(Pages : 3) **A – 3452**

Reg. No. : .....

Name : .....

Fourth Semester B.C.A. Degree Examination, June 2016
(Career Related FDP under CBCSS)
Group 2(b) : Computer Applications
Core Course
CP 1445 : OPERATING SYSTEMS
(2013 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A
(Very Short Answer Type)

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

1. What is degree of multiprogramming ?
2. Name a facility used to implement inter process communication.
3. Expand FCFS.
4. What is use kernel in an operating system ?
5. Which technique is employed to share the CPU among user programs ?
6. What do you mean by a thread ?
7. List two important factors affecting the efficiency of an operating system.
8. What is process scheduling ?
9. What is the use of fork command in UNIX ?
10. What is a file directory ?

P.T.O.

SECTION – B
(Short answer)

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

11. Why an OS can be viewed as a resource allocator ?

12. Define the term "throughput" used to measure the system performance.

13. What do you mean by portability of an operating system ?

14. Define the term semantic gap.

15. What is dispatching ?

16. What do you mean by the term process state ?

17. What are the CPU scheduling criteria ?

18. What is meant by critical section ?

19. What is a semaphore ?

20. Define virtual memory.

21. What is internal fragmentation ?

22. What are the various operations that can be performed on a file directory ?

SECTION – C
(Short essay)

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

23. Discuss about layered approach of an operating system.

24. Briefly discuss about typical functions and services offered by the kernel of an operating system.

25. Explain about the various fields of PCB.

26. What are the different events occurred during the operation of an operating system ?

27. What are the conditions to be satisfied to solve the critical section problem ?

28. What is the difference between deadlock prevention and deadlock avoidance ?

29. How process synchronization is achieved in Unix ?

30. Write a note on mailboxes used for interprocess message passing.

31. What are the different goals of computer security and protection ?

SECTION – D
(Long essay)

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

32. Explain about various classes of operating systems. Briefly mention the features of these operating systems.

33. Explain the classic problems of Synchronization.

34. a) Explain a deadlock avoidance algorithm.

    b) Write a note on the kernel architecture of the UNIX operating system.

35. What is meant by page replacement ? Explain any two page replacement algorithms with examples.

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Reg. No. : .....

Name : .....

Fourth Semester B.C.A. Degree Examination, June 2016
Career Related FDP under CBCSS
Group 2 (b)
CP 1443 : DATABASE MANAGEMENT SYSTEMS
(2013 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. **Each** question carries **one** mark.

1. Define DBMS.
2. Give an example for a database package.
3. Define SQL.
4. What is a Primary key ?
5. Define Selection operation.
6. What is meant by an E-R model ?
7. Define BCNF.
8. What is a Conceptual view ?
9. Define integrity constraint.
10. What do you mean by non-loss decomposition ? **(10×1=10 Marks)**

P.T.O.

SECTION – B

Answer **any 8** questions. **Each** question carries **2** marks.

11. Explain the evolution of database systems.
12. Define Relational model.
13. Explain any two Relational Algebraic operations.
14. Distinguish between selection and projection.
15. What is meant by Foreign Key ? Give an example.
16. Discuss the concept of database tuning.
17. Give an example for UNION operation.
18. How candidate key differ from a primary key ?
19. Distinguish between Internal view and External view of a database.
20. Give an example of a situation of a database which provides inconsistent results.
21. What are strong and weak entity sets ?
22. Distinguish conceptual view and end user view. **(8×2=16 Marks)**

SECTION – C

Answer **any 6** questions. **Each** question carries **4** marks.

23. Explain the concept of redundancy in database system. How this will make series problems in update operations ?
24. Discuss the role of a Database Administrator in a database system environment. How he/she is different from the owner ?
25. Discuss the Data Control (DCL) commands in SQL.
26. What are aggregate commands SQL ? Illustrate by giving two examples.
27. Explain how security and privacy is enforced in a database.

28. Discuss the general syntax with examples the following DML commands.
    i) CREATE
    ii) SELECT with ORDER BY option.

29. Define Normalization. Explain how 1NF can be converted into 2NF.

30. Explain how BCNF is stronger than 3NF using a suitable example.

31. Compare and contrast the features of MS Access and Oracle. **(6x4= 24 Marks)**

SECTION – D

Answer **any 2** questions. **Each** question carries **15** marks.

32. Explain the advantages of database approach. How it overcomes the disadvantages with file system.

33. What is an integrity constraint ? Discuss the various integrity constraints such as Primary Key, Foreign key, Default value, Null value, Range etc. in detail.

34. A relational database consists of the following schema

    WORKER (Empno., Name, Designation, BasicPay)

    WORK (Project-id, Project Name, Location)

    ASSIGNMENT (Empno., Project-id, No.-of-hours)

    Write SQL Command for the following :

    1) To create WORKER table assuming Empno. as primary key and Basic pay within the range 10,000 to 50,000.
    2) To list the work assignment details - Employee Name, Project Name, No.-of-hours.
    3) To list the Employee in the alphabetical order of Designation Column and within each Designation in the decreasing order of BasicPay.
    4) To list out the Project-id with total employees working on each and the total number hours finished in each.

35. Explain the rules in drawing a DFD. Draw an ER-Diagram to represent the data flow involved in retailed shop having Purchase and Sales Operations. **(15x2 = 30 Marks)**

(Pages : 3) **A – 3449**

Reg. No. : .....

Name : .....

Fourth Semester B.C.A. Degree Examination, June 2016
Career Related FDP Under CBCSS
Group – 2(b)
CP 1442 : DATA STRUCTURES AND ALGORITHMS
(2013 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A
(Very short answer type)

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

1. What is the importance of Big_O notation ?
2. How many interchanges are required to sort 5, 1, 6, 2, 4 in ascending order using bubble sort ?
3. Define a queue.
4. What is the complexity of Merge sort algorithm ?
5. Write the postfix expression for *+ab–cd.
6. In which data structure where elements can be added or removed at either end but not in the middle ?
7. What is hashing ?
8. Name the binary tree traversal which produces the postfix expression of an expression tree.
9. Which condition is to be tested before inserting an element into a stack ?
10. What is the maximum number of nodes on level i of a binary tree ?

P.T.O.

SECTION – B
(Short answer)

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

11. Differentiate between static and dynamic data structures.

12. Define the term 'complexity' of an algorithm.

13. How do you represent a stack in computer's memory using a one dimensional array ?

14. What is a sparse matrix ?

15. List and describe the operations to be performed on a queue.

16. What is a binary search tree ?

17. What is garbage collection ?

18. Write the expressions for accessing various elements of a two dimensional array in row major order representation and column major order representation.

19. Write different steps to insert a node at the beginning of a singly linked list.

20. What you mean by traversing a binary tree ?

21. What do you mean by compaction ?

22. Describe indexed sequential file access method.

SECTION – C
(Short essay)

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

23. Write an algorithm to find the transpose of a sparse matrix.

24. Differentiate between linked list and an array.

25. Explain about the application of stacks in implementing recursive function calls.

26. What are the advantages and disadvantages of doubly linked list over singly linked lists ?

27. Write an algorithm to perform selection sort.

28. The order of nodes of a binary tree in preorder and postorder traversals are given under :

    Preorder : {1, 2, 4, 8, 9, 5, 3, 6, 7}

    Postorder : {8, 9, 4, 5, 2, 6, 7, 3, 1}

    Construct the corresponding binary tree.

29. Discuss about different Binary tree representations in memory.

30. Describe how the disadvantages of a queue are eliminated in a circular queue.

31. Define hashing and collision. Explain various collision handling methods.

SECTION – D
(Long essay)

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

32. Convert the given infix expression to postfix form using stack and show the details of stack at each step of conversion.

    Expression : (a + b * c ^ d) * (e + f/g). Note : ^ indicates exponent operator.

33. Write a recursive algorithm for merge sort and show how merge sort sorts the sequence 2, 3, 7, 12, 8, 9, 7, 5, 4.

34. Write short notes on :

    a) BFS and DFS

    b) Representation of graphs in computers memory.

35. Write a program to add two polynomials using singly linked list.