

PABSON
SEE PRE-BOARD EXAMINATION-2081

Subject: Opt II (Computer Science)
Class: 10

Full Marks: 50
Time: 2 hrs.

Attempt all questions

1. Answer the following questions in one sentence:

- a. Write the different architecture of computer network.
⇒ Different architectures of computer network are:
- **Client-Server network**
 - **Peer-to-peer (P2P) network**
 - **Centralized network**
- b. What is Cyber bullying?
⇒ Cyberbullying is the use of digital platforms to harass or humiliate someone through harmful messages, threats, or spreading false information online. It is also known as online bullying.
- c. Write any two services provided by the Internet.
⇒ Some of the services are:
- **Email**
 - **World wide web**
 - **Online Banking**
 - **Ecommerce**
- d. Which query is used to make changes to the data present in the database?
⇒ An **action query** is used to make changes or remove data or records present in the database.
- e. What is Primary key ?
⇒ Primary Key is a **special column (field)** in the table **which uniquely identifies each record** and it **does not accept duplicate values**. Primary key does not allow a user to leave that field blank or null. It **helps to ensure the data integrity(accuracy)** in the database.
- f. Write any two types of operators used in C language ?
⇒ Some of the types of operators in c language are:
- **Assignment operator** ⇒ =
 - **Arithmetic operator** ⇒ +, -, *, /, %
 - **Logical operator** ⇒ &&, ||, !

2. Write appropriate technical term for the following:

- a. Law that governs the legal issues of cyberspace.
⇒ **Cyber Law**
- b. The website that searches documents for specific keywords on the Internet.
⇒ **Search Engine**

3. Write the full form of the following:

- a. **POP** ⇒ **Post Office Protocol**
- b. **ISP** ⇒ **Internet Service Provider**

4. Answer the following questions:

a. Differentiate between LAN and MAN.

⇒

LAN	MAN
- It covers small geographical areas such as a room or building of an organization.	- It generally covers a single town or a city.
- Communication quality is better & data transfer rate is high.	- Communication quality & data transfer rate is slower in comparison to LAN.
- Computers (devices) are mostly connected using wired media.	- Computers can be connected both using wire and wireless media.
- Generally, it is owned by a single organization (corporate).	- It can be owned by multiple organizations.
Eg: LAN network in an Office building.	Eg: University campuses, Public transport system, Smart cities(for cctv & traffic light networks)

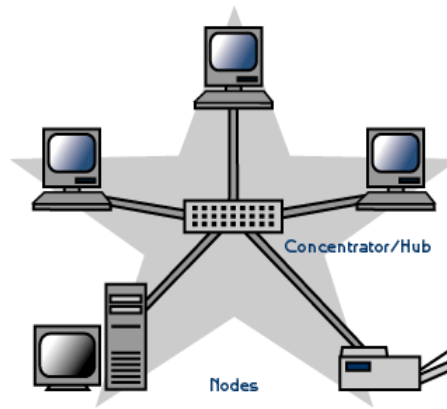
b. What is network topology? Write about star topology with a suitable diagram.

⇒ Network topology is the **inter-connected pattern of network components**.

- The **arrangement of computers in a network** is called Network Topology.
- It is also referred to as the **physical layout of connected computers**.

Star Topology:

- In this topology, all the computers are connected to a centrally placed device called hub or switch.
- In this topology all the workstations are connected to a central device with a point-to-point connection.
- One device sends data to hub/switch and hub/switch sends or transmits that data to destination devices.
- So, it can be said that every node(device) is indirectly connected to every other node with the help of a hub.



c. Write any four opportunities and threats in social media?

⇒

Four opportunities in social media are:

- **Development of a new brand.**
- **To target specific audiences**(customers)
- **For faster sharing of any information.**
- **Social Media Marketing (SMM)**

Four threats in social media are:

- There can be **targeted phishing attacks**
- Use of **fake accounts to bully others**
- **Leak of confidential information**
- **Internet addiction**
- Can face **anxiety & depression**

d. **What is online payment? Write the different forms of e-payment in Nepal.**

⇒ An online payment system is a way of making transactions or paying for goods and services through an electronic medium, without the use of cheques or cash. Online payment or E payment is one of the major components of an e-commerce transaction.

Different forms of e-payment in Nepal are:

- **Smart card (Credit card, Debit card)**
- **Bank Transfer through mobile banking (i.e banking apps)**
- Using **digital wallets** such as **e-sewa, khalti, i-pay** etc
- **Fonepay for QR code (Quick Response) scan**

e. **What is cloud computing? What are the services provided by cloud computing?**

⇒ Cloud computing refers to the **delivery of computing services** (like **storage, processing power, databases, networking, software, and analytics**) over the **internet(cloud)**.

⇒ Cloud computing is the **use of remote servers and hosted services over the internet**.

⇒ **Three services of cloud computing with its example are:**

<u>Services</u>	<u>Examples</u>
1. IaaS (Infrastructure as a Service)	- AWS, Microsoft Azure, Google Cloud etc.
2. PaaS (Platform as a Service)	- Google App Engine, IBM Bluemix etc
3. SaaS (Software as a Service)	- Microsoft Office 365, Google Workspace, Dropbox

f. **Define Data and information.**

⇒

Data: Data can be **defined as the raw form of any facts, figures or entities which alone does not give information**. It can take many forms, such as **numbers, text, images, audio, and more**.

Example of Data: Ram, 1000, account, balance etc.

Information: The **processed form of data is known as information**. When the data becomes information, **it gives meaningful results**.

Example of Information: Ram has 1000 balance in his bank account.

g. **What is MS-Access? Write the features of MS-Access.**

⇒ MS Access is **DBMS software developed by Microsoft Corporation**.

- It is a **powerful and flexible Relational Database Management System(RDBMS)** which can be **used for both simple and complex database projects**.

- The various **objects of MS-Access** are **Tables, Queries, Forms, Reports** etc.

Features of MS-Access:

- Creates sophisticated databases quickly.
- Creates elaborated reports from your data.
- Makes customized data entry forms.
- Analyze and modify your data easily with queries.
- Easier to use and understand than a client-server database.
- Ready templates for regular users to create and publish data.

h. Define action query.

⇒ An **action query** is a query that is used to **make changes** or **remove data** or **records present** in the **database**.

⇒

Various **types of action query** are as follows:

- **Update Query** ⇒ It makes changes to a record or group of records in one or more tables.
- **Delete Query** ⇒ It deletes a set of records according to criteria specified by the user.
- **Append Query** ⇒ It is used to add (or append) records from one table or query to another table. It allows you to insert new data into an existing table

i. What is a table? Write the basic components of the table.

⇒ Tables are the building blocks of a database which holds main Information.

- Database is composed of one or more tables.
- A table looks like a spreadsheet and it is used to store main Data.
- Table stores large volumes of data into rows called records and columns called fields.

Basic components of Table are:

1. Field ⇒ A **field or column** contains information about a certain type for **all records**. It is **also known as attributes**.

For example: In table - Book, **code, book_name, level, author, publication_year** are the fields.

2. Record ⇒ A **record or row** contains information about **single items** in a database **table**.
 - This **single row** is known as **record** or **tuple**.

For example: In table - Book, all the **information(values)** of a specific book **is** a record.

5. Write down the output of the given program. Show with a dry run table.

```
DECLARE SUB TEST(A$)
```

OUTPUT : PABSON

```
CLS
```

```
A$ = "PABSON"
```

```
CALL TEST(A$)
```

```
END
```

```
SUB TEST (A$)
```

```
FOR I = 1 TO LEN(A$)
```

```
    B$ = MID$(A$, I, 1)
```

```
    C$ = C$ + B$
```

```
NEXT I
```

```
PRINT C$
```

```
END SUB
```

6. Rewrite the given program after correcting the bugs:

```
CLS
```

```
OPEN "marks.dat" FOR OUTPUT AS #1
```

```
WHILE NOT EOF(2)
```

```
    INPUT #1, N$, ENG, NEP, SCI
```

```
    ENG + NEP + SCI = TOT
```

```
    IF TOT > 35 THEN PRINT N$, ENG, NEP, SCI
```

```
NEXT
```

```
CLOSE #1
```

```
END
```

Re written program after the correction of bugs:

```
CLS
```

```
OPEN "marks.dat" FOR INPUT AS #1
```

```
WHILE NOT EOF(1)
```

```
    INPUT #1, N$, ENG, NEP, SCI
```

```
    IF ENG > 35 THEN PRINT N$, ENG, NEP, SCI
```

```
WEND
```

```
CLOSE #1
```

```
END
```

7. Study the following program and answer the given question:

```
DECLARE FUNCTION GRADE(A)
```

```
CLS
```

```
INPUT "ENTER A NUMBER"; B
```

```
C = GRADE(B)
```

```
PRINT C
```

```
END
```

```
FUNCTION GRADE (X)
```

```
    WHILE X <> 0
```

```
        R = X MOD 10
```

```
        Z = Z + R
```

```
        X = INT(X / 10)
```

```
    WEND
```

```
END FUNCTION
```

a. How many parameters are used in the above program?

⇒ Since the **function GRADE() is declared with one parameter**, A, & also the function is **defined with one parameter**, X. So, **only one parameter** is used in the above program.

b. List the different library functions used in the program.

⇒ **INT()** is the only library function used in the above program.

8. Convert / calculate as per the instruction:

a. $(111)_{10}$ into (Binary)

⇒ $(1101111)_2$

b. $(212)_8$ into (Hexadecimal)

⇒ $(8A)_{16}$

c. $11001 + 10101$

⇒ $(101110)_2$

d. $100101 \div 1100$

⇒ Quotient ⇒ $(11)_2$

⇒ Remainder ⇒ $(1)_2$

9. a. Write a program in Qbasic that asks to enter three different numbers then find out product and average. Create a user defined function PROD() to calculate product and sub procedure AVG() to calculate average.

⇒

```
DECLARE FUNCTION PROD(A, B, C)
DECLARE SUB AVG(A, B, C)

CLS

INPUT "Enter three different numbers: "; A, B, C

P = PROD(A, B, C)
PRINT "Product = "; P

CALL AVG(A, B, C)

END

FUNCTION PROD (A, B, C)
    PROD = A * B * C
END FUNCTION

SUB AVG (A, B, C)
    Average = (A + B + C) / 3
    PRINT "Average = "; Average
END SUB
```

- b. A sequential data file called “data.dat” has stored data under the field heading item name, quantity and rate. Write a program to display all the records with total.

⇒

```
CLS
OPEN "data.dat" FOR INPUT AS #1

DO WHILE NOT EOF(1)

    INPUT #1, name$, quantity, rate
    Total = quantity * rate
    PRINT name$, quantity, rate, Total

LOOP

CLOSE #1
END
```


10. a. Write a program in C language to ask to enter a number then find out whether it is even or odd.

⇒

```
#include <stdio.h>
#include <conio.h>
```

```
int main()
{
    int number;

    printf("Enter a number: ");
    scanf("%d", &number);

    if (number % 2 == 0)
    {
        printf("%d is even.\n", number);
    }
    else
    {
        printf("%d is odd.\n", number);
    }

    getch();
    return 0;
}
```

b. Write a C program to display the series 1,4,9, upto 10th term.

⇒#include <stdio.h>
#include <conio.h>
// #include <math.h>

```
int main()
{
    int i;

    for(i = 1; i <= 10; i++)
    {
        printf("%d ", i * i);

        // Alternative: printf("%d ", (int)pow(i, 2));
    }

    getch();
    return 0;
}
```