Printed Pages: 02 **Sub Code: BC203 / NBC203**

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MCA (DUAL DEGREE)
(SEM-II) THEORY EXAMINATION 2017-18
OPERATING SYSTEM

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. What is the difference between Hard Real Time System and Soft Real Time System?
b. What is the Kernel?
c. What is the advantage of Multiprogramming?
d. What do you mean by Time-Sharing Systems?
e. What are the different types of Multiprocessing?
f. What are the design goals of an Operating System?
g. What is a Process?
h. What is Process Control Block (PCB)?
i. What is meant by Context Switch?
j. What are System Calls?

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. What is a process and process table? What are different states of process
b. What is deadlock? What are the necessary conditions for deadlock?
c. What is Virtual Memory? How is it implemented?
d. Define and differences between mutex and semaphore?
e. Define process synchronization. Discuss critical section problem.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) How many type of inter process communication. Discuss producer consumer problem.
(b) Define CPU scheduling. Why do we need scheduling?

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Consider the following set of processes, with the arrival times and the CPU-burst times given in milliseconds

Process	Arrival time	Burst Time
P1	0	5
P2	1	3
P3	2	3
P4	3	1

What is the average turnaround time for these processes with the preemptive shortest remaining processing time first (SRPT) algorithm?

(b) What is deadlock detection algorithm? Explain it with example.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss Deadlock avoidance using Banker's algorithm.

(b) Define memory management. How many type of partitions. Discuss it.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Consider a machine with 64 MB physical memory and a 32-bit virtual address space. If the page size is 4KB, what is the approximate size of the page table?

(b) Define Paging scheme with an example in detail.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss protection and security in Window NT.

(b) Define Access matrix. How it can be implemented.