



(Pages : 3)

3611

Reg. No. :

Name :

Fourth Semester B.C.A. Degree Examination, June 2015
Career Related First Degree Programme Under CBCSS
Group 2(b)
Core Course CP 1443 : DATABASE MANAGEMENT SYSTEMS

Time : 3 Hours

Max. Marks : 80

SECTION – A (Very Short Answer Type)

One word to maximum of **one** sentence, answer **all** questions. **(10×1=10 Marks)**

1. What do you mean by information ?
2. What is meant by a query ?
3. What is transaction ?
4. What is DDL ?
5. What is deadlock ?
6. What is RDBMS ?
7. What is Schema ?
8. What is primary key ?
9. What is multivalued dependency ?
10. What is embedded SQL ?

P.T.O.



SECTION – B (Short answer)

Not to exceed one paragraph, answer **any eight** questions. **Each** question carries **two** marks. **(8×2=16 Marks)**

11. List four significant differences between a file-processing system and a DBMS.
12. What is entity and attribute ? Give some examples of entities and attributes in a manufacturing environment.
13. What is the physical data independence ?
14. Give an example of a relation schema R and a set of dependencies such that R is in BCNF, but not in 4 NF.
15. Define the degree of the relation.
16. When is a functional dependency said to be trivial ?
17. Mention the characteristics of RDBMS.
18. Give example for one-to-many and many-to-many relationships.
19. Define Boyce Codd Normal form.
20. What is meant by strong entity set ?
21. What is Meta Data ? Why it is important ?
22. What is denormalization ?

SECTION – C (Short essay)

Not to exceed **120** words, answer **any six** questions. **Each** question carries **four** marks. **(6×4=24 Marks)**

23. What are the different types of Data Models ?
24. What do you mean by data redundancy ? What is the difference between controlled and uncontrolled redundancy ? What is data independence ?
25. What is a transaction ? Which are the properties of a transaction and explain each ?



26. Define a NULL value. How do you retrieve null values from the database ?
27. Explain the SQL statements used for transaction control.
28. What are the categories of constraints ?
29. Explain in detail the difference between Security and Integrity.
30. Explain the different datatypes with example.
31. Compare and contrast the Lossless and Lossy decompositions with relevant examples.

SECTION – D (Long Essay)

Answer **any two** questions. **Each** question carries **15** marks. **(2×15=30 Marks)**

32. Discuss in detail about database system architecture with neat diagram.
 33. Draw an E-R diagram for a banking enterprise with almost all components and explain.
 34. Explain in detail about Relational Algebra, Domain Relational Calculus and Tuple Relational Calculus with suitable examples.
 35. Explain in detail about 1NF, 2NF, 3NF and BCNF with suitable examples.
-



(Pages : 3)

3613

Reg. No. :

Name :

**Fourth Semester B.C.A. Degree Examination, June 2015
Career Related First Degree Programme Under CBCSS
Group 2(b)
Core Course CP 1445 : OPERATING SYSTEMS**

Time : 3 Hours

Max. Marks : 80

SECTION – A

(Very Short Answer type)

Answer **all** questions. **Each** question carries **1** mark. (**One** word to maximum of **one** sentence)

(10×1=10 Marks)

1. What is logical address ?
2. What is a kernel thread ?
3. What is a dispatcher ?
4. What is CPU scheduler ?
5. What is the use of relocation registers ?
6. What is spooling ?
7. What is circular wait ?
8. What is an interrupt ?
9. What is paging ?
10. What is critical region ?

P.T.O.



SECTION – B
(Short Answer)

Answer **any eight** questions. **Each** question carries **2** marks. (Not to exceed **one** paragraph) **(8×2=16 Marks)**

11. What are time sharing systems ?
12. What is the meaning of the term busy waiting ?
13. What is the use of resource allocation graph ?
14. What is dynamic linking ?
15. List the benefits of swapping.
16. What are the different attributes of file ?
17. What are cooperating processes ?
18. Why should page replacement be performed ?
19. What is the cause of thrashing ?
20. List the different page replacement algorithms.
21. Differentiate between fork() and clone() LINUX system calls.
22. Describe the different ways of implementing semaphores.

SECTION – C
(Short Essay)

Answer **any six** questions. **Each** question carries **4** marks.
(Not to exceed **120** words) : **(6×4=24 Marks)**

23. Explain the characteristics of modern operating systems.
24. Differentiate between thread and process.



- 25. Write notes on overlays.
- 26. Explain about DMA.
- 27. Describe the bit vector approach to free space management.
- 28. Explain about shortest job first scheduling algorithm.
- 29. What are the different types of fragmentation ? Explain.
- 30. What are the benefits of multithreaded programming ?
- 31. Explain about segmentation.

SECTION – D

(Long Essay)

Answer **any two** questions. **Each** question carries **15** marks : **(2×15=30 Marks)**

- 32. Discuss in detail about file allocation methods.
 - 33. What is deadlock detection and recovery ? Describe the different methods for recovery from deadlock.
 - 34. What is demand paging ? Describe the process of demand paging in Operating System.
 - 35. Briefly explain about the different types of operating systems.
-



(Pages : 3)

3610

Reg. No. :

Name :

Fourth Semester B.C.A. Degree Examination, June 2015
(Career Related First Degree Programme Under CBCSS)
Group 2(b)
Core Course CP 1442 : DATA STRUCTURES AND ALGORITHMS
(2013 Admn.)

Time : 3 Hours

Max. Marks : 80

SECTION – A
(Very Short Answer Type)

One word to maximum of **one** sentence. Answer **all** questions. **(10×1=10 Marks)**

1. Explain how to determine the location of an element at an index 'i' in an array.
2. What is a static data structure ?
3. Differentiate between stacks and queues.
4. Give two applications of threaded binary trees.
5. What is an adjacency matrix ?
6. Discuss best and worst case time complexities of an algorithm.
7. What is the difference between doubly linked list and a circularly linked list ?
8. What is a file ? Explain.
9. Define garbage collection.
10. What is meant by free storage pool ?

P.T.O.



SECTION – B
(Short Answer)

Not to exceed one paragraph, answer any eight questions . Each question carries 2 marks. (8x2=16 Marks)

11. What is time complexity ? What are the different notations used to represent it ?
12. What is an indexing techniques ? What are its advantages ?
13. Explain the steps to insert a new element at a position 'i' in a linear list.
14. Write down the code in C/C++ to add an element in a queue.
15. Describe the representation of graphs.
16. What are the different file organisations ?
17. What is meant by compaction ? Why is it necessary ?
18. What is the time complexity of linear search algorithm ?
19. Which data structure is the most suitable one to manage free storage pool ? Why ?
20. Explain preorder traversal in a binary tree.
21. Explain circularly linked list.
22. Explain the worst case situation of the data in a sorting algorithm.

SECTION – C
(Short Essay)

Not to exceed 120 words, answer any six questions. Each question carries four marks. (6x4=24 Marks)

23. Explain how a tree is represented in memory.
24. Construct a prefix tree for the expression $A^* - B + (A / B) - (C * D)$.
25. Write the algorithm for Breadth First Traversal of a tree.
26. Explain the algorithm and time complexity of the problem of generating first 'n' Fibonacci terms.



27. What is meant by free storage pool ? Explain how is it managed.
28. Explain the representation of a threaded binary tree with one example.
29. Write code in C/C++ to do the insertion and deletion of an element in a doubly linked list.
30. What are array of structures and structure of arrays ? Explain with examples.
31. Explain the representation of a queue using array. Write the algorithm to add an element in a given queue.

SECTION – D

(Long Essay)

Answer **any two** questions. **Each** question carries **15** marks. **(2×15=30 Marks)**

32. Give an algorithm to count the number of leaf nodes in a binary tree. What is its computing time ?
 33. Discuss dynamic storage management. Explain how a doubly linked list is used in dynamic storage management.
 34. Explain the pop and push operations in a stack constructed using linked list.
 35. Write an algorithm to sort a list of marks to create a rank list using merge sort. Compute its time and storage complexity.
-