Printed Pages: 02 **Sub Code: NCS401**

Paper Id: 110247 **Roll No.** | | | | | | | | | | |

B. TECH.
(SEM IV) THEORY EXAMINATION 2018-19
OPERATING SYSTEM

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

Note: Attempt all Sections.

SECTION A

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

a. What do you mean by multitasking?
b. Define kernel and names of type of kernel.
c. Explain critical region?
d. Write a short note on interprocess communication.
e. What is process control block?
f. Define scheduling with example.
g. What do you mean by memory management?
h. Define Paging?
i. Explain RAID?
j. Describe in term Directory system.

SECTION B

2. Attempt any *three* of the following: 10x3=30

a. Explain OS? Define the services provided by the operating system.
b. Describe the Producer-Consumer problem with its suitable solution.
c. Differentiate between user thread and kernel thread. What is thread cancellation?
d. What are the necessary conditions to hold a deadlock in a system?
e. Explain the difference between internal and external fragmentation.

SECTION C

3. Attempt any *one* part of the following: 10x1= 10

a. Discuss the difference between a time-sharing system and real time system.
b. What do you understand by system call? List and explain four system calls used for process management.

4. Attempt any *one* part of the following: 10x1= 10

a. Define semaphore. Give a scheme for implementation of semaphore primitives.
b. Explain Dining Philosopher problem with its suitable solution.

5. Attempt any *one* part of the following: 10x1=10

a. Consider the set of processes given in the table and the following scheduling algorithms:
   i. Round Robin (Quantum=2)
   ii. SJF

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Draw the Gantt chart and find the average waiting time and turn-around time for the algorithms.

Process ID	Arrival Time	Execution Time
A	0	4
B	2	7
C	3	3
D	3.5	3
E	4	5

b. Explain the various CPU scheduling techniques with Gantt charts clearly as indicated by (process name, arrival time, process time) for the following (A,0,4), (B,2,7), (C,3,2) and (D,2,2) for FCFS and SRTF.

6. Attempt any *one* part of the following: 10x1=10

a. Write and explain Banker's algorithm for avoidance of deadlock.
b. Differentiate between Deadlock and Starvation in detail.

7. Attempt any *one* part of the following: 10x1=10

a. Given memory partition of 100 K, 500 K, 200 K, 300 K, and 600 K (in order) how would each of the first-fit, best-fit and worst-fit algorithms place processes of 212 K, 417 K, 112 K, and 426 K (in order)? Which algorithm makes the most efficient use of memory?
b. Define virtual memory concepts and also discuss replacement algorithms in brief.

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