INFORMATICS PRACTICES

Time allowed : 3 hours

Maximum Marks : 70

General Instructions :
(i) All questions are compulsory.
(ii) Answer the questions after carefully reading the text.
1. (a) Vidya College has three departments that are to be connected into a network. Which of the following communication medium (out of the given options), should be used by the college for connecting their departments for very effective High Speed communication?
   - Coaxial Cable
   - Optical Fiber
   - Ethernet Cable
   
   Also name the type of network (out of PAN/LAN/WAN) formed.

   (b) State reason why Star topology requires more cable length than Bus topology.

   (c) Seema needs a network device that should regenerate the signal over the same network before the signal becomes too weak or corrupted. Amit needs a network device to connect two different networks together that work upon different networking models so that the two networks can communicate properly.
   
   Name the devices that should be used by Seema and Amit.

   (d) How is a domain name related to an IP address?

   (e) How is firewall useful in ensuring network security?

2. (a) Identify the odd one out of the following Java statements. State reason for your choice.
   
   (i) for
   (ii) do while
   (iii) switch
   (iv) while

   (b) Write the purpose of parseInt() method.

   (c) Identify invalid variable names out of the following. State reason if invalid.
   
   (i) for
   (ii) - salary
   (iii) salary12
   (iv) product

   (d) What is the difference between statements (i) and (ii)?
   
   (i) \[ t = 2; \]
   (ii) \[ if \ (t == 2) \]
   \[ d = 3; \]
(e) Write HTML tags to do the following:

(i) Inserting a horizontal line in a web page.
(ii) Inserting a line break

(f) What does 'XML' stand for? How is the purpose of HTML different from XML?

(g) Rewrite the following code using if else if statement:

switch(dePCODE)
{
    case 1:
        allowance = 4000;
        break;
    case 2:
        allowance = 3200;
        break;
    default:
        allowance = 1000;
}

3. (a) What is the meaning of 'Open Source' in the term 'Open Source Database Management System'?

(b) In a table 'Employee', a column 'Occupation' contains many duplicate values. Which keyword would you use if you wish to list only different values?

(c) How is ALTER TABLE statement different from UPDATE statement?

(d) Charvi wants to delete the records where the "FirstName" is "Rama" in the 'Emp' Table. She has entered the following SQL statement. An error is being displayed. Rewrite the correct statement.

DELETE 'Rama' FirstName FROM Emp;
(e) (i) Name 2 Group (Aggregate) functions of SQL.

(ii) Consider the table:

<table>
<thead>
<tr>
<th>CompanyCode</th>
<th>Donations</th>
</tr>
</thead>
<tbody>
<tr>
<td>C101</td>
<td>13000</td>
</tr>
<tr>
<td>C102</td>
<td>NULL</td>
</tr>
<tr>
<td>C104</td>
<td>7000</td>
</tr>
<tr>
<td>C105</td>
<td>4000</td>
</tr>
</tbody>
</table>

What output will be displayed by the following SQL statement?

```sql
SELECT AVG(Donations) FROM Company;
```

(f) Given below is the 'Emp' table:

<table>
<thead>
<tr>
<th>ENO</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anita Khanna</td>
</tr>
<tr>
<td>2</td>
<td>Bishmeet Singh</td>
</tr>
</tbody>
</table>

SET AUTOCOMMIT = 0;

INSERT INTO Emp VALUES (5, 'Farzia');

COMMIT;

UPDATE Emp SET NAME = 'Farzziya' WHERE ENO = 5;

SAVEPOINT A;

INSERT INTO Emp VALUES(6, 'Richard');

SAVEPOINT B;

INSERT INTO Emp VALUES(7, 'Rajyalakshmi');

SAVEPOINT C;

ROLLBACK TO B;

What will be the output of the following SQL query now?

```sql
SELECT * FROM Emp;
```
(g) Consider the table below:

<table>
<thead>
<tr>
<th>EMPID</th>
<th>DEPARTMENT</th>
<th>SALARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>E101</td>
<td>PERSONNEL</td>
<td>60000</td>
</tr>
<tr>
<td>E102</td>
<td>ACCOUNTS</td>
<td>65000</td>
</tr>
<tr>
<td>E103</td>
<td>MARKETING</td>
<td>40000</td>
</tr>
<tr>
<td>E104</td>
<td>PERSONNEL</td>
<td>62000</td>
</tr>
<tr>
<td>E105</td>
<td>PERSONNEL</td>
<td>50000</td>
</tr>
<tr>
<td>E106</td>
<td>MARKETING</td>
<td>35000</td>
</tr>
</tbody>
</table>

Identify error(s) in the following SQL statement. Rewrite the correct SQL statement.

```sql
SELECT Department, Salary
FROM Company
GROUP BY Department;
```

4. (a) Identify programming languages out of the following:

HTML, C++, JAVA, MySQL

(b) Write Java statement to extract selected item from a given listbox named "jList1."

(c) What will be displayed in jTextField1 and jTextField2 after the following code is executed:

```java
int t;
int x;
x=12;
t=(3*x++)/3;
jTextField1.setText(""+t);
jTextField2.setText(""+x);
```
(d) Write the output that will be displayed in the textfields by the following Java code:

```java
String x;
String stream = "Commerce";
jTextField1.setText((stream.length() + 9) + " ");
x = stream.concat("Humanities");
jTextField2.setText(x);
jTextField3.setText(" + x.substring(2, 5));
jTextField4.setText(stream.toLowerCase());
```

(e) Write the value that will be stored in variable `sum` after execution of the following code:

```java
int sum = 0, m = 4;
for (int i = 9; i >= 6; i--)
{
    if (i % 3 == 0)
        sum = sum + i;
    else
        sum = sum - i;
}
```

(f) The following code has error(s). Rewrite the correct code underlining all the corrections made:

```java
int a = 0;
int b = 15;
do;
    a = a + 3;
    b = b - 3;
while (a <= b);
```
(g) Ms. Sharma works as a programmer in "ABC Car Rental Company" where she has designed a software to compute charges to be paid by the client. A screenshot of the same is shown below:

![ABC CAR RENTALS](image)

A client can take any car out of Deluxe/SemiDeluxe/Ordinary for rent.

A client can also opt for services of a guide. Charges vary depending on the type of car opted.

Charges of services of Guide are extra.

Help Ms. Sharma in writing the code to do the following:
(i) After selecting appropriate Radio Button and checkbox(if required), when 'CALCULATE' button is clicked, Amount, Guide Charges and Total Amount should be calculated and displayed in the respective text fields.

<table>
<thead>
<tr>
<th>Category of Car</th>
<th>Amount (in ₹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deluxe Car</td>
<td>1000 per day</td>
</tr>
<tr>
<td>Semi Deluxe Car</td>
<td>800 per day</td>
</tr>
<tr>
<td>Ordinary Car</td>
<td>700 per day</td>
</tr>
</tbody>
</table>

Amount is obtained by multiplying per day charges of Car with number of days for which the car is taken.

If 'Guide Required' checkbox is selected, Guide charges per day are ₹ 500.00.

Guide Charges is calculated as : Car required for No. of days * 500;

Total Amount = Amount + Guide Charges

(ii) When 'CLEAR' button is clicked, all text fields and checkbox should be cleared.

(iii) When 'CLOSE' button is clicked, the application should close.

5. (a) Srishti has created the following table with the name 'Veterinary'.

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>AnimalId</td>
<td>Primary Key</td>
</tr>
<tr>
<td>VaccinationsDate</td>
<td></td>
</tr>
<tr>
<td>AnimalName</td>
<td>Not Null</td>
</tr>
<tr>
<td>OwnerName</td>
<td></td>
</tr>
</tbody>
</table>

One of the rows inserted is as follows:

<table>
<thead>
<tr>
<th>AnimalId</th>
<th>VaccinationDate</th>
<th>AnimalName</th>
<th>OwnerName</th>
</tr>
</thead>
<tbody>
<tr>
<td>A101</td>
<td>2015-02-12</td>
<td>Sheru</td>
<td>Amit Sharma</td>
</tr>
</tbody>
</table>

(i) What are the data type of columns AnimalId and VaccinationDate in the table Veterinary?
(ii) Srishti is now trying to insert the following row:

<table>
<thead>
<tr>
<th>AnimalId</th>
<th>VaccinationDate</th>
<th>AnimalName</th>
<th>OwnerName</th>
</tr>
</thead>
<tbody>
<tr>
<td>A102</td>
<td>2015-08-09</td>
<td>NULL</td>
<td>Abhimanyu Shah</td>
</tr>
</tbody>
</table>

Will she be able to successfully insert it? Give reason.

(b) Write the output of the following SQL queries:

(i) SELECT MID('LearningIsFun', 2, 4);

(ii) SELECT ROUND(76.384, 2);

(iii) SELECT INSTR('INFORMATION FORM', 'RM');

(iv) SELECT DAYOFYEAR ('2015-01-30');

(c) Table “Order” is shown below. Write commands in SQL for (i) to (iv) and output for (v) and (vi)

Table: Order

<table>
<thead>
<tr>
<th>OrderId</th>
<th>OrderDate</th>
<th>SalesPerson</th>
<th>OrderAmount</th>
</tr>
</thead>
<tbody>
<tr>
<td>O101</td>
<td>2015-09-12</td>
<td>Ravi Kumar</td>
<td>34000</td>
</tr>
<tr>
<td>O102</td>
<td>2015-08-15</td>
<td>Rashmi Arora</td>
<td>50000</td>
</tr>
<tr>
<td>O103</td>
<td>2015-11-01</td>
<td>Ravi Kumar</td>
<td>55000</td>
</tr>
<tr>
<td>O104</td>
<td>2015-12-09</td>
<td>Manjeet Singh</td>
<td>60000</td>
</tr>
<tr>
<td>O105</td>
<td>2015-11-10</td>
<td>Rashmi Arora</td>
<td>50000</td>
</tr>
</tbody>
</table>

(i) To display names of SalesPersons (without duplicates).

(ii) To list OrderId and respective OrderAmount in descending order of orderAmount.

(iii) To count the number of orders booked by SalesPersons with names starting with ‘R’.

(iv) To list Order ids, order dates and order amounts that were booked after 1st September 2015.

(v) SELECT OrderId, OrderAmount FROM Order where OrderAmount between 50000 and 60000;

(vi) SELECT concat (OrderId, SalesPerson), length(SalesPerson) FROM Order;
6. (a) Write SQL query to create a table ‘Song’ with the following structure:

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>SongId</td>
<td>Integer</td>
<td>Primary key</td>
</tr>
<tr>
<td>Title</td>
<td>Varchar(50)</td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>Integer</td>
<td></td>
</tr>
<tr>
<td>ReleaseDate</td>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

(b) Consider the tables given below:

Table: Party

<table>
<thead>
<tr>
<th>PartyId</th>
<th>Description</th>
<th>CostPerPerson</th>
</tr>
</thead>
<tbody>
<tr>
<td>P101</td>
<td>Birthday</td>
<td>400</td>
</tr>
<tr>
<td>P102</td>
<td>Wedding</td>
<td>700</td>
</tr>
<tr>
<td>P103</td>
<td>Farewell</td>
<td>350</td>
</tr>
<tr>
<td>P104</td>
<td>Engagement</td>
<td>450</td>
</tr>
</tbody>
</table>

Table: Client

<table>
<thead>
<tr>
<th>ClientId</th>
<th>ClientName</th>
<th>Address</th>
<th>Phone</th>
<th>NoOfGuests</th>
<th>PartyId</th>
</tr>
</thead>
<tbody>
<tr>
<td>C101</td>
<td>A.K. Antony</td>
<td>A-151, Adarsh Nagar</td>
<td>99101956</td>
<td>80</td>
<td>P101</td>
</tr>
<tr>
<td>C102</td>
<td>Fauzia Aria</td>
<td>K-6/52, Vikas Vihar</td>
<td>893466448</td>
<td>500</td>
<td>P102</td>
</tr>
<tr>
<td>C103</td>
<td>Rashi Khanna</td>
<td>D-6, Hakikat Nagar</td>
<td>981166568</td>
<td>.50</td>
<td>P101</td>
</tr>
<tr>
<td>C104</td>
<td>S.K. Chandra</td>
<td>76-A/2, MG Colony,</td>
<td>65977756</td>
<td>100</td>
<td>P104</td>
</tr>
</tbody>
</table>

(i) Name the Primary keys in both the tables.

(ii) 'P101' data is present twice in column 'PartyId' in 'Client' table - Is there any discrepancy? Give reason for your answer.

(c) With reference to the above given tables (in Q6 b), Write commands in SQL for (i) and (ii) and output for (iii) given below:

(i) To display Client names of clients, their phone numbers, PartyId and party description who will have number of guests more than 50 for their parties.
(ii) To display Client Ids, their addresses, number of guests of those clients who have 'Adarsh' anywhere in their addresses.

<table>
<thead>
<tr>
<th>ClientId</th>
<th>ClientName</th>
<th>Address</th>
<th>Phone</th>
<th>NoOfGuests</th>
<th>PartyId</th>
</tr>
</thead>
</table>

(iii) SELECT ClientId, ClientName, NoOfGuests, description, Costperson FROM Client, Party WHERE Client.PartyId = Party.PartyId AND NoOfGuests BETWEEN 50 AND 100;

7. (a) How is an e-commerce business more cost effective than traditional business? Write two points. 2

(b) How is e-learning beneficial for old people? Write one point. 1

(c) Ms. Ariya is creating a form for PAN CARD application. Help her to choose most appropriate controls from ListBox, ComboBox, TextField, TextArea, RadioButton, CheckBox, Label and Command Button for the following entries.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To enter NAME</td>
</tr>
<tr>
<td>2</td>
<td>To enter MOBILE NUMBER</td>
</tr>
<tr>
<td>3</td>
<td>To allow user to choose one CATEGORY out of the categories: Company, Trust, Individual.</td>
</tr>
<tr>
<td>4</td>
<td>To enter NATURE OF BUSINESS/PROFESSION in the form of a paragraph</td>
</tr>
</tbody>
</table>