(Scheme (CBCS)) (F+R)
(2015 – 16 & Onwards)
COMPUTER SCIENCE
BCA – 305 : Operating Systems

Time: 3 Hours
Max. Marks: 100

Instruction: Answer all Sections.

SECTION – A

Answer any ten questions.

1. What is an operating system? Mention any two functions of an O.S.
2. Define time sharing systems.
3. What is aging?
4. What is monitor?
5. Define deadlock with an example.
6. Define compaction.
7. Define virtual memory.
9. What is a bit vector?
10. Define seek time.
11. What is worm?
12. Define logical and physical address.

(10x2=20)

SECTION – B

Answer any five questions.

13. Explain states of a process with neat diagram.
15. Explain the Critical-section problem.

(5x5=25)

P.T.O
18. Describe the frame allocation algorithms.
19. Explain linked allocation method.
20. List any three goals of protection.

**SECTION - C**

Answer any three questions. \((3\times15=45)\)

21. a) Explain FCFS scheduling algorithm with an example and a Gantt chart.
    b) Explain the different types of schedulers.
22. a) Explain Banker's algorithm.
    b) Explain different methods of deadlock prevention.
23. a) Explain any two page replacement algorithm with an example.
    b) Differentiate between paging and segmentation.
24. a) Explain different file accessing methods.
    b) Explain single level and two level directory.
25. a) Explain any three disk scheduling algorithms with examples.
    b) Discuss about the different types of viruses.

**SECTION - D**

Answer any one. \((1\times10=10)\)

26. Write short notes on:
    a) PCB.
    b) Semaphore.
27. Write short notes on:
    a) Overlays.
    b) Dining-philosophers problem.
III Semester B.C.A. Degree Examination, November/December 2015
(Y2K14 – CBCS)
COMPUTER SCIENCE
BCA 305 : Operating Systems

Time : 3 Hours
Max. Marks : 100

Instruction : Answer all Sections.

SECTION – A

Answer any ten questions. (10x2 = 20)

1. What is an operating system? Mention any two functions of an OS.
2. List differences between batch processing and multiprogramming OS.
3. Define the terms scheduler and dispatcher.
4. What is inter-process communication?
5. Explain TEST AND SET () Synchronisation hardware.
6. Mention the methods used to handle deadlocks.
7. What is dynamic loading?
8. What are overlays?
9. Define THRASHING.
10. List different types of files.
11. What is disk formatting?
12. Define encryption.

SECTION – B

Answer any five questions. (5x5 = 25)

13. Explain SPOOLING with a diagram.
14. Explain process control block.

P.T.O.
15. Explain Dining-philosopher's problem.
17. What is fragmentation? What is external fragmentation?
18. Explain LRU page replacement algorithm with an example.
20. What is a virus? Explain different types of viruses?

**SECTION-C**

Answer any three questions. \( 3 \times 15 = 45 \)

21. a) Explain time-sharing and real-time operating systems. \( 8 \)
    b) Explain various services offered by an OS. \( 7 \)

22. a) Explain different states of a process with a diagram. \( 6 \)
    b) Consider the following processes with their CPU burst in milli seconds. \( 9 \)

<table>
<thead>
<tr>
<th>PROCESS</th>
<th>CPU BURST</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>10</td>
</tr>
<tr>
<td>P2</td>
<td>1</td>
</tr>
<tr>
<td>P3</td>
<td>2</td>
</tr>
<tr>
<td>P4</td>
<td>10</td>
</tr>
<tr>
<td>P5</td>
<td>5</td>
</tr>
</tbody>
</table>

The processes arrive in the order P1, P2, P3, P4, P5. Draw the Gantt chart illustrating the execution of these processes using FCFS and Round Robin algorithms. Calculate.

i) Average Working Time
ii) Average Turnaround Time
23. a) What is a semaphore? Explain different types of semaphore. 7
       b) Explain different methods of deadlock prevention. 8

24. a) Explain paging scheme. 8
       b) What is demand paging? Explain. 7

25. a) Explain various methods used to allocate space to files. 8
       b) Explain any two disk scheduling algorithms. 7

SECTION - D

Answer any one question.

(10×2 = 20)

26. Write short notes on:
    a) Swap space management 5
       b) Any five objects of windows executive 5

27. Write short notes on:
    a) Pre-emptive and non-preemptive scheduling. 5
       b) Security Mechanism used in LINUX. 5