

32521/E 210

Reg. No.

4	EX	07	18	07	18	07	18	07	18
---	----	----	----	----	----	----	----	----	----

**V Semester B.C.A.3 Degree Examination, November/December 2017**  
**(Regular)**  
**OPERATING SYSTEM**

Time : 3 Hours

Max. Marks : 80

- Instructions:** 1) Answer the questions of all three Sections as per the instruction.  
2) Draw the diagrams wherever necessary.

**SECTION – A**

1. Answer any 10 of the following :

(10×2=20)

- What is multiprogramming ?
- List any four services of an operating system.
- Mention the types of Inter Process Communication.
- Differentiate between Independent and co-operating process.
- Define Turn Around Time.
- Differentiate between counting and Binary semaphore.
- What is logical address ?
- What is fragmentation ?
- What is the use of an overlay ?
- What is thrashing ?
- What is worm ?
- What is page fault ?

**SECTION – B**

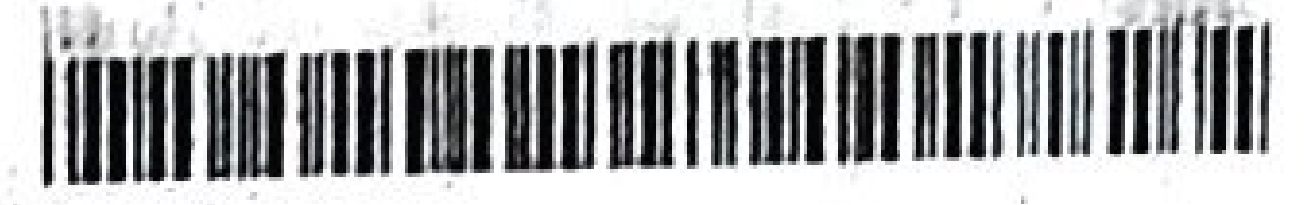
Answer any 4 questions.

(4×5=20)

- Explain the concept of virtual machine with neat diagram.
- Explain the activities of an operating system in connection with process management and file management.

P.T.O.





4. Explain PCB with neat diagram.
5. Explain paging with an example.
6. Explain various file attributes.
7. Explain the concept of boot block and bad block.

### SECTION – C

Answer any 4 of the following :

(4×10=40)

8. Consider the following set of processes with CPU burst time and arrival time given in milliseconds.

Process	Arrival time	Burst time
P <sub>1</sub>	0	8 ms
P <sub>2</sub>	1	4 ms
P <sub>3</sub>	2	9 ms
P <sub>4</sub>	3	5 ms

Draw the GANTT-CHART illustrating the execution of these processes using FCFS and Round-Robin scheduling (Quantum Time 1 ms).

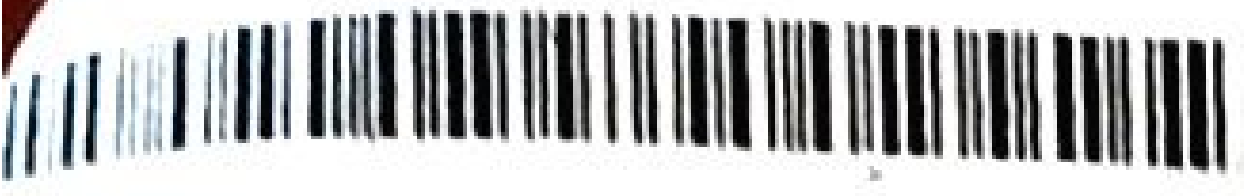
Calculate the average waiting time for FCFS, RR scheduling.

Calculate average turn around time for FCFS and RR scheduling.

(4+3+3)

9. a) Explain linked allocation method of allocating disk space to file.
  - b) Explain real time systems.
- (5+5)
10. a) Explain dining philosophers problem of synchronization.
  - b) Explain segmentation with an example.
- (5+5)





1. Consider a system with 5 processes  $P_0$  through  $P_4$  and three resource types A, B, C. Resource type A has 10 instances, resource type B has 5 instances, and resource type C has 7 instances. The following snapshot of the system has been taken.

	Allocation			Max		
	A	B	C	A	B	C
$P_0$	0	1	0	7	5	3
$P_1$	2	0	0	3	2	2
$P_2$	3	0	2	9	0	2
$P_3$	2	1	1	2	2	2
$P_4$	0	0	2	4	3	3

Using Banker's algorithm answer the following :

- i) What is the content of available matrix ?
- ii) What is the content of need matrix ?
- iii) Find the safe sequence if the system is in a safe state. (2+2+6)

12. a) Explain optimal page replacement and least recently used page replacement algorithm considering the following reference string.

[7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1]

b) Explain SCAN and LOOK Disk scheduling algorithm with an example. (5+5)