2017

(3rd Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : BCA–303

(Operating Systems)

Full Marks : 75

Time : 3 hours

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

The figures in the margin indicate full marks for the questions

1. *(a)* Define kernel. Explain the primary goals of operating system. 2+4=6

(b) Explain briefly the basic components of computer system. 4

Or

(c) Explain the concepts of time-sharing system and distributed system. 6

(d) Explain any four services provided by an operating system. 4

2. *(a)* What is context switch? Explain the three types of scheduler. 2+4=6

(b) Explain the contents of a process control block with diagram. 4

Or

(c) Differentiate between user threads and kernel threads. Explain the many-to-many multithreading model. 4

(d) The following processes arrive for execution at time 0, with the length of CPU burst time given in milliseconds :

Process	*Burst time*
P1	8
P2	5
P3	3
P4	9

Draw a Gantt chart and compare the average waiting time for FCFS, SJF (non-preemptive) and RR (given : quantum time is 5 milliseconds) schedulings. 6

3. *(a)* Explain swapping with a suitable diagram. 4

(b) Differentiate between logical and physical address spaces. Explain the concepts of virtual memory. 2+4=6

Or

(c) Explain the basic paging method for memory management with example. 4

(d) Describe the following allocation algorithms : 2×3=6

(i) First fit

(ii) Best fit

(iii) Worst fit

4. *(a)* Explain the concepts of file attributes, file operations and file types. 6

(b) Explain briefly the different file access methods. 4

Or

(c) Write a short note on directory structure. 5

(d) Explain briefly the different file allocation methods. 5

5. *(a)* Explain the different methods of deadlock recovery. 5

(b) What is semaphore? Explain the implementation of counting semaphore in terms of binary semaphore. 5

Or

(c) Explain the methods for handling deadlocks. 5

(d) Differentiate between program threads and system threads. 5

★★★

SECTION—II

(*Marks* : 10)

III. Answer the following questions : 2×5=10

1. Differentiate between process and thread.

2. What is blade server?

3. What is demand paging?

4. What is graceful degradation?

5. What are the two advantages of encrypting data stored in the computer system?

★★★

2017

(3rd Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : BCA–303

(Operating Systems)

Full Marks : 75

Time : 3 hours

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

The figures in the margin indicate full marks for the questions

1. *(a)* Define kernel. Explain the primary goals of operating system. 2+4=6

(b) Explain briefly the basic components of computer system. 4

Or

(c) Explain the concepts of time-sharing system and distributed system. 6

(d) Explain any four services provided by an operating system. 4

2. *(a)* What is context switch? Explain the three types of scheduler. 2+4=6

(b) Explain the contents of a process control block with diagram. 4

Or

(c) Differentiate between user threads and kernel threads. Explain the many-to-many multithreading model. 4

(d) The following processes arrive for execution at time 0, with the length of CPU burst time given in milliseconds :

Process	*Burst time*
P1	8
P2	5
P3	3
P4	9

Draw a Gantt chart and compare the average waiting time for FCFS, SJF (non-preemptive) and RR (given : quantum time is 5 milliseconds) schedulings. 6

3. *(a)* Explain swapping with a suitable diagram. 4

(b) Differentiate between logical and physical address spaces. Explain the concepts of virtual memory. 2+4=6

Or

(c) Explain the basic paging method for memory management with example. 4

(d) Describe the following allocation algorithms : 2×3=6

(i) First fit

(ii) Best fit

(iii) Worst fit

4. *(a)* Explain the concepts of file attributes, file operations and file types. 6

(b) Explain briefly the different file access methods. 4

Or

(c) Write a short note on directory structure. 5

(d) Explain briefly the different file allocation methods. 5

5. *(a)* Explain the different methods of deadlock recovery. 5

(b) What is semaphore? Explain the implementation of counting semaphore in terms of binary semaphore. 5

Or

(c) Explain the methods for handling deadlocks. 5

(d) Differentiate between program threads and system threads. 5

★★★

5. What are the two advantages of encrypting data stored in the computer system?

★★★

3. What is demand paging?

4. What is graceful degradation?

SECTION—II

(*Marks* : 10)

III. Answer the following questions : 2×5=10

1. Differentiate between process and thread.

2. What is blade server?