III Semester B.C.A. Degree Examination, Nov./Dec. 2018
(CBCS) (F + R) (2015-16 and Onwards)
COMPUTER SCIENCE
BCA 305 : Operating System

Time : 3 Hours  Max. Marks : 100

Instruction : Answer all the Sections.

SECTION – A

1. Answer any ten questions : (10×2=20)

1. Mention the different operating system components.
2. What is concurrent execution ?
3. What is the difference between multi-tasking and multi-user system ?
4. What is semaphore ?
5. Explain contiguous memory management techniques.
6. What is fragmentation ?
7. Differentiate between logical and physical address space.
8. What is the difference between absolute path and relative path name ?
9. Explain overlays.
10. What are the two necessary condition for a deadlock ?
12. What is an access matrix ?
SECTION – B

II. Answer any five questions: \(5 \times 5 = 25\)

13. What is an operating system? Give four functions of operating system.


15. What is process? Draw a process state transition diagram and explain.

16. Explain the requirements to critical section problems.

17. Explain the resource allocation graph.

18. Compare first fit, best fit and worst fit allocation of memory.

19. Describe the unix system process scheduling algorithm.

20. What is computer virus? Explain briefly any four types of viruses.

SECTION – C

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

21. Define, compare and contrast each of the following terms:
   a) Batch processing.
   b) Time sharing.
   c) Real time processing.

22. When do you run deadlock detection algorithm? Explain with an example.

23. Explain the different types of disk scheduling algorithm with one example.
24. Consider the following set of processes with the length of the CPU burst time given in millisecond.

<table>
<thead>
<tr>
<th>Process</th>
<th>Burst Time</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>P2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>P3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>P4</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>P5</td>
<td>8</td>
<td>3</td>
</tr>
</tbody>
</table>

The processes are assumed to have arrived in the order P1, P2, P3, P4 and P5 all at time 0.

i) Draw four gantt chart illustrating the execution of these processes using FCFS, SJF, a non preemptive priority and RR scheduling (time slice = 3ms).

ii) What is the turn around time and waiting time of each process in the entire scheduling algorithm mentioned above?

25. a) Explain user differentiation in detail.

   b) Write a note on fragmentation.

SECTION - D

IV. Answer any one question:

(1×10=10)

26. Explain the layered structure of WINDOWS operating system.

27. Write a short note on:

   i) PCB

III Semester B.C.A. Degree Examination, Nov./Dec. 2018
(Y2K8 Scheme) (Repeaters)
COMPUTER SCIENCE
BCA 304 : OPERATING SYSTEMS

Time : 3 Hours
Max. Marks : 90/100

Instructions:
i) Answer all Sections.
ii) Section – D is applicable only to students who have taken admission in 2011-12 and onwards.

SECTION – A

I. Answer any ten questions: (10×2=20)
1) Define operating system. Mention any two types of operating system.
2) Define spooling.
3) Explain Ageing.
4) What are the characteristics of deadlock?
5) What is a semaphore?
6) Write the difference between safe state and unsafe state.
7) What is page fault?
8) What is hit ratio?
9) List the functions of file management system.
10) List any two advantages and disadvantages of real time system.
11) What is encryption?
12) What is kernel dispatcher?

SECTION – B

II. Answer any five questions: (5×5=25)
13) Explain states of a process with a neat diagram.
14) Explain Round-Robin scheduling algorithm.
15) Explain Multi-level Queue Scheduling (MLQ).
16) Explain contiguous memory allocation.
17) Explain Swapping.

P.T.O.
18) Explain demand paging with an example.
19) Briefly explain file allocation methods.
20) Explain any five types of viruses.

SECTION - C

III. Answer any three questions:
(3x15=45)
21) a) Write the difference between preemptive and non-preemptive scheduling.
   b) Explain Dining-Philosopher problem.
22) a) Define deadlock. Explain methods for handling deadlock.
   b) List any five difference between paging and segmentation.
23) What is page replacement? Why we need it? Brief the different page replacement algorithms.
24) a) Explain the different types of file accessing methods.
   b) Explain Banker's algorithm.
25) a) Explain disk scheduling algorithms.
   b) Write short notes on swapping with a diagram.

SECTION - D

IV. Answer any one question:
(1x10=10)
26) Write short notes on:
   a) Structure of a harddisk.
   b) Three goals of protection.
27) Consider the following set of process

<table>
<thead>
<tr>
<th>Process</th>
<th>Burst time</th>
</tr>
</thead>
<tbody>
<tr>
<td>P_1</td>
<td>10</td>
</tr>
<tr>
<td>P_2</td>
<td>1</td>
</tr>
<tr>
<td>P_3</td>
<td>2</td>
</tr>
<tr>
<td>P_4</td>
<td>10</td>
</tr>
<tr>
<td>P_5</td>
<td>5</td>
</tr>
</tbody>
</table>

The process arrive in the order P_1, P_2, P_3, P_4 and P_5. For the above, obtain the Gantt chart and Average waiting time using i) FCFS and ii) Round Robin. (Time Quantum 4 ms).
III Semester B.C.A. Degree Examination, November/December 2017
(CBCS) (F + R) (2015-16 and Onwards)
BCA 305 : OPERATING SYSTEMS

Time : 3 Hours                       Max. Marks : 100

Instruction: Answer all Sections.

SECTION – A

Answer any ten questions:

1. What are the main functions of operating system.
2. What is Convoy effect?
3. Differentiate process and program.
4. What is mutual exclusion?
5. What are the necessary conditions for deadlock?
6. What is compaction?
7. Define virtual memory.
8. What is demand paging?
9. Mention any four file operations.
10. Define seek time.
11. Write any two antivirus softwares.
12. What is disk formatting?

SECTION – B

Answer any five questions:

13. Explain time sharing system.
14. What is system call? Explain types of system calls.

P.T.O.
15. Explain different process states with a neat diagram.
16. What is semaphore? Explain different types of semaphores.
17. Explain Banker's algorithm.
18. Explain the terms first-fit, best-fit and worst-fit.
19. Explain LRU page replacement algorithm with an example.
20. What is virus? Explain different types of viruses.

SECTION – C

Answer any three questions: (3x15=45)

21. a) Explain different types of schedulers.
    b) Explain FCFS and Round Robin scheduling algorithms with example. (7+8)

22. a) Explain different methods of deadlock prevention.
    b) Explain Dining-Philosophers problem. (8+7)

23. a) Write a note on segmentation.
    b) Explain any three disk scheduling algorithms with example. (7+8)

24. a) Write a note on file allocation methods.
    b) Explain various file accessing methods. (8+7)

25. a) Explain user authentication in detail.
    b) Write a note on fragmentation. (7+8)

SECTION – D

Answer any one question: (1x10=10)

26. Write short notes on:
    a) Multilevel queue scheduling.
    b) Operating system components. (5+5)

27. Write short notes on:
    a) Overlays.
    b) Optimal page replacement algorithm. (5+5)
III Semester B.C.A. Degree Examination, November/December 2017  
(Repeaters) (Y2K8 Scheme)  
BCA 304 : OPERATING SYSTEMS

Time : 3 Hours  
Max. Marks : 90/100  

Instructions:  
1) Answer all Sections. 
2) Section D is applicable only to students who have taken admission in 2011-12 and onwards.

SECTION A

Answer any ten questions.  
(10x2=20)

1. Define Operating System.
2. Define SPOOLING.
3. Define Time sharing system.
4. Define Deadlock.
5. What is thrashing ?
6. List the different types of files.
7. Define Dynamic linking.
8. What is RR scheduling ?
9. What is pure demand paging ?
10. What is swap space management ?
11. What is a system call ?
12. What is Trojan Horse ?

P.T.O.
SECTION – B

Answer any five questions. (5x5=25)

13. Explain Multiprogramming system.
14. Explain the states of a process.
15. Explain any 2 necessary conditions of Deadlock.
17. What is page fault? Explain the steps involved in page fault.
18. Explain SCAN scheduling.
19. Explain the structure of Hard disk.
20. Explain virtual machine.

SECTION – C

Answer any three questions. (3x15=45)

21. a) Explain FCFS CPU scheduling with example. 8
   b) Explain Parallel Operating System. 7
22. a) Differentiate b/w pre-emptive and non-preemptive scheduling. 7
   b) Explain priority CPU scheduling. 8
23. a) Explain Banker’s algorithm. 9
   b) Explain any two file operations. 6
24. a) Differentiate paging and segmentation. 8
   b) Explain contiguous memory allocation. 7
25. a) Explain types of Fragmentation. 8
   b) Explain LRU page replacement algorithm with an example. 7
Answer any one question:

26. Write short notes on:
   a) Virtual Memory.
   b) Look disk scheduling.

27. Write short notes on:
   a) MONITORS.
   b) Resource allocation graph.
(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.

SECTION – B
Answer any five questions.

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

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. (3x15=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. (1x10=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.

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.

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 x 15 = 45)

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

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

<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.  
    b) Explain different methods of deadlock prevention. 
24. a) Explain paging scheme. 
    b) What is demand paging? Explain. 
25. a) Explain various methods used to allocate space to files. 
    b) Explain any two disk scheduling algorithms. 

SECTION – D 

Answer any one question. 

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

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