2012

MCA

3rd SEMESTER EXAMINATION

OPERATING SYSTEM

PAPER—MCA-305

Full Marks : 100

Time : 3 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer *Q. No. 1* and any *four* from the rest.

1. (a) Define following (any *two*) : 2×3

(i) System calls ;

(ii) CPU interrupts ;

(iii) I/O interrupts.

(b) Differentiate between long-term scheduler and short-term scheduler. 6+4

2. (a) What is an operating system?

   (b) What is parallel systems and distributed system? What are the difference between the above two?

   (c) What is magnetic disks?

   (d) Draw storage hierarchy. 3+(4+3)+2+3

3. (a) Define operating system services in short.

   (b) Define system programs in short.

   (c) What do you mean by device management? Define the term "request" & "release" in terms of device management. 6+5+4

4. (a) What do you mean by process?

   (b) What are the difference between program & process?

   (c) Define different process states of a diagram of their interrelation.

   (d) What is PCB? What types of information is stored in PCB? Briefly describe them. 2+3+6+4

5. (a) What is CPU Scheduling?

   (b) Suggest a method for the prediction of Next CPU burst.

   (c) Can SJF be called a priority scheduling? Explain.

   (d) What do you mean by R–R Scheduling? What are its advantages?

(e) Suppose the context switching time in an OS is 15 nS then what should be the time quanta of RR scheduling for 90% CPU utilization? 2+3+3+3+4

6. (a) What is a thread? Explain.

(b) What do you mean by user lever and kernel level threads? What are their advantages and disadvantages?

(c) What is Thread Control Block? What are the essential entries of TCB? 3+6+6

7. (a) Define the following : 3×2

(i) Mutual Excession ;

(ii) Progress ;

(iii) Bounded waiting.

(b) What is semaphorer?

(c) Illustrate with example Deadlock & Starvation.

6+2+7

8. (a) Explain Process Scheduling. 2

(b) Define SJFS with following example :

Process	*Arrival Time*	*Burst Time*
P_1	0	8
P_2	1	4
P_3	2	9
P_4	3	5

Also calculate the average waiting time. 4

(c) What is deterministic model?

Explain the following example with FCFS, SJF and RR (quantum = 10 ms) with the average waiting time calculation : 9

Process	*Burst Time*
P_1	10
P_2	29
P_3	3
P_4	7
P_5	12

Internal Assessment **30**