Part-I (Database Management Systems) Max Marks: 35

Question 1 in part-I is compulsory. Attempt any two questions from the remaining questions in part-I

Q-1. Choose the most appropriate option for the following statement and write on the provided answer sheet. (Please write only correct options, no need to write whole answer). (Marks:10)

1) What does SQL stand for?
   a) Strong Question Language
   b) Structured Question Language
   c) Structured Query Language
   d) Semi-Structured Query Language

2) Which SQL Statement is used to insert new data in a database?
   a) ADD RECORD
   b) ADD INTO
   c) INSERT
   d) ADD NEW

3) A DBMS is
   A) Another name for database system
   b) Independent of a database
   c) Dependent on application programs
   d) Is a set of procedures which manage a database
4) The Process of Normalization
   a) Is automatic using computer program
   b) Requires one to understand dependency between attributes
   c) Is manual and requires semantic information
   d) Is finding a key of Relation

5) With SQL, how do you select a column named “First Name” from a table named “Persons”?
   a) EXTRACT first name FROM persons.
   b) SELECT first name FROM Persons.
   c) SELECT Persons First Name

6) In an E-R diagram entities are represented by
   a) Circles
   b) Rectangles
   c) Diamond Shaped Box
   d) Ellipse

7) Pick the meaningful relationship between entities
   a) Vendor Supplies goods
   b) Vendor Talks with customer
   c) Vendor complaints to Vendor
   d) Vendor ask Prices

8) Which SQL keyword is used to sort the result set?
   a) SORT BY
   b) ORDER
   c) ORDER BY
   d) SORT

9) With SQL, how can you delete the records where the “first name” is “peter” in persons table?
   a) DELETE FROM persons WHERE First Name= ‘peter’
   b) DELETE ROW First name = ‘Peter’ FROM Persons
   c) DELETE FIRST Name = ‘Peter’ FROM Persons
10) Primary key always uniquely identifies each record in a table
   a) True
   b) False
   c) Statement is not clear

Q-2. a) Write a brief note on history of database processing. (Marks: 4.5)
   b) Draw an Entity Relationship Diagram (ERD) for the following company. (Marks: 8)

Golden company wants to computerize its sales system. Golden Co. has its network across the
Country. Country is distributed in zones. Each zone covers one or more cities. Each cities has one or
More distributors. Golden company has number of Products. Some products have more than one
Packing size. The sales Process is: Delivery order is made for each approved order. One delivery order
Can be serves in more than one supply depending on the availability of material in the stores. For each
Supply Invoice is made. Invoice should be made from the delivery order. Therefore we have to save the
Records of pending items in delivery order. Golden company has dealing with number of Transporters.
Invoice also contains the name of transporter. Golden company receives payments from the
Distributors. We have to save the record of each distributor.

Q-3. a) Define Entity. Attribute and relationship with examples. (Marks: 4.5)
   b) Discuss different type of database anomalies with examples. (Marks: 4)
   c) Define Functional Dependency and its types with examples. (Marks: 4)

Q.4. a) Write SQL Statement: (Marks: 4.5)
   i) Which create the following table STUDENT?
   ii) Which insert the following given data in STUDENT table
   iii) Which display all students name who earns more than 3.00 CGPA?

<table>
<thead>
<tr>
<th>First Name</th>
<th>Address</th>
<th>Class</th>
<th>CGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maryam</td>
<td>Lahore</td>
<td>BS-CS</td>
<td>3.25</td>
</tr>
<tr>
<td>Bilal</td>
<td>Islamabad</td>
<td>BS-SE</td>
<td>2.25</td>
</tr>
<tr>
<td>Faisal</td>
<td>Quetta</td>
<td>BS-IT</td>
<td>3.65</td>
</tr>
</tbody>
</table>
b) Normalize the following HBL “Branch-Staff” Relation upto 3rd Normal form but step by step
Show each intermediate resultant table with its data. (Mark: 8)

<table>
<thead>
<tr>
<th>B#</th>
<th>Address</th>
<th>S#</th>
<th>S name</th>
<th>Salary</th>
<th>C#</th>
<th>C name</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>PU Old Campus</td>
<td>B1S1</td>
<td>Naveed</td>
<td>45000</td>
<td>C1</td>
<td>PUCIT</td>
</tr>
<tr>
<td>B1</td>
<td>PU Old Campus</td>
<td>B1S2</td>
<td>Nadia</td>
<td>20000</td>
<td>C2</td>
<td>PUCAD</td>
</tr>
<tr>
<td>B1</td>
<td>PU Old Campus</td>
<td>B1S3</td>
<td>Kirn</td>
<td>38000</td>
<td>C1</td>
<td>PUCIT</td>
</tr>
<tr>
<td>B2</td>
<td>PU New Campus</td>
<td>B2S1</td>
<td>Ifrah</td>
<td>46000</td>
<td>C1</td>
<td>PUCIT</td>
</tr>
</tbody>
</table>

Note:

<table>
<thead>
<tr>
<th>B#</th>
<th>Branch number</th>
</tr>
</thead>
<tbody>
<tr>
<td>S#</td>
<td>Staff Number</td>
</tr>
<tr>
<td>Sname</td>
<td>Staff name</td>
</tr>
<tr>
<td>C#</td>
<td>Client number</td>
</tr>
<tr>
<td>Cname</td>
<td>Client name</td>
</tr>
</tbody>
</table>

Part-II (Operating System and Networks) Max marks: 35

Note:

1: Question 5 in part -II is compulsory.

2: Attempt any two question from the remaining question in part -II

Q.5. Choose h most appropriate option for the following statements and write on the provided answer Sheet. (Please write only correct options, to write whole Answer. (Marks: 10)
1) A process is in a ________ state, if that process has halted its execution but a record of the process is still maintained by the operating system.
   A) Running    b) Ready    c) Blocked    d) Terminate

2) On a system that used simple paging, memory is divided into fixed-size blocks called page frames.
   a) True    b) False    c) Statement is not clear

3) A process is in a ________ state, if that process has been created but will not be considered for loading into memory or for execution.
   A) Running    b) Exit    c) Held    d) Terminate

4) The number of processed the system can execute in a period of time is called: throughput of a system.
   a) True    b) False    c) Statement is not clear

5) A process is in a ________ state, if it is executing on a CPU.
   A) Running    b) Exit    c) Held    d) Terminate

6) The ________ model shows how the network functions of a computer ought to be organized.
   a) ITU-T    b) OSI    c) ISO    d) ANSI

7) As the data packet moves from the lower to the upper layers, headers are ________________
   a) Added    b) Subtracted    c) Rearranged    d) Modified

8) Layer 2 lies between the physical layer and the ________ layer.
   a) Network    b) Data link    c) Transport    d) Presentation

9) A tree topology is a variation of a ________ Topology.
   a) Mesh    b) Star    c) Bus    d) Ring

10) A television broadcast is an example of ________________ transmission.
    a) Simplex    b) Half-duplex    c) Full-duplex    d) Automatic

Q.6. a) Differentiate Swapper and Dispatcher. (Marks: 6.5)

b) Discuss briefly Distributed Operating System (Marks: 6.)

Q.7.a) Discuss “Overlaying” Memory Management Scheme and Also Discuss one Disadvantage of this Scheme. (Marks: 6.5)

b) Write a note on Simple Segmentation. (Marks: 6)

Q.8.a) Discuss briefly Functions of Physical Layer of OSI Model. (Marks: 6.5)

B) Differentiate Mesh Topology and Star Topology. (Draw figures also) (Marks: 6)