I.M.C.A. SEM–III (2014 COURSE) CBCS : SUMMER - 2018

SUBJECT: OPERATING SYSTEMS

Day: **Friday**
Date: **27/04/2018**

S-2018-1756

Time: **02.00 PM TO 05.00 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) Both sections should be written in **SEPARATE** answer book.

SECTION - I

Q.1 What is an operating system? Discuss various operating system structures with the help of suitable diagrams. **(15)**

Q.2 What do you mean by process? Give the various process states and explain process state transition. **(15)**

Q.3 What is the need of virtual memory? How virtual addresses are converted to physical addresses? Explain with suitable example. **(15)**

Q.4 Explain the implementation and characteristics of semaphore with the help of example. **(15)**

Q.5 What is swapping? Why it is essential in memory management? Explain memory management with bitmap and linked list. **(15)**

Q.6 Discuss various protection mechanisms in the file system. **(15)**

Q.7 Write short notes on the following: **(15)**

a) Disk structure
b) Linux operating system
c) Multiprocessing operating systems

SECTION - II

Q.8 What is deadlock? Give the conditions for occurrence of deadlock and explain deadlock detection methods in brief. **(20)**

Q.9 Consider the following case: **(20)**

Processes	Arrival time	Execution time (min.)
P1	10:00	8
P2	10:05	2
P3	10:06	6
P4	10:09	1

Calculate average waiting time and turnaround time in case of :

a) First come first served
b) Shortest job first

Q.10 **a)** What is scheduler? Explain the types of it with suitable diagram. **(10)**

b) Explain the following algorithms: **(10)**

i) Second chance page replacement algorithm
ii) LRU with matrix

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