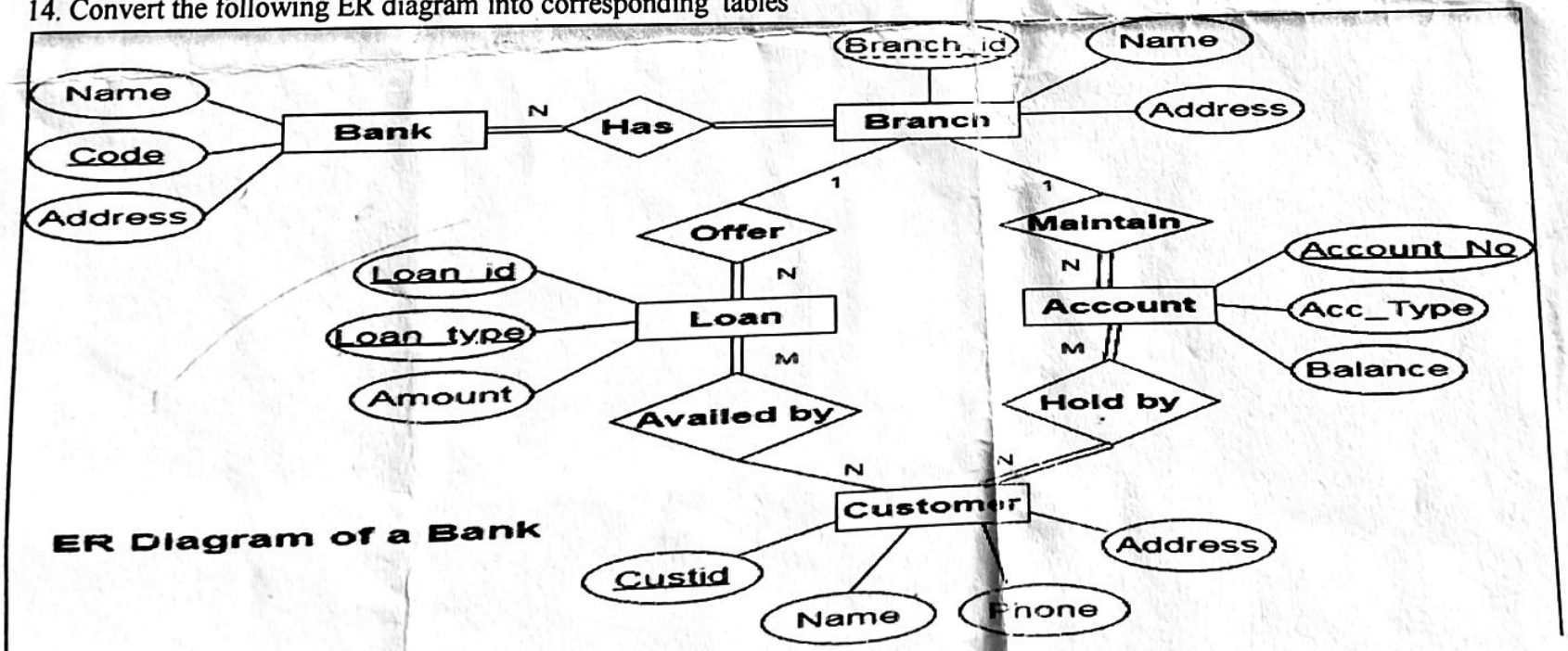
DBMS(PCC-CS502)

3rd Year, 5th Semester

Full marks: 25 Time: 40 min

(Question 1 to 10 carry one mark each)

1. A relation is considered to be in second normal form if it is in first normal form and it has no ..... dependencies.
   a) referential b) functional c) partial key d) transitive
2.) Which of the following is the result of a transitive dependency? a) insertion anomaly b) modification anomaly c) deletion anomaly d) all of the above
3. A functional dependency of the form $x \rightarrow y$ is trivial if a) $y \subseteq x$ b) $y \subset x$ c) $x \subseteq y$ d) $x \subset y$
4. Let E be an entity set in a relationship set R. If every entity in E participates in at least one relationships in R, then the participation of E in R is ___
   a) Partial b) Total c) Complete d) Incomplete
5. If every non-key attribute is functionally dependent on primary key, then the relation will be in a. 1NF b.2NF c. 3NF d. BCNF
6. Which normal form is considered adequate for relational database design ? a. 1NF b.2NF c. 3NF d. BCNF
7. Given the functional dependencies X-> W, X->Y, Y->Z, Z->PQ, Which of the following does not hold good? a. X->Z b. W->Z c. X-> WY d. None of these
8. A normal form in which every determinant is a key is a. 2NF b. 3NF c. BCNF d. 4NF
9. In an E-R diagram double lines indicate a. Total participation b. Multiple participation c. Cardinality N d. None of these
10. A _____ entity has a primary key that is partially derived from the parent entity in the relationship a. strong b. weak c. business d. relationship
11. "Every relation in BCNF is also in 3 NF ; however, a relation in 3 NF is not necessarily in BCNF." Explain 3
12. Explain Cardinality in ER diagram with example. 4
13. What is functional dependency? Differentiate between trivial and non trivial functional dependency. 1+2
14. Convert the following ER diagram into corresponding tables 5



ER Diagram of a Bank

DBMS(PCC-CS502)(CA2)

3rd Year 5th Semester

Full marks : 5 Time: 40 min

(Question 1 – 11 carry 1 mark each)

1. What is the degree of a table with 1000 rows and 10 columns?
   a) 10 b) 100 c) 1000 d) none of these
2. A set of possible data values is called
   a) attribute b) degree c) tuple d) domain
3. The entity integrity constraint states that
   a) no primary key value can be null b) a part of the key may be null c) duplicate object values are allowed d) none of these
4. Relational Calculus is a
   a) Procedural language b) Non-procedural language c) Structured Query language d) none of these
5. In a relational data model, the columns of a table are called
   a) Relation b) Tuple c) Attribute d) Degree
6. If a set of attributes, K, in relation to schema R1 is a foreign key for R1 then
   a) every tuple of R1 has a distinct value for k b) K is a key for some other relation
   c) K cannot have a null value for tuples in R1 d) K is a primary key for R1
7. Which of the following relational algebra operations do not require the participating tables to be union-compatible?
   a) Union b) Intersection c) Difference d) Join
8. Relational Algebra is
   a) Structured Query language b) Non-procedural query Language c) Procedural query Language d) None of these
9. If two relations R and S are joined, then the non matching tuples of both R and S are ignored in
   a) left outer join b) right outer join c) full outer join d) inner join
10. Consider the join of relation R with S. If R has m tuples and S has n tuples, then the maximum and minimum size of the join respectively are
    a) m+n and 0 b) m+n and |m-n| c) mn and 0 d) mn and m+n
11. The common column is eliminated in
    a) theta join b) outer join c) natural join d) equijoin

12. A company database schema is as follows

EMP(Fname, Minit, Lname, Ssn, Bdate, Address, Sex, Salary, Super_ssn, Dno)
DEPT(Dname, Dnumber, Mgr_ssn, Mgr_start_date)
DEPT_LOCATIONS(Dnumber, Dlocation)
PROJECT(Pname, Pnumber, Plocation, Dnum)
WORKS_ON(Essn, Pno, Hours)
DEPENDENT(Essn, Dependent_name, Sex, Bdate, Relationship)

i) Write relational algebra query for the following: (5 x 2 =10)
   a) List the names of employees who have no dependents
   b) Retrieve the names of all employees who works on every project
   c) Retrieve the names of all employees with two or more dependents.
   d) Retrieve the name of managers who have at least one dependent
   e) Retrieve the names of all employees in department 5 who work more than 10 hours per week on the ProductX project
ii) Write a trc query to retrieve the name of each employee who works on some project controlled by department number 5. 2
iii) Write a drc query to retrieve the name and address of all employees who work for the "Research" department 2

DBMS(PCC-CS502)(CA4) (SET-5)

3rd Year, 5th Semester

Full marks: 25 Time: 20 min

1. The relationship set is represented in E-R diagram as
   a) Double diamonds b) Undivided rectangles c) Dashed lines d) Diamond
2. An entity set that does not have sufficient attributes to form a primary key is termed a _____
   a) Strong entity set b) Variant set c) Weak entity set d) Variable set
3. For a weak entity set to be meaningful, it must be associated with another entity set, called the
   a) Identifying set b) Owner set c) Neighbour set d) Strong entity set
4. A relationship is an association between _____ a) objects b) entities c) databases d) fields
5. Which of the following is not a consequence of non-normalized database?
   a) Update Anomaly b) Insertion Anomaly c) Redundancy d) Lost update problem
6. A table is in BCNF if it is in 3NF and if every determinant is a _____ key.
   a) Dependent b) Normal c) Candidate d) Both Normal and Candidate
7. A table is in 3NF if it is in 2NF and if it has no _____
   a) Functional Dependencies b) Transitive Dependencies c) Trivial Functional Dependency d) Multivalued Dependencies
8. A _____ is an indirect functional dependency, one in which X->Y only by virtue of Y->Z and X->Z.
   a) Multivalued Dependencies b) Join Dependency c) Trivial Functional Dependency d) Transitive Dependencies
9. In a given relationship R, if an attribute A uniquely defines all other attributes, then the attribute A is a key attribute which is also known as the _____ key. a) Candidate b) Join c) Functional d) None of the Mentioned
10. Every time attribute A appears, it is matched with the same value of attribute B, but not the same value of attribute C. Therefore, it is true that:
    a) A -> B b) A -> C c) A -> (B,C) d) (B,C) -> A
11. The values of the attribute describes a particular_____ a) Entity set b) File c) Entity instance d) Organization
12. If both the functional dependencies : X→Y and Y→X hold for two attributes X and Y then the relationship between X and Y is
    a) M:N b) M:1 c) 1:1 d) 1:M
13. The ERD is used to graphically represent the ____ database model. a) condensed b) logical c) physical d) conceptual
14. A ____ relationship exists when three entities are associated. a) unary b) ternary c) binary d) weak
15. Which of the following is not a consequence of concurrent operations?
    a) Lost update problem b) Update anomaly c) Incorrect Summary problem d Dirty read
16. The FD A -> B , DB -> C implies a) DA -> C b) A -> C c) B -> A d) DB -> A
17. In an E-R, Y is the strong entity and X is a weak entity. Then which of the following is incorrect :
    a) Operationally, if Y is deleted, so is X b) existence of X is dependent on Y.
    c) Operationally, if X is deleted, so is Y. d) Operationally, if X is deleted, Y remains the same.
18. Which of the following is not a property of transactions? a) Atomicity b) Concurrency c) Isolation d) Durability
19. Which of the following is not a consequence of concurrent operations?
    a) Lost update problem. b) Update anomaly. c) Unrepeatable read. d) Dirty read.
20. A transaction is in _____ state after the last operation has been executed.
    a) partially committed b) active c) committed d) none of the above
21. Which one of the following statements about normal forms is FALSE?
    a) BCNF is stricter than 3 NF b) Lossless, dependency preserving decomposition into 3 NF is always possible
    c) Loss less, dependency – preserving decomposition into BCNF is always possible d) Any relation with two attributes is BCNF
22. Relations produced from an ER diagram will always be a)4NF b)3NF c)2NF d)1NF
23. In addition to removing undesirable characteristics, normalization also eliminates ___ anomalies.
    a) Insert b) Update c) Delete d) All of the above
24. A common approach to normalization is to ___ the larger table into smaller tables and link them together by using relationships.
    a) Add b) Subtract c) Multiply d) Divide
25. Which of the following gives a logical structure of the database graphically?
    a) Entity-relationship diagram b) Entity diagram c) Database diagram d) Architectural representation

DBMS(PCC-CS502)

3rd Year, 5th Semester

Full marks: 25 Time: 45 min

1. In an ER diagram, what do entities represent? 1
   a) Relationships between tables b) Physical storage locations
   c) Real-world objects or concepts d) Database queries
2. Which of the following is not a type of database? 1
   a) Hierarchical b) Network c) Distributed d) Decentralized
3. Which of the following is not a function of the database? 1
   a) Managing stored data b) Manipulating data c) Security for stored data d) Analysing code
4. Which of the following is a function of the DBMS? 1
   a) Storing data b) Providing multi-users access control c) Data Integrity d) All of these
5. What is information about data called? 1
   a) Hyper data b) Tera data c) Meta data d) Relations
6. Which of the following best describes an attribute in an ER model? 1
   a) A link between entities b) A primary key c) A characteristic or property of an entity d) A type of relationship
7. Because it contains a description of its own structure, a database is considered to be _____. 1
   a) described b) metadata compatible c) self-describing d) an application program
8. What is the overall responsibility of the DBA? 1
   a) Facilitate the development and use of the database b) Create and populate tables
   c) Development, operation, and maintenance of the database and its applications d) Both the first and third answers above are correct
9. Data Model is collection of conceptual tools for describing - 1
   a) Data b) Data Schema c) Consistency Constraints d) All of these
10. The users who use easy-to-use menu are called 1
    a) Sophisticated end users b) Naive users c) Stand-alone users d) Casual end users
11. What is the difference between a database schema and database state? 2
12. Describe three schema architecture with diagram. 5
13. What is the difference between logical data independence and physical data independence? Which one is harder to achieve and why? 3+2
14. What is distributed dbms? Differentiate between homogeneous and heterogeneous distributed dbms. 1+2