Total No. of Questions : 10] SEAT No. :

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[4758] - 576

T.E. (Computer Engg.)

DATABASE MANAGEMENT SYSTEMS APPLICATIONS

(2012 Course)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right side indicate full marks.*
4) *Assume suitable data, if necessary.*

Q1) a) Explain R database model with suitable example. **[5]**

b) Compare SQL and NOSQL databases. **[5]**

OR

Q2) a) Define Transitivity dependency. Explain third normal form with suitable example. **[5]**

b) Explain view and Index objects in SQL with example. **[5]**

Q3) a) Explain Distinct between the terms serial schedule and serializable schedule with suitable example. **[5]**

b) Explain MongoDB data modeling with suitable example. **[5]**

OR

Q4) a) Describe croud-sourcing in MongoDB. **[5]**

b) Explain different concurrency protocols in Database management systems. **[5]**

P.T.O.

Q5) a) Explain 3- tier web architecture with diagram for online shopping database system. **[5]**

b) Explain database administration in MongoDB. **[5]**

c) Describe Cassendra database architecture. **[7]**

OR

Q6) a) Describe advantages of Homogeneous and Heterogeneous distributed databases. **[5]**

b) Explain speedup and scale up in parallel databases in detail. **[5]**

c) Explain Database Connectivity using MongoDB with suitable Example. **[7]**

Q7) a) Consider following DTD for bid **[7]**

```
<?xml version= "1.0" encoding="UTF-8"?>

<!ELEMENT bids  (bid_tuple*)>

<!ELEMENT bid_tuple (userid, itemno, bid, bid_date)>

<!ELEMENT userid (#PCDATA)>

<!ELEMENT itemno (#PCDATA)>

<!ELEMENT bid (#PCDATA)>

<!ELEMENT bid_date (#PCDATA)>
```

Create XML document, XML Schemas and solve the following queries in XQuery.

i) List the item number and description of the item(s) that received the largest number of bids, and the number of bids it (or they) received.

ii) List item numbers and average bids for items that have received three or more bids, in descending order by average bid.

b) Write a short note on **[10]**

i) JSON

ii) Hive

OR

Q8) a) Consider following DTD for bibliography **[7]**

<!ELEMENT bib (book*)>

<!ELEMENT book (title, (author+ | editor+), publisher, price)>

<!ATTLIST book year CDATA #REQUIRED >

<!ELEMENT author (last, first)>

<!ELEMENT editor (last, first, affiliation)>

<!ELEMENT title (#PCDATA)>

<!ELEMENT last (#PCDATA)>

<!ELEMENT first (#PCDATA)>

<!ELEMENT affiliation (#PCDATA)>

<!ELEMENT publisher (#PCDATA)>

<!ELEMENT price (#PCDATA)>

Create XML document, XML Schemas and solve the following queries in XQuery on the bibliography fragment.

i) List books published by Addison-Wesley after 1991, including their year and title.

ii) Find pairs of books that have different titles but the same set of authors (possibly in a different order).

b) Write a short note on : **[10]**

i) Map Reduce in Hadoop

ii) Cloudera

Q9) a) Explain BIS Components in detail **[5]**

b) Explain Recommendations algorithm in detial. **[5]**

c) Define Association Rule Mining. Explain Apriori Algorithm with suitable example. **[6]**

OR

Q10 a) Explain Regression analysis in data mining with suitable example. **[5]**

b) Define data Mining. Explain decision Tree classification algorithm with suitable example. **[5]**

c) Explain ETL Data Warehouse. **[6]**