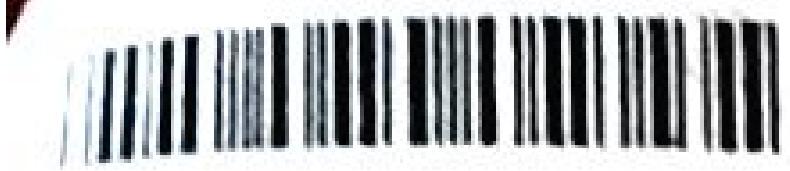
III. Answer any four questions : (4x10=40)

- 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 ? 8
 - ii) What is the content of need matrix ? 5
 - iii) Find the safe sequence, if the system is in a safe state. 5
- 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