Part 1:

1. **Data** are values which represent known facts about something with an absolute meaning.
2. A **Mini World** is some part of the real world that a given database stores information about.
3. A **Database System** includes the database and the application programs developed to make use of the Database Management System.
4. **Database Management Software** is software which assists in the process of creating and maintenance of a computer database.
5. A **Database Administrator** is responsible for software and hardware resources, monitoring performance and authorizing access to the database.
6. An **End User** is someone who uses the database on a regular basis and who doesn’t know how the database is structured.
7. A **Business Analysts** role is to analyze business data for better decision making related to planning, advertising and marketing. Use tools that work closely with the stored database.
8. **Data Model** is an abstraction used to hide storage details and present a conceptual view of the database to its users.
9. The **Relational Data Model** groups tuples into relations to represent data. It uses declarative operations to specify what data to get rather than how to get it.
10. An **Atomic Value** is a piece of data in a database table that cannot be broken down any further.
11. **Domain** is the set of valid values, with a name, data type and a set of atomic values. An example domain could be: Name: type string.
12. A **Key** is a column which is indexed to increase access to a table’s row.
13. A **Foreign Key** is a reference to an existing primary key in the referenced table.
14. A **Relation** is a way to model data and states the commonalities of the attributes.
15. An **Attribute** is a column in a database table. An attribute in a student relation could be CGPA.
16. A **Tuple** is the associated data values in a relation, each row is a tuple in the base relation.
17. **Entity Integration Rule** is the constraint stating a primary key value cannot be null.
18. **Logical Data Independence** provides the ability to change the conceptual schema without being required to change the external schemas and their associated application programs.
19. **Data Definition Language** is used by DBA’s and database designers to specify the schema of a database. Includes the commands: create, alter and drop.
20. **Data Manipulation Language** is used to populate the database and modify its tuples. Includes the commands: insert, delete and update.

Part 2:

CREATE TABLE xxx (

object CHAR(2) PRIMARY KEY,

dependent CHAR(2),

FOREIGN KEY(dependent) REFERENCES xxx(object) ON DELETE SET NULL

);

INSERT INTO xxx VALUES ('E1', NULL);

INSERT INTO xxx VALUES ('E3', 'E1');

INSERT INTO xxx VALUES ('E2', 'E3');

UPDATE xxx SET dependent = 'E2' WHERE object = 'E1';

Part 3:

CREATE TABLE Suppliers (

s# CHAR(2) **PRIMARY KEY**,

sname VARCHAR(20) **NOT NULL**,

status INT **NOT NULL**,

city VARCHAR(20) **NOT NULL**,

**CHECK (status >= 0 AND status != 404 AND city in ('London', 'Paris', 'Athens'))**

);

CREATE TABLE Parts (

p# CHAR(2) **PRIMARY KEY**,

pname VARCHAR(20) **NOT NULL**,

color VARCHAR(20) **NOT NULL**,

weight FLOAT **NOT NULL**,

city VARCHAR(20) **NOT NULL**,

**CHECK (weight > 0 AND color in ('Red', 'Green', 'Blue'))**

);

CREATE TABLE SP (

s# CHAR(2) **NOT NULL**,

p# CHAR(2) **NOT NULL**,

qty INT **DEFAULT 0** **NOT NULL**,

**PRIMARY KEY**(s#, p#),

**FOREIGN KEY**(s#) REFERENCES Suppliers(s#) ON DELETE CASCADE,

**FOREIGN KEY**(p#) REFERENCES Parts(p#) ON DELETE CASCADE,

**CHECK (qty >= 0 AND qty <= 99999)**

);

INSERT INTO Suppliers VALUES ('S1', 'Smith', 20, 'London');

INSERT INTO Suppliers VALUES ('S2', 'Jones', 30, 'Paris');

INSERT INTO Suppliers VALUES ('S3', 'Blake', 30, 'Paris');

INSERT INTO Suppliers VALUES ('S4', 'Clark', 20, 'London');

INSERT INTO Suppliers VALUES ('S5', 'Adams', 30, 'Athens');

INSERT INTO Parts VALUES ('P1', 'Nut', 'Red', 12.0, 'London');

INSERT INTO Parts VALUES ('P2', 'Bolt', 'Green', 17.0, 'Paris');

INSERT INTO Parts VALUES ('P3', 'Screw', 'Blue', 17.0, 'Oslo');

INSERT INTO Parts VALUES ('P4', 'Screw', 'Red', 14.0, 'London');

INSERT INTO Parts VALUES ('P5', 'Cam', 'Blue', 12.0, 'Paris');

INSERT INTO Parts VALUES ('P6', 'Cog', 'Red', 19.0, 'London');

INSERT INTO SP VALUES ('S1', 'P1', 300);

INSERT INTO SP VALUES ('S1', 'P2', 200);

INSERT INTO SP VALUES ('S1', 'P3', 400);

INSERT INTO SP VALUES ('S1', 'P4', 200);

INSERT INTO SP VALUES ('S1', 'P5', 100);

INSERT INTO SP VALUES ('S1', 'P6', 100);

INSERT INTO SP VALUES ('S2', 'P1', 300);

INSERT INTO SP VALUES ('S2', 'P2', 400);

INSERT INTO SP VALUES ('S3', 'P2', 200);

INSERT INTO SP VALUES ('S4', 'P2', 200);

INSERT INTO SP VALUES ('S4', 'P4', 300);

INSERT INTO SP VALUES ('S4', 'P5', 400);