B.E. (Computer Engineering) Fourth Semester (C.B.S.)

File Structure & Data Processing

P. Pages : 2

NRT/KS/19/3389

Time : Three Hours

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0780

Max. Marks : 80

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Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Clarify UNIX directory system with example. **6**

b) Describe each of the following file processing operations with example- **8**
   i) OPEN   ii) CLOSE
   iii) READ   iv) WRITE
   v) SEEK

OR

2. a) Write and explain difference between Constant Linear Velocity (CLV) and Constant Angular Velocity (CAV). **7**

b) Following are given the characteristics of tape drive : **7**
Tape density = 6250 bpi (Bits per inches per track)
Size of inter block gap = 0.75 inch
File characteristics are as follows :
   - Number of records = 10,00,000 records
   - Size of records = 200 bytes
Calculate how much tape length of tape is needed.
   i) If blocking factor = 01
   ii) If blocking factor = 30

3. a) List all the methods used for buffer management. Explain each in detail. **7**

b) Interpret the term 'field' illustrate with example different methods of field structure. **6**

OR

4. a) Describe the following : **6**
   i) Fixed length records
   ii) Variable length records
   iii) Stream of bytes

b) Describe Unix tools for sequential processing. **7**

5. a) What is need of compression ? Explain technique for run length coding with example. **7**

b) Differentiate between internal and external fragmentation. **6**

OR

6. a) Consider the following frequency table. **7**

Char.	p	q	r	s	t
Frequency	28	13	35	10	14

Apply the Huffman coding compression technique to find variable length coding.

b) Explain binary search method. State and explain the limitation of binary search. **6**

7. a) Explain with example different utilities for sorting and consequential processing in unix. **6**

b) What is consequential processing ? Explain merging and matching with example. **7**

OR

8. a) Explain the application to a general ledger program for consequential processing. **7**

b) Explain k-way merging algorithm in detail. **6**

9. a) What do you understand by paged binary tree ? What are problems associated with paged trees ? **6**

b) Explain what is multi level indexing ? Explain the following statement : B-Tree is built upward from the bottom whereas the binary trees are build downward from the top. **7**

OR

10. a) Explain AVL tree with example why it is better than a simple binary search tree. **7**

b) Show the B-tree of order four that results from loading the following set of keys in order C S D T A M P I B W N G U R K E H O L J Y Q Z F X V. **7**

11. a) What is hashing ? Explain all the hashing methods by providing suitable example for each of them. **8**

b) Consider the set of keys and the corresponding address produced by some hash function. **6**

key (k)	Home Address
COLE	20
BATES	21
ADAMS	21
DEAN	22
EVANS	20

Draw hash table using collision resolution by progressive overflow. Also find average search length to access the disk to retrieve a record.

OR

12. a) Describe various techniques for handling collision. Give the advantages and disadvantages of each collision resolution technique. **8**

b) Explain : **6**
   i)   Double hashing
   ii) Chained progressive overflow
   iii) Chaining with separate overflow area.

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