National University of Computer and Emerging Sciences, Lahore
Spring Semester 2008

Course: CS204 - Database Systems | Total Time Allowed: 3hrs.
Date: May 24, 2008 | Max Points: 50

Final Exam - Part I (MCQs)
(30 minutes Max. for this part)

Roll No: _____ Section: _____

Question 1: *(15 points)*
Please encircle the correct answer:

1. In the entity relationship model, the primary aspect of a composite attribute is that it

a) Consists of subparts, which represent more basic attributes
b) Is an attribute that has a set of values
c) Is an attribute that can be determined from other attribute values
d) Is an attribute whose values are distinct for each individual entity in the entity set
e) None of the above

2. When we map from an entity-relationship diagram to a set of relations, Which of the following is incorrect?

a) Each weak entity type becomes a relation
b) Key attributes of an entity type become the key of a relation
c) The key of a many-to-many relationship type is the combined key of all the participating relations
d) Each relationship type becomes a relation
e) None of the above

3. Specialization in the Enhanced Entity-Relationship model is

a) The process of defining a set of superclasses of an entity type
b) The process of defining a set of subclasses of an entity type
c) The process of defining an entity type that contains the common features of a set of entity types
d) The process of defining a set of weak entity types of an entity type
e) None of the above

4. If an attribute defined specialization is disjoint-total then which of the following statement is false.

a) The defining attribute is a multivalued attribute.
b) There exists a defining attribute in subclasses, which defines the type of the entity instances.
c) Defining attribute can have a null value.
d) The defining attribute must be a primary key of superclass.
e) All of the above

5. What is the minimum number of keys that any relation with n attributes must have?

a) 0
b) n
c) 1
d) 2^n
e) n/2

6. Which of the following update operations may cause a violation of the primary key constraint?

a) A deletion of one tuple from the relation

b) An insertion of one tuple into the relation

c) An update of one tuple in the relation

d) Both (b) and (c)

e) Both (a) and (b)

7. Given the relational schema consisting of Course(Cnumber, Cname, Dept) and Enroll(RollNo, Cnumber, Grade), which SQL query retrieves the courses for each department in which students are not enrolled?

a) SELECT Dept, Cname FROM Course
WHERE Cnumber NOT IN (SELECT Cnumber FROM Enroll) ORDER BY Dept;

b) SELECT Dept, Cname FROM Course
WHERE Cnumber IN (SELECT Cnumber FROM Enroll) ORDER BY Dept;

c) SELECT Dept, Cname FROM Course, Enroll
WHERE Course.Cnumber = Enroll.Cnumber ORDER BY Dept;

d) SELECT Dept, Cname FROM Course ORDER BY Dept;

e) All of the above

8. What is the result of the SQL query SELECT C, F FROM R, S WHERE B = D AND A = E;
given the following two tables, R and S?

R

A	B	C
41	21	32
42	22	32
43	24	32
43	21	31
45	21	31
41	20	31

S

D	E	F
20	41	4
22	42	5
23	43	6
24	43	6

a) A table with columns C and F whose 3 rows are (32,4), (32,5) and (32,6)

b) A table with columns C and F whose 3 rows are (32,5), (32,6) and (31,4)

c) A table with columns C and F whose 1 rows is (31,6)

d) A table with columns C and F whose 2 rows are (32,5) and (31,6)

e) None of the above

9. What constraint does the one functional dependency DeptNo → Dname define for the relation schema DeptSales(DeptNo, Dname, Month, Year, Sales)?

a) If two tuples have the same value for Dname then they have the same value for DeptNo

b) If two tuples have the same value for DeptNo then they have the same value for Dname

c) DeptNo must be a primary key for DeptSales

d) DeptNo must be a superkey for DeptSales

e) All of the above

10. Given the relation schema, DeptSales(DeptNo, Dname, Month, Year, Sales) and the set of functional dependencies, F = {DeptNo→Dname, {DeptNo,Month,Year}→Sales }, then which of the following functional dependencies is a valid inference?

a) {DeptNo,Month,Year}→Dname

b) {Month,Year}→Dname

c) DeptNo→Sales

d) Dname→Sales

e) None of the above

11. Two sets of functional dependencies, F_1 and F_2 are equivalent if

a) F_1 and F_2 contain no redundant functional dependencies

b) F_2 is a subset of F_1

c) F_1 and F_2 have the same number of functional dependencies

d) F_1 and F_2 have the different number of functional dependencies

e) None of the above

12. Given the relation DeptSales(DeptNo, Dname, Month, Year, Sales) with FDs
F = {DeptNo→Dname, {DeptNo,Month,Year}→Sales }, then DeptSales could suffer from

a) insertion anomalies

b) redundancy and inconsistency

c) deletion anomalies

d) updation anomalies

e) all of the above

13. Given the relation R(A,B,C,D) with FDs F = {AB→C, A→D} shown below.
What values could be inserted for the missing D and A column values. The domain for D is {d1,d2,d3,d4,d5,d6,d7} and the domain for A is {a1,a2,a3,a4}.

A	B	C	D
a1	b1	c1	d1
a1	b2	c2	
	b1	c1	d3
a4	b1	c4	d4

a) d1 and a1

b) d5 and a4

c) d5 and either a2 or a3

d) d1 and either a2 or a3

e) none of the above

14. Which of the following is not a desirable property of transactions?

a) Isolation

b) Atomic

c) Inconsistency

d) Permanency

e) None of the above

15. The write ahead log rule is that

a) A Log must be maintained for all occurring transactions

b) A log must be physically written to disk after the commit

c) A log must be physically written to disk before the commit processing can complete

d) A log must be written to log buffer before the commit processing can complete

e) None of the above

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a	d	b	e	c	d	a	b	b	a	e	e	d	c	c