INTEGRATED MASTER OF COMPUTER APPLICATIONS (CHOICE BASED CREDIT SYSTEM)
I.M.C.A. Sem-VII : WINTER : 2021
SUBJECT: OPERATING SYSTEM CONCEPTS

Day : Saturday
Date : 22-01-2022 **W-10084-2021**
Time : 10:00 AM-01:00 PM
Max. Marks: 100

N.B.:

1) Attempt **ANY FOUR** questions from Section-I and **ANY TWO** questions from Section-II.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SAME** answer book.

SECTION-I

Q.1 **a)** What is multitasking? How is it differ from multiprogramming? Explain in detail. **(08)**
b) Explain the virtual machine structure of operating system in brief. **(07)**

Q.2 **a)** Differentiate between: **(08)**
i) Implicit tasking and explicit tasking
ii) Online operating system and real time operating system
b) Discuss operating system services for process management. **(07)**

Q.3 What is virtual memory? Explain the process of loading virtual pages into physical page frames with help of page table. **(15)**

Q.4 **a)** What is semaphore? Discuss queueing implementation of semaphore. **(08)**
b) Describe various issues in message implementation. **(07)**

Q.5 **a)** Explain disk space management in detail. **(08)**
b) Explain DMA controller in brief. **(07)**

Q.6 What are monitors? Discuss the need and format of monitor with example. **(15)**

Q.7 Write notes on **(ANY TWO):** **(15)**

a) Directories
b) Swapping
c) Time slice scheduling

SECTION-II

Q.8 Consider the following case. **(20)**

Processes	In time (am)	Runtime (min)
P1	10.00	10
P2	10.07	2
P3	10.09	2
P4	10.10	5

Explain the following algorithms and calculate the average turnaround time and average waiting time for each:
i) FCFS ii) SJF iii) SRTN

Q.9 Consider the hard disk with 150 tracks, currently head is serving track number 91 and moving outside. Following is the queue of requests kept in FIFO order. **(20)**
90, 99, 37, 105, 137, 38, 69, 101, 78, 135
Calculate total time required to move all these tracks in case of
(Consider seek time = 0.20 sec.):
a) FCFS b) SSTF

Q.10 What is deadlock? What are the conditions needed for deadlock? Explain the Banker's algorithm in detail. **(20)**

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