1. Since a relation is formally defined as a set of tuples, if the cardinality is 22 (i.e., there are 22 tuples), there must be 22 distinct tuples.

2. Minimum = 0                maximum = infinity (theoretically).

3. A relation can have several candidate keys, but only one of them is designated as primary key. Candidate keys are set of fields that satisfy the conditions that they are minimal and uniquely identify a tuple.

4. a)

   CREATE TABLE Emp (  
edid        INTEGER,  
ename       CHAR(10),  
age        INTEGER,  
salary      REAL,  
    PRIMARY KEY (eid) )

   CREATE TABLE Works (  
edid        INTEGER,  
did        INTEGER,  
pertime     INTEGER,  
    PRIMARY KEY (eid, did),  
    FOREIGN KEY (did) REFERENCES Dept,  
    FOREIGN KEY (eid) REFERENCES Emp,  
    ON DELETE CASCADE)

   CREATE TABLE Dept (  
did        INTEGER,  
budget     REAL,  
managerid   INTEGER ,  
    PRIMARY KEY (did),  
    FOREIGN KEY (managerid) REFERENCES Emp,  
    ON DELETE SET NULL)

b)

   CREATE TABLE Dept (  
did        INTEGER,  
budget     REAL,  
managerid   INTEGER NOT NULL ,  
    PRIMARY KEY (did),  
    FOREIGN KEY (managerid) REFERENCES Emp)

c)

   UPDATE Emp E  
   SET E.Salary = E.Salary * 1.10