B.E. Information Technology Sixth Semester

IT602 - Database Management Systems

P. Pages : 2 **GUG/W/18/1703**

Time : Three Hours * 1 3 3 7 * Max. Marks : 80

Notes : 1. All questions are compulsory.
2. All questions carry marks as indicated.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Explain drawbacks of conventional file processing system, give example. **8**

b) Draw and explain 2 – tier and 3 – tier architecture of database management system. **8**

OR

2. a) Explain the following. **9**
1) DDL
2) DML
3) DCL

b) Write about:- **4**
1) Hierarchical Model.
2) E-R model.

c) Explain one-to-one, one-to-many and many-to-many mapping in ER model. **3**

3. a) Write a short note on tuple relational calculus and domain relational calculus. Give suitable examples. **4+4 =8**

b) Explain Triggers used in SQL. **8**

OR

4. Write SQL queries for the following : **16**
employee (emp_no, emp_name, emp_place, emp_company)

i) Display all the information from employee table,

ii) Give the name & place of employee working in 'FBC'.

iii) Print the total number of employees in the database.

iv) Update the table employee, add one column emp_salary.

v) Give the names of employees. Whose salary is less than 1 lac.

vi) Give a raise of 10% in salary for every employee in the table.

vii) Find the min, max, avg of salary for employees.

viii) Put a check constraint on attribute salary such that salary should be greater than 5000.

5. a) Compute F^+ and $(AG)^+$ for R = (A, B, C, G, H, I) and F^* for the following FD'S :- **8**

$F = \{ \quad A \rightarrow B,$
$A \rightarrow C,$
$CG \rightarrow H,$
$CG \rightarrow I,$
$B \rightarrow H \quad \}$

b) Explain 4NF and 5NF with example. **8**

OR

6. a) Write a short note on Decomposition and normal forms. **8**

b) Explain BCNF. Justify the difference between 3NF and BCNF. **8**

7. a) What is Transaction Management? Write in brief properties of transaction. Give example. **8**

b) Draw and explain states of transaction. **8**

OR

8. a) Describe different types of failures in Database. **8**

b) Explain Log-Based and shadow page recovery in database. **8**

9. a) Explain query processing with suitable diagram. **8**

b) Explain B^+ tree index file organization in Db. **8**

OR

10. a) Explain single level and multilevel indices. **6**

b) Differentiate between fixed length and variable length records. **6**

c) Explain RAID system. **4**

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