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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B.Tech (ET+L) **Semester – III**

Subject (Course):DBMS and DATA MODELLING **Max. Marks : 100**
Course Code : CSEG220 **Duration : 3 Hrs**
No. of page/s:

Attempt all questions from Q1 to Q9.Attempt any one from Q10.

SECTION A (4x5)

Q1) Explain the following terms:schema,instances,tuple,domain.?
Q2) What properties of database makes it advantageous over file systems.
Q3)What do you understand by data dependence?in how many ways can data show dependence?
Q4) Explain the data modelling approach using entitities and relationships conventions?

SECTIONB (4x10)

Q5) "Functional dependencies have important role to play in normalization".Justify the statement
Q6) Describe DBMS architecture and explain why it is known as three-tier architecture.
Q7)How does various SQL queries operate on the relation?explain any 5 with examples.
Q8) For each of the following SQL queries, for each relation involved, list the attributes that must be examined to compute the answer. All queries refer to the following relations:

Emp (eid: integer, did: integer, sal: integer, hobby: char (20))
Dept (did: integer, dname: char(20), floor: integer, budget: real)
1. SELECT * FROM Emp E
2. SELECT * FROM Emp E, Dept D
3. SELECT * FROM Emp E, Dept D WHERE E.did = D.did
4. SELECT E.eid, D.dname FROM Emp E, Dept D WHERE E.did = D.did

SECTION C (2x20)

Q9). Suppose you are given a relation R with four attributes ABCD. For each of the following sets of FDs, assuming those are the only dependencies that hold for R, do the following: (a) Identify the candidate key(s) for R.
(b) Identify the best normal form that R satisfies (1NF, 2NF, 3NF, or BCNF).
(c) If R is not in BCNF, decompose it into a set of BCNF relations that preserve the dependencies.

1. $C \rightarrow D$, $C \rightarrow A$, $B \rightarrow C$

2. $ABC \rightarrow D$, $D \rightarrow A$

Q10) Discuss the few characteristics of distributed database? Also explain various techniques used for concurrency control?

Or

How can you differentiate logical and physical data structure?with context to DB2 discuss the DB2 instaces and table spaces along with types.

SET B

Attempt all questions from Q1 to Q9.Attempt any one from Q10.

SECTION A (4x5)

Q1)What do you under stand by three tier architecture of Dbms?

Q2)Differentiate between different models of databases?

Q3)DBMS is better than file systems?Comment.

Q4)What are the sign conventions of ER diagrams?

SECTION B (4x10)

Q5)"Use of database depends upon the people needs"?Classify the DB users in this context?

Q6)Using suitable examples explain following SQL queries CREATE,DELETE,DROP,ALTER,SELECT,

Q7) Differentiate the applicability of relational algebra and relational calculus using an example.

Q8)Find the candidate keys for following set of functional dependencies

1)R(ABCDEFGH)

AB->C,

A->DE,

B->DF,

F->GH

2)R(WXYZ)

Z->W,

Y->Z,

WX->Y

SECTION C (2x20)

Q9)Does the concept of Functional dependencies applies to all normal forms?Verify you answer using examples.

Q10) Explain DB2 Architecture describing the following components logical and physical data structures,db instances,different types of table spaces?

OR

Q10) How does distributed database differ from conventional file system? Also explain how can one deal with concurrency control?