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SET

## SEE QUESTIONS AND ANSWERS

## Model Question (Issued by CDC)

Full Marks: 50

Time: 2 hrs.

## Group 'A' (10 Marks)

Answer the following questions in one sentence. [6x1=6]

- What is a search engine?  
Ans: A search engine is a web application that allows users to search the content from the internet based on their queries. E.g. Google and Bing.
- What is the business done through Internet?  
Ans: "E-commerce" or "electronic commerce" is the trading of goods and services on the Internet.
- Which data type is used to store numeric characters or special symbols in MS-Access?  
Ans: The "Text" data type is used to store numeric characters or special symbols in MS-Access.
- Which view is used to modify a table in MS-Access?  
Ans: The design view is used to modify a table in MS-Access.
- What is modular programming?  
Ans: The process of breaking down a large program into smaller, logical and manageable parts is called modular programming.
- Write any two features of C language.  
Ans: The two features of C language are as follows:
  - It is a structural programming language.
  - It supports graphics.

Write the appropriate technical terms for the following.

[2x1=2]

- Law that governs the legal issues of cyberspace.  
Ans: Cyber law
- The smallest unit to represent information on a quantum computer.  
Ans: A quantum bit

Write the full forms of the following:

[2x1=2]

- STP  
Ans: Shielded Twisted Pair
- WAP  
Ans: Wireless Application Protocol

## Group 'B' (24 Marks)

Answer the following questions.

[9x2=18]

- What is a computer network? Enlist any two advantages of it.  
Ans: A group of computers interconnected with each other through any medium using a definite rule (protocol) for the purpose of sharing data, information, hardware, software and other resources.

The following are the advantages of computer networks:

- Expensive hardware like a printer, scanner, etc. can be shared in a network. So, it is cost-effective.
- It allows several users to share data in real time.

- What is computer ethics? Write any two of them.

Ans: Computer ethics refers to the moral code of conduct or a set of principles that guide computer users about the wise and safe use of computers and other electronic media. It is generally aware of computer user's misuse and exploitation of technology.

The commandments of computer ethics are:

- Do not use computers and internet to commit crimes (cybercrime).
- Do not use a computer to bear false witness.

- What is software security? Write any two measures of hardware security.

Ans: The protection or securing of computer data, information and software from being damaged or lost accidentally or intentionally is known as software security.

The following are the two measures of hardware security:

- Use power protection devices like UPS, volt guard and CVT.
- Maintain dust - free environment.

- What is M-Commerce? Write its two important services.

Ans: M-Commerce refers to Mobile-Commerce which is an extended version of E-Commerce where buying and selling goods, services and information are done through handheld devices like mobile phones, tablets, PDAs, etc. E.g. movie tickets, flight tickets.

The two important services of M-commerce are:

- Mobile banking
- Hotel payment

- What is IoT? Write any two importance of it.

Ans: The Internet of Things (IoT) is the network of real-world "Things" (Devices) made with sensors, software, hardware and other modern technology that can communicate with the user and devices along with its environment. E.g. smartwatch, voice assistant, smart car, etc.

The following are the importance of IoT:

- It increases the efficiency and productivity of work.
- It helps to automate our daily life work.

- What is a database? Give any two examples.

Ans: The systematic and scientific collection of data that can be retrieved or accessed whenever required is called a database. It is an organized way of collecting and keeping data and information. E.g. Dictionary, Telephone directory, Marks ledger, etc.

- What is a primary key? List any two advantages of it.

Ans: The key or field that is used to uniquely identify records from the database table is called a primary key. It must be unique and cannot be kept empty (null value not accepted).

The following are the two advantages of a primary key:  
 (i) It uniquely identifies records.  
 (ii) It prevents duplication of data.

**h. What is data sorting? List any two advantages of using it.**

**Ans:** Arranging data in a particular order of field that may be either ascending or descending is called data sorting. The process of placing elements from a collection in some kind of order is sorting.

Its advantages are:

- (i) Similar data can be grouped together.
- (ii) It helps in faster searching of data.

**i. What types of work are done in MS-Access using Form and query objects?**

**Ans:** The form allows users to enter new data and edit or modify the existing data through a user-friendly interface. Query allows users to retrieve or access and interpret the information based on the user requirements.

**5. Write down the output of the given program and show it with a dry run in the table. [2]**

```
DECLARE SUB SHOW (A)
CLS
N = 87
CALL SHOW (N)
END
SUB SHOW (A)
DO
  B = A MOD 6 + 3
  IF B MOD 4 = 0 THEN GOTO AA
  PRINT B;
  AA:
  A = A - 10
  LOOP WHILE A >= 50
END SUB
```

**Ans: Dry run table**

Dry run in table				
	A	N	B = A MOD 6+3	B MOD 4 = 0 ?
	-	87	-	-
	87	87	-	-
1st loop	77	87	6	false
2nd loop	67	87	4	true
3rd loop	57	87	6	false
4th loop	47	87	8	true

Output is: 6 6

**6. Rewrite the given program after correcting the bugs: [2]**

REM to add record in an existing file

CLS

OPEN "Record.Dat" FOR OUTPUT AS #1

AA:

INPUT "Enter Name, Class and Roll No.", Nm\$, Cl, Rn

INPUT #2, Nm\$, Cl, Rn

INPUT "More records"; Y\$

IF UCASE\$(Y\$) = "Y" THEN GOTO aa

CLOSE "Record.dat"

END

**Ans: The program after correcting bugs is:**

CLS

OPEN "Record.Dat" FOR APPEND AS #1

AA:

INPUT "Enter Name, Class and Roll No.", Nm\$, Cl, Rn

WRITE #1, Nm\$, Cl, Rn

INPUT "More records"; Y\$

IF UCASE\$(Y\$) = "Y" THEN

GOTO aa

CLOSE #1

END

**7. Study the following program and answer the given questions. [2x1=2]**

OPEN "Detail.dat" FOR INPUT AS #1

OPEN "Temp.dat" FOR OUTPUT AS #2

INPUT "Enter name of the students"; Sn\$

FOR I = 1 TO 10

INPUT #1, Nm\$, Cl, A

IF Sn\$ < > Nm\$ THEN

WRITE #2, Nm\$, Cl, A

END IF

NEXT I

CLOSE #1, #2

KILL "Detail.dat"

NAME "Temp.dat" AS "Detail.dat"

END

**Questions:**

a. What is the main objective of the program given above?

**Ans:** The main objective of the given program is to delete the record associated with the name entered by the user.

b. Do you get any problem in the above program if the "Kill" statement is removed? Give reason.

**Ans:** Since the KILL statement will delete the data file named "detail.dat", if we remove KILL, the new data file "temp.dat" will be not renamed as "detail.dat".

**Group 'C' (16 Marks)**

**8. Convert/Calculate as per the instruction. [4x1=4]**

a.  $(11001101)_2 = (?)_{16}$

**Soln:** By making a hexadecimal equivalent

Given binary number	1100	1101
Octal equivalent	C	D

Hence,  $(11001101)_2 = (CD)_{16}$

b.  $(524)_{10} = (?)_2$

**Soln:**

	Remainder
--	-----------

2	524	
2	262	0
2	131	0
2	65	1
2	32	1
2	16	0
2	8	0
2	4	0
2	2	0
2	1	0
2	0	1

$(524)_{10} = (1000001110)_2$

a.  $(1010)_2 \times (110)_2 - (1011)_2 = (?)_2$   
 1010  
 x 110  
 0000  
 1010x  
 1010xx  
 111100  
 Now, 111100  
 -1011  
 110001

Hence,  $(1010)_2 \times (110)_2 - (1011)_2 = (110001)_2$

b.  $(10110)_2 \div (101)_2 = (?)_2$   
 101) 10110 (100  
 -101  
 01  
 -00  
 10  
 -00  
 10

Quotient = 100 Remainder = 10

c. Write a program in QBASIC that asks length, breadth and height of a room and calculates its area and volume. Create a user-defined function to calculate area and sub-program to calculate volume.  
 Hint:  $[A = L \times B]$ ,  $[V = L \times B \times H]$  [4]

Ans: DECLARE FUNCTION area(l, b)  
 DECLARE SUB volume(l, b, h)  
 CLS  
 INPUT "Enter length breadth and height", l, b, h  
 x=area(l, b)  
 PRINT "Area is"; x  
 CALL volume(l, b, h)  
 END  
  
 FUNCTION area(l, b)  
 a="b"  
 area=a  
 END FUNCTION  
  
 SUB volume(l, b, h)  
 v="b\*h"  
 PRINT "Volume is"; v  
 END SUB

b. A sequential data file called "Record.txt" has stored data under the field heading Roll No., Name, Gender, English, Nepali, Maths and Computer. Write a program to display all the information of those students whose gender is 'F' and obtained marks in computer is more than 90. [4]

Ans: OPEN "Record.txt" FOR INPUT AS #1  
 CLS  
 PRINT "Roll No", "Name", "Gender", "English", "Nepali",  
 "Maths", "Computer"  
 WHILE NOT EOF(1)

```

INPUT #1, r, n$, g$, e, n, m, c
g$ = UCASE$(g$)
IF g$ = "F" AND c > 90 THEN
  PRINT r, n$, g$, e, n, m, c
END IF
WEND
CLOSE #1
END
  
```

10. Write a program in C language that asks a number and whether it is odd or even. [4]

Ans: #include  
 int main()  
 {  
 int n, a;  
 printf("Enter any number");  
 scanf("%d", &n);  
 a = n%2;  
 if (a == 0)  
 {  
 printf("%d is even", n);  
 }  
 else  
 {  
 printf("%d is odd", n);  
 }  
 return 0;

OR

Write a program in C language to display the series with their sum 1, 2, 3, 4 up to 10<sup>th</sup> terms.

Ans: #include  
 int main()  
 {  
 int i, s=0;  
 for(i=1; i<=10; i++)  
 {  
 printf("%d", i);  
 s = s+i;  
 }  
 printf("Sum is %d", s);  
 return 0;

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## SEE QUESTIONS AND ANSWERS

## SEE Examination [2081]

RE-3031

Time: 2 hrs.

Full Marks: 50

## Group 'A' (10 Marks)

1. Answer the following questions in one sentence. [6x1=6]

(a) What is telecommunication?

Ans: Telecommunication is the transmission of information over the distances using electronic means such as phones, radios, or the Internet.

(b) Give any two examples of Simplex Mode.

Ans: Two examples of Simplex Mode are keyboard to monitor and television broadcasting.

(c) Write any two methods of creating table in MS Access.

Ans: Two methods of creating a table in MS Access are:

1. Using Design View
2. Using Table Datasheet View

(d) What is the maximum character you can use for creating a field name in MS Access?

Ans: The maximum number of characters allowed for a field name in MS Access is 64 characters.

(e) Write the syntax of KILL statement.

Ans: Syntax: KILL pathname

Example: KILL "C:\KcWebTech\file.txt"

(f) Write any two keywords used in C-language.

Ans: The two keywords used in C language are:

1. int
2. return

2. Write appropriate technical terms for the following.

[2x1=2]

(a) The websites that search documents for specified keywords in WWW.

Ans: Search engine

(b) The recording of interaction with the digital world.

Ans: Digital footprint

3. Write the full form of the following.

[2x1=2]

(i) UPS: Uninterruptible Power Supply

(ii) VR: Virtual Reality

## Group 'B' (24 Marks)

4. Answer the following questions.

[9x2=18]

(a) Differentiate between guided and unguided media. (Any two)

Ans:

Guided media	Unguided media
a. Guided media use physical cables (like twisted pair, coaxial, or fiber-optic) to transmit data.	a. Unguided media while transmitting data wirelessly through the air (like radio waves, microwaves).

- |  |   |
|--|---|
| b. Guided media offer more security and less interference. | b. Unguided media are more prone to interference and less secure. |
|--|---|

(b) Define cyber law. List any one-one do's and don'ts of cyber ethics.

Ans: Cyber law is the legal framework that governs activities conducted through the internet and digital platforms.

- Do's: Respect others' privacy online.
- Don'ts: Don't spread false information or rumors.

(c) Define Antivirus software with two examples.

Ans: Antivirus software is a program designed to detect, prevent, and remove malicious software (malware) from computers and networks.

Two examples of antivirus software are:

1. Norton Antivirus
2. McAfee Antivirus

(d) Why is e-commerce more popular than traditional commerce nowadays? Give any two reasons.

Ans: Two reasons why e-commerce is more popular than traditional commerce nowadays are:

1. E-commerce allows shopping anytime, anywhere, without the need to visit physical stores.
2. E-commerce enables businesses to reach a global customer base, expanding their market beyond local limitations.

(e) What is e-governance? Provide any two examples of e-governance services that exist in Nepal.

Ans: E-governance refers to the use of digital technologies by government agencies to provide services, engage with citizens, and streamline administrative processes.

The two notable e-governance services in Nepal are: NagarikApp and ConnectIPS.

(f) What is database? Name any two data types used in MS Access.

Ans: A database is an organized collection of data that is stored and accessed electronically, allowing for easy management, retrieval, and manipulation of information.

Two data types used in MS Access are:

1. Text
2. Date / Time

(g) Write the difference between field and record. (Any two)

Ans: **Field:** A field is a single unit of data or attribute in a database table, such as "Name," "Age," or "Address." It is represented by a column in the table.**Record:** A record is a complete set of related data or information about an entity, represented by a row in the table. For example, a record could contain a person's name, age, and address.**Field:** Fields are specific categories or types of information.**Record:** A record contains multiple fields, representing a complete set of data about a specific entity.

- (i) Define a report. Why is it necessary to create a report in DBMS?

Ans: A report in a DBMS is a formatted and printable presentation of data retrieved from a database, designed for analysis or sharing.

The necessities of creating a report in DBMS are:

1. Reports help present data in a structured and easily understandable format, making it easier to analyze and make decisions.
2. Reports provide a formal way to display and distribute data, which is useful for business or regulatory purposes.

- (ii) What is query? Mention the different types of Action query.

Ans: A query is a request for data or information from a database, typically written in a Structured Query Language (SQL), used to retrieve or manipulate data according to specified criteria.

The different types of action queries in MS-Access are: Update Query, Append Query, Delete Query and Make-Table Query.

1. Write down the output of the given program and show them in dry run table. [2]

```

DECLARE SUB Display (TS)
TS="COMPUTER"
CALL Display (TS)
END

SUB Display (TS)
FOR C=1 TO LEN (TS) STEP 2
  DS=MIDS (TS,C,1)
  PRINT DS;
NEXT C
END SUB

```

Ans: Dry Run Table:

Iteration	C (Position)	DS=MIDS(TS, C, 1)	Output
1	1	C	C
2	3	M	CM
3	5	U	CMU
4	7	E	CMUE

Final Output: CMUE

- Rewrite the given program after correcting the bugs. [2]

REM to add record in an existing file.

OPEN "student.dat" FOR OUT AS #2

TOP:

INPUT "Enter Name, Class and Roll No.": SName\$, C, RN

INPUT#2, SNames\$, C, RN

INPUT "More records": Y\$

IF UCASE\$(Y\$)= "Y" THEN GOTO POP

CLOSE #2

STOP

Ans: Corrected Program:

REM to add record in an existing file.

OPEN "student.dat" FOR APPEND AS #2

TOP:

INPUT "Enter Name, Class and Roll No.": SName\$, C, RN

WRITE #2, SName\$, C, RN

INPUT "More records (Y/N)": Y\$

IF UCASE\$(Y\$)= "Y" THEN GOTO TOP

CLOSE #2

END

Corrections Made:

Bug in Code	Correction
FOR OUT	FOR APPEND
INPUT#2	WRITE #2
GOTO POP	GOTO TOP
STOP	END

7. Study the following program and answer the given questions. [2x1=2]

DECLARE FUNCTION COUNT (AS)

CLS

INPUT "Enter any word": WS

END

FUNCTION COUNT (AS)

B=LEN(AS)

C=0

FOR i=1 TO B

ES=MIDS(CS,i,1)

IF ES="A" OR ES="E" OR ES="I" OR ES="O" OR ES="U" THEN

C=C+1

END IF

NEXT i

COUNT=C

END FUNCTION

- (a) Write down the missing statement in the main module to execute the program.

Ans: The missing statement in the main module is:

PRINT "Total vowels = "; COUNT(W\$) 'To call the function and display the result

- (b) List any two string functions used in the above program.

Ans: The string functions used in the above program are:

1. LEN(A\$)

2. MID\$(CS, i, 1)

Note: There's a bug in MIDS(CS, i, 1) — it should be MIDS(AS, i, 1) since CS is undefined.

## Group 'C' (16 Marks)

8. Convert/Calculate as per the instructions. [4x1=4]

(i)  $(1503)_8 = (?)_{16}$

Soln: Firstly, let's convert Octal to Decimal equivalent;  
 $= 1 \times 8^3 + 5 \times 8^2 + 0 \times 8^1 + 3 \times 8^0$   
 $= 1 \times 512 + 5 \times 64 + 0 \times 8 + 3 \times 1$   
 $= 512 + 320 + 0 + 3$   
 $= 835_{10}$

Now, let's convert Decimal to Hexadecimal:

		Remainder
16	835	3
16	52	4
16	3	3
	0	

Answer:  $(1503)_8 = (343)_{16}$

(ii)  $(101000101)_2 = (?)_8$

Soln: Binary number: 101000101

Step 1: Group into 3-bits: 101 000 101

Step 2: Convert each 3-bit group to octal

- 101 = 5
- 000 = 0
- 101 = 5

Answer:  $(101000101)_2 = (505)_8$

(iii)  $(1010 + 1101)_2 - (110)_2$

Soln:

$$\begin{array}{r}
 1010 \\
 + 1101 \\
 \hline
 10111
 \end{array}
 \quad
 \begin{array}{r}
 10111 \\
 - 110 \\
 \hline
 10001
 \end{array}$$

Answer:  $(10001)_2$

(iv)  $(100111)_2 \div (110)_2$

Soln:

$$\begin{array}{r}
 110 ) 100111 ( 011 \\
 - 000 \\
 \hline
 1001 \\
 - 110 \\
 \hline
 111 \\
 - 110 \\
 \hline
 001
 \end{array}$$

Answer: Quotient: 110, Remainder: 1

9. Answer the following questions. [4x2=8]

(a) Write a program in QBASIC that asks length, breadth and height of room and calculate its perimeter and volume. Create a function procedure to calculate perimeter and Sub procedure to calculate the volume.

[HINT: Volume =  $L \times B \times H$  and perimeter =  $2(L + B)$ ] [4]

Ans:

```

DECLARE FUNCTION PERI (L, B)
DECLARE SUB VOL (L, B, H)
CLS
INPUT "Enter Length of the room: ", L
INPUT "Enter Breadth of the room: ", B
INPUT "Enter Height of the room: ", H
PRINT "Perimeter of the room = "; PERI (L, B)
CALL VOL (L, B, H)
END
  
```

```

FUNCTION PERI (L, B)
PERI = 2 * (L + B)
END FUNCTION
  
```

```

SUB VOL (L, B, H)
V = L * B * H
PRINT "Volume of the room = "; V
END SUB
  
```

(b) Write a program to read data from the sequential data file name "std.dat" which contains student's name, roll no. and marks of English, Nepali, Maths and Computer of few students. Display the result with all the information of those students whose marks in Computer are more than 40. [4]

Ans:

OPEN "std.dat" FOR INPUT AS #1

CLS

PRINT

"=====

PRINT "Name"

Roll No

English

Nepali

Maths

Computer"

PRINT

"=====

WHILE NOT EOF(1)

INPUT #1, Name\$, Roll, Eng, Nep, Math, Comp

IF Comp &gt; 40 THEN

PRINT Name\$, Roll, Eng, Nep, Math, Comp

END IF

WEND

PRINT

"=====

CLOSE #1

END

10. Write a program in C-language to find the greatest number among any two different input numbers. [4]

Ans: #include <stdio.h>

```
int main()
{
    int a, b;
    printf("Enter first number: ");
    scanf("%d", &a);
    printf("Enter second number: ");
    scanf("%d", &b);
    if (a > b)
    {
        printf("%d is the greatest number.\n", a);
    } else {
        printf("%d is the greatest number.\n", b);
    }
    return 0;
}
```

Or

Write a program in C-language to display the series 5, 10, 15, 20, ..... upto 15<sup>th</sup> terms.

Ans: #include <stdio.h>

```
int main()
{
    int i, p;
    printf("The required series is:\n");
    for (i = 1; i <= 15; i++)
    {
        p = 5 * i;
        printf("%d", p);
    }
    return 0;
}
```

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### SEE QUESTIONS AND ANSWERS

#### SEE Grade Increment Examination [2080]

GI-3031

Time: 2 hrs.

Full Marks: 50

##### Group 'A' (10 Marks)

1. Answer the following questions in one sentence. [6x1=6]
- Give the names of any two unguided transmission media.

Ans: Any two unguided transmission media are radio waves and microwaves.

- Write any two benefits of e-governance service.

Ans: Any two benefits of e-governance services are increased transparency and convenience for citizens.

- Which type of query do you use to calculate the total marks of students from table in MS-Access?

Ans: We use a select query to calculate the total marks of students from a table in MS-Access.

- What is the maximum length of the field name in MS-Access?

Ans: The maximum length of a field name in MS-Access is 64 characters.

- List the different types of procedures in QBASIC.

Ans: The different types of procedures in QBASIC are SUB procedures and FUNCTION procedures.

- Which format specifier do you use in C language for an 'int' data type?

Ans: In C language, the format specifier for an 'int' data type is "%d".

2. Write appropriate technical terms for the following: [2x1=2]

- Digital trails created while using Internet.

Ans: Digital footprint

- Data transmission in only one direction.

Ans: Simplex mode

3. Write the full forms of the following. [2x1=2]

Ans: (i) NIC: Network Interface Card

(ii) OTP: One Time Password

##### Group 'B' (24 Marks)

4. Answer the following questions. [9x2=18]

- Define Bus topology. Write any two advantages of Bus topology.

Ans: Bus topology is a network arrangement where all devices are connected to a single central communication line (bus).

Two advantages of Bus topology are:

- Cost-effective: Requires less cable compared to other topologies.
- Easy to install: Simple to set up in small networks.

- b. What is cyber ethics? Write any two commandments for using a computer.

Ans: Cyber ethics refers to the moral principles and guidelines that governs responsible behavior when using computers and the Internet.

Two commandments for using a computer are:

1. Do not use computers to harm others
2. Respect others' privacy

- c. What is Backup? How does it help to secure data?

Ans: A backup is a copy of important data stored separately to prevent loss in case of system failure or cyber threats. It allows data recovery in case of accidental deletion, hardware failure, or cyberattacks.

- d. Define e-commerce. Write any two names of Nepali e-commerce sites.

Ans: E-commerce (Electronic Commerce) refers to the buying and selling of goods and services over the internet.

Two Nepali e-commerce sites are:

1. Daraz Nepal
2. Sastodeal

- e. What is social media? Write any one reason why it is popular nowadays.

Ans: Social media are online platforms that allow users to create, share, and interact with content.

One reason for popularity is that they enable instant communication and global connectivity.

- f. Define DBMS with any two examples of it.

Ans: A DBMS is software that stores, retrieves, and manages data in a structured manner.

Two examples of DBMS are:

1. Microsoft Access
2. MySQL

- g. What is primary key? List any two advantages of it.

Ans: A primary key is a unique identifier for each record in a database table.

Two advantages of primary key are:

1. Prevents duplicate entries
2. Speeds up data retrieval

- h. What is query? List two types of it.

Ans: A query is a request to retrieve or manipulate data from a database.

Two types of query are:

1. Select Query
2. Update Query

- i. Define report and write any two uses of it.

Ans: A report is a formatted presentation of database information for analysis or printing.

Two uses of report are:

1. Helps in decision-making
2. Provides a professional summary of data

5. Write down the output of the given program and show them in dry run table. [2]

DECLARE FUNCTION Series (N)

CLS

A = 2

PRINT "Sum of the series"; Series (A)

END

#### FUNCTION Series (N)

Sum = 0

FOR J = 1 TO 4

Sum = Sum + N

N = N + 3

NEXT J

Series = Sum

END FUNCTION

Ans: The program calculates the sum of a series where each term increases by 3.

#### Dry Run Table:

Iteration	Value	Explanation
Loop (J=1)	Sum = 0 + 2 = 2	Sum becomes 2, then N updates to 2 + 3 = 5.
Loop (J=2)	Sum = 2 + 5 = 7	Sum becomes 7, then N updates to 5 + 3 = 8.
Loop (J=3)	Sum = 7 + 8 = 15	Sum becomes 15, then N updates to 8 + 3 = 11.
Loop (J=4)	Sum = 15 + 11 = 26	Sum becomes 26, then N updates to 11 + 3 = 14.
Loop ends	Series = 26	The loop completes, and the function returns 26.
PRINT	Sum of the series 26	The main program prints the result.

The output of the program is: Sum of the series 26.

6. Re-write the given program after correcting the bugs. [2]

REM to display name, post and salary of 10 employees.

OPEN "EMP.TXT" FOR IN AS #1

FOR I = 10 TO 1

INPUT #1, Name\$, Post\$, Salary

DISPLAY Name\$, Post\$, Salary

NEXT I

CLOSE "EMP.TXT"

END

Ans: Corrections Made:

- File Opening Mode: Changed FOR IN to FOR INPUT
- Loop Structure: Changed FOR I = 10 TO 1 to FOR I = 1 TO 10
- Display Command: Replaced DISPLAY with PRINT
- File Closing: Changed CLOSE "EMP.TXT" to CLOSE #1

#### Corrected/Debugged program:

REM to display name, post and salary of 10 employees

OPEN "EMP.TXT" FOR INPUT AS #1

FOR I = 1 TO 10

INPUT #1, Name\$, Post\$, Salary

PRINT Name\$, Post\$, Salary

NEXT I

CLOSE #1

END

1. Study the following program and answer the given questions. [2x1=2]

```

DECLARE SUB SEE (A$)
A$ = "COMPUTER SCIENCE"
END

SUB SEE (A$)
L = LEN (A$)
FOR I = L TO 1 STEP -2
PRINT MID$ (A$, I, 1)
NEXT I
END SUB

```

- a. Which statement should be added in the main module to execute the program?

Ans: Corrected Main Module:

```

DECLARE SUB SEE (A$)
A$ = "COMPUTER SCIENCE"
CALL SEE(A$) 'This line must be added to execute the subroutine
END

```

Reason:

- The SUB SEE (A\$) is defined but never called.
- Adding CALL SEE(A\$) triggers the subroutine execution.

- b. List out the variables used in the above program.

Ans: The program uses the following variables:

1. A\$ (String variable) – Stores the text "COMPUTER SCIENCE".
2. L (Numeric variable) – Stores the length of A\$.
3. I (Numeric variable) – Loop counter in the FOR statement.

Group 'C' (16 Marks)

3. Convert/Calculate as per the instruction [4x1=4]

i)  $(10011011)_2 = (?)_8$

Soln:

1. Group binary digits into sets of 3 (from right):

010 011 011

2. Convert each group to octal:

➢ 010 = 2

➢ 011 = 3

➢ 011 = 3

Answer:  $(10011011)_2 = (233)_8$

ii)  $(99)_{10} = (?)_{16}$

Soln:

1. Divide 99 by 16:

$99 \div 16 = 6$  with remainder 3

2. Write the hexadecimal equivalent:

➢ 6 in hex = 6

➢ 3 in hex = 3

Answer:  $(99)_{10} = (63)_{16}$

iii)  $(10110)_2 \times (101)_2 = (?)_2$

Soln:

$$\begin{array}{r}
 10110 \\
 \times 101 \\
 \hline
 10110 \\
 00000 \\
 10110 \\
 \hline
 1101110
 \end{array}$$

Answer:  $(10110)_2 \times (101)_2 = (1101110)_2$

iv)  $(101101)_2 \div (11)_2$

Soln:

$$\begin{array}{r}
 1111 \text{ (Quotient)} \\
 \hline
 11 ) 101101 \\
 11 \\
 \hline
 101 \\
 11 \\
 \hline
 101 \\
 11 \\
 \hline
 10 \text{ (Remainder)}
 \end{array}$$

Answer:  $(101101)_2 \div (11)_2 = (1111)_2$  with a remainder of  $(10)_2$

9. a. Write a program in QBASIC that asks radius and height of a cylinder. Create a user-defined function to calculate the total surface area and a sub-program to calculate the volume of a cylinder.

[Hint : TSA =  $2\pi(r + h)$  and Volume =  $\pi r^2 h$ ] [4]

Ans: DECLARE FUNCTION CylinderTSA (radius, height)

DECLARE SUB CylinderVolume (radius, height)

CLS

INPUT "Enter the radius of the cylinder: ", r

INPUT "Enter the height of the cylinder: ", h

PRINT "Total Surface Area = "; CylinderTSA(r, h)

CALL CylinderVolume(r, h)

END

FUNCTION CylinderTSA (radius, height)

PI = 3.14159

CylinderTSA = 2 \* PI \* radius \* (radius + height)

END FUNCTION

SUB CylinderVolume (radius, height)

PI = 3.14159

volume = PI \* radius ^ 2 \* height

PRINT "Volume = "; volume

END SUB

- b. Write a program to create a sequential data file "student.dat" to store 10 students' name and obtained marks in four different subjects. [4]

Ans: OPEN "student.dat" FOR OUTPUT AS #1  
 FOR student = 1 TO 10  
 CLS  
 INPUT "Enter student name: ", name\$  
 INPUT " Enter marks for Subject 1: ", mark1  
 INPUT " Enter marks for Subject 2: ", mark2  
 INPUT " Enter marks for Subject 3: ", mark3  
 INPUT " Enter marks for Subject 4: ", mark4  
 WRITE #1, name\$, mark1, mark2, mark3, mark4  
 NEXT student  
 CLOSE #1  
 END

10. Write a program in C language that asks for an integer value and checks whether it is divisible by 7 or not. [4]

Ans:

```
#include <stdio.h>
int main()
{
    int num;
    printf("Enter an integer: ");
    scanf("%d", &num); // Input the number
    // Check divisibility by 7
    if(num % 7 == 0) {
        printf("%d is divisible by 7.\n", num);
    } else {
        printf("%d is not divisible by 7.\n", num);
    }
    return 0;
}
```

Or

Write a program in C language to display the series with their sum 1, 4, 9, 16, ..... up to 10<sup>th</sup> terms.

```
#include <stdio.h>
int main()
{
    int i, term, sum = 0;
    printf("The required series: ");
    for (i = 1; i <= 10; i++)
    {
        term = i * i;
        printf("%d", term);
        if (i < 10) {
            printf(",");
        }
        sum += term;
    }
    printf("\nThe sum of the series: %d", sum);
    return 0;
}
```

4  
SET

**SEE QUESTIONS AND ANSWERS**

Time: 2 hrs.

Full Marks: 50

**Group 'A' (10 Marks)**

1. Answer the following questions in one sentence. [6x1=6]

a. Where is the intranet used?  
 Ans: Intranet is used to share internal information and resources within an organization.

- b. Write any two benefits of cloud computing.

Ans: The following are the benefits of cloud computing:  
 (i) It allows quick and easy access and storage of information anywhere.

(ii) It is easier to get back up and restore the data.

- c. Which data type is used to store the email of an employee in MS Access?

Ans: Hyperlink is used to store the email of an employee.

- d. Write any two data types used in the MS Access database.

Ans: The two data types used in MS Access are Text and Number.

- e. What are the procedures in QBASIC?

Ans: The procedures used in QBASIC are the FUNCTION procedure and SUB procedure.

- f. Write any two shortcomings of C language.

Ans: Two shortcomings of C language are:  
 (i) Converter is required to translate the program.

(ii) Program size is lengthy.

2. Write the appropriate technical terms for the following. [2x1=2]

- a. The protocol that makes the network communication possible.

Ans: TCP/IP

- b. Digital marks created while using the Internet.

Ans: Digital footprint

3. Write the full form of the following. [2x1=2]

- a. ISDN

Ans: Integrated Services Digital Network

- b. TCP/IP

Ans: Transmission Control Protocol/Internet Protocol

**Group 'B' (24 Marks)**

4. Answer the following questions. [9x2=18]

- a. Differentiate between peer-to-peer and client-server networks.

Ans:

Peer-to-Peer Network	Client-Server Network
i. Peer-to-peer is a type of network model where all nodes on the network have an equal relationship with each other. It can share information, hardware and software with each other.	ii. The network model where one or more powerful computers (servers) provide the different network services and all other users of the computer network (clients) access those services to perform user's tasks.

ii. There is no centralized control that the network administrator needs to manage.	ii. There is a central security administration and the network administrator is responsible.
---	--

**b. What is cyber ethics? Give any two examples of it.**

Ans: Computer ethics is a set of moral principles that govern the use of computers and information technology.

The two computer ethics are as follows:

- Do not use a computer to harm others.
- Do not use a computer to publish fake information.

**c. What is software security? Write any two measures of software security.**

Ans: Software security is the protection of computer systems and applications from threats, such as virus attacks and unauthorized access, to ensure their confidentiality, integrity and availability (CIA). Any two measures of software security are:

Backup, Password

**d. Define E-commerce. Write its importance.**

Ans: E-commerce refers to electronic transactions such as buying, selling and exchanging of goods and information over computer communication networks, such as the Internet.

The importance of e-commerce is to reduce costs, lower the product cycle time, faster customer response and deliver better-quality service.

**e. Why is mobile computing necessary for the present time? Write any two importance of it.**

Ans: Mobile computing refers to a variety of devices that allow people to access data and information from wherever they are via mobile devices.

The following are the two importance of mobile computing:

- It allows people to work and communicate from anywhere at any time.
- It keeps connected to the internet, allowing to access information all the time.

**f. Differentiate between the primary key and foreign key with an example.**

Ans:

Primary Key	Foreign Key
i. A primary key is a field or multiple fields in a table that uniquely identifies each record, and is used to establish relationships between tables and enforce data integrity.	i. A foreign key in MS Access is a field that establishes a relationship between two tables by referencing the primary key of another table.
ii. For example, in a table employees, each employee might have an ID number as their primary key.	ii. For example, in a table of orders, the foreign key might be the customer ID number, linking the order of tables.

**g. What is a query? List any two advantages of it.**

Ans: A query is an object of a database that is used to view, retrieve, change and analyze records from a table or multiple links based on specified conditions.

The following are the two advantages of the query:

- Queries enable users to retrieve specific data from tables or data sources.
- Queries allow users to filter, sort, and group data in meaningful ways.

**h. What is data sorting? List any two advantages of using it.**

Ans: The process of arranging all the records in a table either in ascending or descending order based on a field or multiple fields is known as sorting.

The advantages of sorting are:

- Sorting helps to organize data and make it easier to find and retrieve specific information.
- Sorting can save time and improve efficiency by allowing users to quickly access the data they need.

**i. Define form. Write its importance.**

Ans: Form is one of the MS Access database objects that provides a graphical interface to view, modify and add data in a table or multiple linked tables.

The following are the importance of form:

- Forms provide an easy-to-use interface for data entry and manipulation, improving data accuracy and completeness.
- Forms can include validation rules to ensure data quality and prevent errors.

**5. Write down the output of the given program. Show with a dry run in the table. [2]**

DECLARE SUB SERIES ()

CLS

CALL SERIES

END

SUB SERIES

X=1 : Y=2

FOR P=1 TO 10

PRINT X;

X=X+Y

Y=Y+1

NEXT P

END SUB

Ans: Dry run

X	Y	P=1 TO 10	PRINT X:	X=X+Y	Y=Y+1
1	2	1 TO 10 Yes	1	1+2=3	2+1=3
3	3	2 TO 10 Yes	3	3+3=6	3+1=4
6	4	3 TO 10 Yes	6	6+4=10	4+1=5
10	5	4 TO 10 Yes	10	10+5=15	5+1=6
15	6	5 TO 10 Yes	15	15+6=21	6+1=7
21	7	6 TO 10 Yes	21	21+7=28	7+1=8
28	8	7 TO 10 Yes	28	28+8=36	8+1=9
36	9	8 TO 10 Yes	36	36+9=45	9+1=10
45	10	9 TO 10 Yes	45	45+10=55	10+1=11
55	11	10 TO 10 Yes	55	55+10=65	11+1=12
66	12	11 TO 10 No Loop Exits			

The output of the above program: 1, 3, 6, 10, 15, 21, 28, 26, 45, 55.

6. Rewrite the given program after correcting the bugs. [2]

REM to store records in the data file.

OPEN "employee.dat" FOR INPUT AS #1

DO

INPUT "Enter Name, Address and Gender";N\$, A, G

INPUT #1, N\$, A, G

INPUT "Do you want to continue"; Y\$

WHILE UCASE\$(Y\$) = "Y"

CLOSE "employee.dat"

END

Ans: Debugged Program

REM to store records in the data file.

OPEN "employee.dat" FOR OUTPUT AS #1

DO

INPUT "Enter Name, Address and Gender";N\$, A\$, G\$

WRITE #1, N\$, A\$, G\$

INPUT "Do you want to continue"; Y\$

LOOP WHILE UCASE\$(Y\$) = "Y"

CLOSE #1

END

7. Study the following program and answer the given questions. [2]

DECLARE FUNCTION text\$(N\$)

CLS

INPUT "Enter any string"; X\$

PRINT text\$(X\$)

END

FUNCTION text\$(X\$)

FOR i = LEN(N\$) to 1 STEP -1

WS\$=WS\$+MID\$(N\$, i, 1)

NEXT i

text\$=WS

END FUNCTION

Questions:

a. What is the main objective of the above program?

Ans: The main objective of the above program is to reverse the input string.

b. List all the parameters used in the above program.

Ans: The parameters used in the above program are X\$ and N\$.

Group 'C' (16 Marks)

8. Convert/Calculate as per the instruction. [4x1=4]

a.  $(10111101)_2 = (?)_8$ 

Soln:

Paired Binary Digit	10	111	101
Binary Equivalent Value	2	7	5

 $(10111101)_2 = (275)_8$ b.  $(645)_{10} = (?)_{16}$ 

Soln:

16	645	Remainder
16	40	5
16	2	8
0		2

 $(645)_{10} = (258)_{16}$ c.  $(10101)_2 \times (111)_2$ 

Soln:

		1	0	1	0	1
			x	1	1	1
		1	0	1	0	1
		1	0	1	0	x
1	0	1	0	1	x	x
10	0	1	0	0	1	1

 $(10101)_2 \times (111)_2 = (10010011)_2$ d.  $(111110) / (110)$ 

Soln:

110	111110	(1010)
	- 110	
	00111	
	- 110	
	0010	
	- 0	

Quotient = 1010

Remainder = 10

9. a. Write a program in QBASIC to input the length and breadth of the room and calculate its area using function procedure and perimeter using sub procedure. [4]

Ans: DECLARE FUNCTION AREA(L,B)

DECLARE SUB PERI(L,B)

CLS

INPUT "ENTER LENGTH AND BREADTH"; L,B

PRINT "AREA OF RECTANGLE ROOM"; AREA(L,B)

CALL PERI(L,B)

END

FUNCTION AREA(L,B)

AREA=L\*B

END FUNCTION

SUB PERI(L,B)

P=2\*(L+B)

PRINT "PERIMETER =";P

END SUB

- b. A sequential data file called "Records.dat" has stored data under the field heading Roll No, Name, Age and Address. Write a program to display all the records of students whose address is "SYANGJA" and age is above 15. [4]

Ans: OPEN "Records.dat" FOR INPUT AS #1

CLS

WHILE NOT EOF(1)

INPUT #1, RN, NS, A, ADS

IF UCASE\$(ADS)="SYANGJA" AND A&gt;15 THEN

PRINT RN, NS, A, ADS

ENDIF

WEND

CLOSE #1

END

10. Write a C program to find the sum of odd numbers from 80 to 90. [4]

Ans: #include&lt;stdio.h&gt;

```
int main()
{
int i, s=0;
for(i=80; i<=90; i++)
{
if(i%2 == 1)
s+=i;
}
printf("\nSum of odd numbers=%d", s);
return 0;
}
```

OR

Write a program in C language to input three numbers and find the greatest number among three numbers.

Ans: #include&lt;stdio.h&gt;

```
int main()
{
int a, b, c;
printf("Enter any three numbers?");
scanf("%d%d%d", &a, &b, &c);
if(a>b && a>c)
printf("\n%d is the greatest number", a);
if(b>a && b>c)
printf("\n%d is the greatest number", b);
if(c>a && c>b)
printf("\n%d is the greatest number", c);
return 0;
}
```

5  
SET

## SEE QUESTIONS AND ANSWERS

Time: 2 hrs.

Full Marks: 50

## Group 'A' (10 Marks)

1. Answer the following questions in short. [6x1=6]
- In which communication media is data transfer the fastest?

Ans: In fiber optic cable, data transfer is the fastest.

- What is cybercrime?

Ans: A criminal activity that is carried out using computers, networks and the Internet is called cybercrime.

- What is topology?

Ans: The interconnected pattern of network components in LAN is topology.

- What is a primary key?

Ans: A special field or group of fields in the table that uniquely defines each record from the database is a primary key.

- Write the types of parameters used in QBASIC.

Ans: Formal parameters and actual parameters are the two types of parameters.

- How many keywords are in C language?

Ans: There are 32 keywords in C language. For example, int, char, float, for, etc.

- Write the appropriate technical terms for the following. [2x1=2]

a. A main computer in the computer network.

Ans: Server

b. A malicious program of the computer to cause harm.

Ans: Malware

3. Write the full forms of the following acronyms: [2x1=2]
- WLAN

Ans: Wireless Local Area Network

- POP

Ans: Post Office Protocol

## Group 'B' (24 Marks)

4. Answer the following questions. [9x2=18]
- What is data communication? Write the basic elements of data communication.

Ans: Data communication is the process of transferring data and information between computers and other electronic devices.

The basic elements of data communication are data (message), sender, medium, receiver and protocol.

- What is computer ethics? Write any two commandments of computer ethics.

Ans: Computer ethics is a set of moral principles or codes of conduct that regulate the use of computers systematically without causing harm to other users.

Two commandments of computer ethics are given below.

- Do not use a computer to publish false information.
- Do not search the file or record of other people.

**c. What is digital citizenship? List out the major themes of digital citizenship.**

**Ans:** Digital citizenship refers to the responsible and ethical use of technology and the Internet which involves understanding, practicing, and promoting appropriate behavior when using digital tools and resources.

Major themes of digital citizenship are digital access, digital commerce, digital communication and digital literacy.

**d. What is online payment? Write some different modes of electronic payment.**

**Ans:** Online payment refers to the payment for buying or selling goods or services through the Internet using different online payment gateway.

Some modes of electronic payment are given below:  
Credit Card, Debit Card, Smart Card, Electronic Fund Transfer, eSewa, etc.

**e. What is hardware security? Write the role of UPS in hardware security.**

**Ans:** Hardware security is the protection given to the various hardware devices and tools used in computers from accidental or intentional harm.

UPS (Uninterruptible Power Supply) protects hardware devices by controlling the fluctuation of electric voltage and provides enough backup electric power to the computer system when there is a power failure.

**f. What is a database? Write any two examples.**

**Ans:** A collection of systematically organized interrelated data that stores, organizes and retrieves data is called a database.

Two examples of databases are:

Dictionary and Marks ledger.

**g. What is a table in MS Access? In how many ways can we create a table in MS Access?**

**Ans:** A table is the primary building block of a database which stores and manages large volumes of data into rows and columns.

The ways to create a table in MS Access are:

Design view, Using Wizard and Datasheet view.

**h. What is an action query? Write its types.**

**Ans:** An action query is a type of query that makes changes to or removes records in a single operation. Append Query, Update Query, Delete Query and Make Table Query are the types of an action query.

**i. Name any four objects of MS Access.**

**Ans:** The four objects of MS Access are Table, Query, Form and Report.

**5. Write the output of the given program (Workout with dry run).** [2]

DECLARE SUB FIND ()

CLS

CALL FIND

END

SUB FIND

X#=1

FOR I=1 TO 5

PRINT X# \*X#

X#=X#\*10+1

NEXT I

END SUB

**Ans: Dry run table**

X#	1=1 To 5	Print X# * X#	X#=X# * 10+1
1	1 to 5 'yes'	1	11
11	2 to 5 'yes'	121	111
111	3 to 5 'yes'	12321	1111
1111	4 to 5 'yes'	1234321	11111
11111	5 to 5 'yes'	123454321	111111
111111	6 to 5 'no' Loop exits		

The output is;

1

121

12321

1234321

123454321

**6. Rewrite the given program after correcting the bugs.** [2]

REM to create a sequential data file "INFO.DAT" to store records

OPEN "INFO.DAT" FOR INPUT AS #1

OPS:

INPUT "Enter Name, Address, Contact Number";N\$, A\$, C

WRITE #2, N\$, A\$, C

INPUT "Add More Records(Y/N)";y\$

IF LCASE(y\$) = "y" THEN GOTO OPS

CLOSE #1

END

**Ans: Debugged program:**

REM to create a sequential data file "INFO.DAT" to store records

OPEN "INFO.DAT" FOR OUTPUT AS #1

OPS:

INPUT "Enter Name, Address, Contact Number";N\$, A\$, C

WRITE #1, N\$, A\$, C

INPUT "Add More Records(Y/N)";y\$

IF LCASE(y\$) = "y" THEN GOTO OPS

CLOSE #1

END

7. Study the following program and answer the given questions. [2x1=2]

DECLARE FUNCTION TEST(X)

CLS

A=10

Z=TEST(A)

PRINT Z

END

FUNCTION TEST(X)

FOR J=1 TO X

    SUM=SUM+J\*j

NEXT J

TEST=SUM

END FUNCTION

Questions:

- a. How many parameters are there in the above program?

Ans: There is only one parameter which is X.

- b. How many times will the statement  $SUM=SUM+J*j$  execute?

Ans: The statement will execute 10 times.

Group 'C' (16 Marks)

8. Convert/Calculate as per the instruction. [4x1=4]

- a.  $(110111)_2 = (?)_8$

Soln: By making an octal equivalent

Grouping binary number in 3 digits:	110	111
Octal equivalent	6	7

Hence,  $(110111)_2 = (67)_8$

- b.  $(25AF)_{16} = (?)_{10}$

Soln:  $(25AF)_{16} = (?)_{10}$

$$= 2 \times 16^3 + 5 \times 16^2 + A \times 16^1 + F \times 16^0$$

$$= 2 \times 4096 + 5 \times 256 + 10 \times 16 + 15 \times 1$$

$$= 8192 + 1280 + 160 + 15$$

$$= 9647$$

$$\text{So, } (25AF)_{16} = (9647)_{10}$$

- c.  $(1110001)_2 + (110)_2$

Soln:  $110 \ 1110001 \ (10010$

110	1000
110	101
101	0
0	101

$$\therefore Q = 10010 \quad R = 101$$

9. a. Write a program in QBASIC that asks the radius and height of a cylinder and calculate the volume using the FUNCTION procedure and curve surface area using the SUB procedure.

[Hints:  $V = \pi r^2$ , CSA=2  $\pi r h$ ] [4]

Ans: DECLARE FUNCTION vol (R,H)  
 DECLARE SUB CSR(R,H)  
 CLS  
 INPUT "RADIUS OF A CYLINDER";R  
 INPUT "HEIGHT";H  
 PRINT "Volume of the Cylinder=";vol(R,H)  
 CALL CSR(R,H)  
 END  
  
 FUNCTION vol(R,H)  
 vol=3.14 \* R \* R \* H  
 END FUNCTION  
  
 SUB CSR(R,H)  
 C=2\*3.14\*R\*H  
 PRINT "The Curve Surface Area=";C  
 END SUB

- b. A sequential data file named "STAFF.REC" has stored the records with the fields Name, Post and Salary. Write a program to display the records of those whose salary is more than 45000. [4]

Ans: OPEN "STAFF.REC" FOR INPUT AS #1  
 CLS  
 WHILE NOT EOF(1)  
 INPUT #1, NS, PS, SAL  
 IF SAL>45000 THEN PRINT NS, PS, SAL  
 WEND  
 CLOSE #1  
 END

10. Write a program in C language to ask to enter two numbers and find out the sum and product. [4]

Ans: #include<stdio.h>  
 int main()  
 {  
 int a, b, sum, prod;  
 printf("Enter any two number");  
 scanf("%d %d", &a, &b);  
 sum=a+b;  
 prod=a\*b;  
 printf("\nThe Sum=%d", sum);  
 printf("\nThe Product=%d", prod);  
 return 0;  
 }

OR

Write a C program to ask a number and find whether it is ODD or EVEN.

Ans: #include<stdio.h>  
 int main()  
 {  
 int a;  
 printf("Enter a number");  
 scanf("%d", &a);  
 if(a%2==0)  
 printf("\nIt is EVEN number");  
 else  
 printf("\nIt is ODD number");  
 return 0;  
 }

6  
SET

## SEE QUESTIONS AND ANSWERS

Time: 2 hrs.

Full Marks: 50

## Group 'A' (10 Marks)

1. Answer the following questions in short. [6x1=6]

- a. List out two examples of unguided media.

Ans: The following are the two examples of unguided media:

- (i) Wi-fi (ii) Radio wave

- b. Write two measures to secure the hardware of the computer system.

Ans: The two measures to secure the hardware of the computer system are:

- (i) Regular maintenance (ii) Insurance

- c. What is the default size of the Yes/No field in MS-Access?

Ans: The default size of the Yes/No field is 1 bit.

- d. Which data type is used in the field 'email' in MS-access?

Ans: Hyperlink is the data type of the field 'email'.

- e. What is modular programming?

Ans: Modular programming is the art of developing a program by splitting a single program into multiple segments called modules.

- f. Why is C-program called a structured programming language?

Ans: A C-program is called a structured programming language because a program in C language can be divided into small logical functional modules or structures with the help of function procedures.

2. Write the appropriate technical terms for the following. [2x1=2]

- (a) Law that governs the legal issue of cyberspace.

Ans: Cyber law

- (b) The rate at which data are transferred in the given medium.

Ans: Bandwidth

3. Write the full form of the following acronyms. [2x1=2]

- a. GPS

Ans: Global Positioning System

- b. SaaS

Ans: Software as a Service

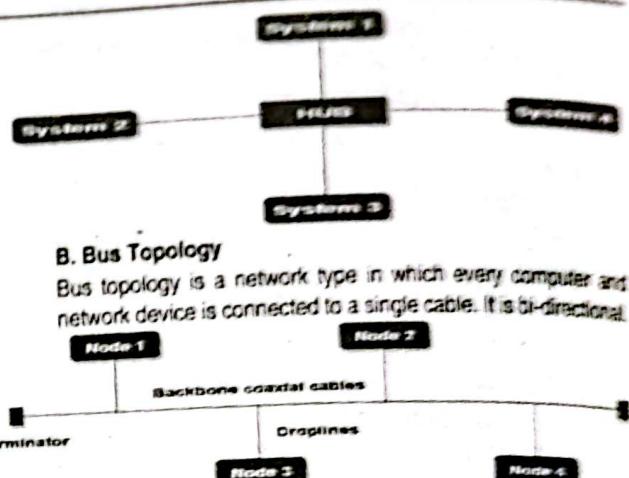
## Group 'B' (24 Marks)

4. Answer the following questions. [9x2=18]

- a. Explain any two network topologies with the help of a diagram.

Ans: A. Star Topology

In star topology, all the devices are connected to a single hub through a cable. The hub is the central node and all other nodes are connected to the central node.



## B. Bus Topology

Bus topology is a network type in which every computer and network device is connected to a single cable. It is bi-directional.

- b. What are the commandments of computer ethics?

Ans: The following are the commandments of computer ethics:

1. Thou shalt not use a computer to harm other people.
2. Thou shalt not interfere with other people's computer work.
3. Thou shalt not snoop around in other people's computer files.
4. Thou shalt not use a computer to steal.
5. Thou shalt not use a computer to bear false witness.

- c. Define cryptography. Write its role in data security.

Ans: Cryptography is a method of protecting information and communication using codes so that only those for whom the information is intended can read and process it.

Cryptography concerns itself with the following four objectives:

- Confidentiality
- Non-repudiation
- Integrity
- Authentication

- d. What is mobile computing? Write its importance.

Ans: Mobile computing is the ability to connect portable devices to wireless-enabled networks to access data and services while on the move.

Mobile computing is important because it is a convenient technique to transmit and receive voice, text, audio, and video with no temporal or special constraints.

- e. What is data type? Name any four data types used in MS Access.

Ans: A data type in MS Access is the pre-declaration of the type of data to be used in a particular field. The four data types are:

Text, Currency, Number, Date/Time.

- f. What is MS Access? Write its uses.

Ans: MS Access is the popular Relational Database Management System (DBMS). It is a product of Microsoft Corporation of the USA.

It is used for the following reasons:

- Managing voluminous records.
- Maintaining data consistency.
- Providing backup and security of the data.
- Reduces the redundancy of the data.

## g. Show the differences between Field and Record.

Ans: Fields and records are two basic components of a database, which is an organized collection of information, or data. The term "fields" refers to columns, or vertical categories of data while the term "records" refers to rows or horizontal groupings of unique field data.

ID	First Name	Last Name	DOB
1	Nishan	Roka	5/12/2070
2	Riwaz	G.C.	6/16/2075
3	Diwas	Roka	8/19/2068

Field

Record

## h. What is data sorting? What is the use of design view in MS Access?

Ans: Sorting is the process of arranging data into meaningful order so that you can analyze it more effectively. Design view is used to have a design of a table or a query or a form or a report according to necessity.

## i. List out two differences between Table and Query.

Ans: A table is used to store our data. A query is used to find and retrieve just the data that we want.

A table is not used to calculate the data. A query is used to have data calculation too.

## 5. Write the output of the given program: (Workout with dry run): [2]

```
DECLARE FUNCTION SUM (C)
C = 10
PRINT SUM (C)
END
```

```
FUNCTION SUM (C)
FOR K = 1 TO C
IF K MOD 3 = 0 THEN
S = S + K
END IF
NEXT K
SUM = S
END FUNCTION
```

Ans: Dry run

Looping (K)	K MOD 3=0	S=S+K
1	1	0
2	2	0
3	0	3
4	1	3
5	2	3
6	0	9
7	1	9
8	2	9
9	0	18
10	0	28

Sum = 28

## 6. Rewrite the given program after correcting the bugs. [2]

REM to store records in a data file

CLS

OPEN "info.dat" FOR INPUT AS #1

DO

INPUT "Enter Name, address and class "; NS, A, C

INPUT #1, NS, A, C

INPUT "Do you want to continue "; Y\$

WHILE UCASE\$(Y\$) = "Y"

CLOSE "info.dat"

END

Ans: After debugging:

CLS

OPEN "info.dat" FOR OUTPUT AS #1

DO

INPUT "Enter Name, address and class "; NS, AS, C

INPUT #1, NS, AS, C

INPUT "Do you want to continue "; Y\$

LOOP WHILE UCASE\$(Y\$) = "Y"

CLOSE #1

END

## 7. Study the following program and answer the given questions. [2]

DECLARE FUNCTION exam\$(a\$)

CLS

INPUT "Enter any string"; X\$

PRINT exam\$(X\$)

END

FUNCTION exam\$(a\$)

FOR i=LEN (a\$) TO 1 STEP -1

WS=WS+MIDS(a\$, i, 1)

NEXT i

exam\$ = WS

END FUNCTION

Questions:

## a. What is the main objective of the above program?

Ans: The main objective of the above program is to reverse the user input string.

## b. List out the string functions used in the above program.

Ans: The string functions used in the above program are: LEN(a\$), MIDS()

Group 'C' (16 Marks)

## 8. Convert/ Calculate as per the instruction. [4x1=4]

a.  $(101101 + 1101)_2 - (1101)_2$

Ans: 101101  
 + 1101  
 111010  
 - 11011  
 11111

14 ... 12 Sets Questions-Answers Collection

b.  $(10111 \times 11)_2 \div (110)_2$

Ans: 
$$\begin{array}{r} 10111 \\ \times 11 \\ \hline 10111 \\ 110111 \\ \hline 1000101 \\ 110 ) 1000101 ( 1011 \\ \quad -110 \\ \quad \quad 1010 \\ \quad \quad -110 \\ \quad \quad \quad 1001 \\ \quad \quad \quad -110 \\ \quad \quad \quad \quad 11 \end{array}$$

Quotient = 1011 Remainder = 11

c.  $(329)_{10} = (?)_8$

Ans: Divide by the base 8 to get the digits from the remainder:

Division by 8	Quotient	Remainder (Digit)
$(329)/8$	41	1
$(41)/8$	5	1
$(5)/8$	0	5

$= (511)_8$

$(329)_{10} = (511)_8$

d.  $(DA3)_{16} = (?)_2$

Ans: Convert each hex digit to 4 binary digits (see conversion table below):

DA3

$$\begin{array}{ccc} = D & A & 3 \\ = 1101 & 1010 & 0011 \end{array}$$

$= 110110100011$

$= (DA3)_{16} = (110110100011)_2$

- a. Write a program to ask the radius of a circle to calculate the area and circumference of it. Create a user-defined function procedure AKC(r) to calculate the area and sub-procedure CKC(r) to calculate the circumference. [4]

Ans: DECLARE FUNCION AKC(R)

DECLARE SUB CKC(R)

CLS .

INPUT "ENTER RADIUS OF A CIRCLE";R

PRINT "Area of the Circle=";AKC(R)

CALL CKC(R )

END

FUNCTION AKC(R )

AKC=3.14\*R^2

END FUNCTION

SUB CKC(R)

C=2\*3.14\*R

PRINT "Circumference of the Circle=";C

END SUB

- b. A sequential data file called "emp.dat" has stored data under the field heading Name, Gender, salary and address. Write a program to display all the information of those whose name starts with the alphabet "A" and whose salary is  $\geq 50000$ . [4]

Ans: CLS

OPEN "emp.dat" FOR INPUT AS #1

WHILE NOT EOF(1)

INPUT #1, N\$, G\$, SAL, AD\$

IF UCASE\$(LEFT\$(N\$,1))="A" AND SAL>=50000 THEN

PRINT N\$, G\$, SAL, AD\$

ENDIF

WEND

CLOSE #1

END

10. Write a C program to calculate the sum of the following Series, 2, 8, 18, 32.....up to the 10<sup>th</sup> term. [4]

Ans: #include<stdio.h>

int main()

{

int i, p, s=0;

for(i=1; i<=10; i++)

{

p= i\*i+2;

printf("%d",p);

s+=p;

}

return 0;

}

OR

Write a C program to ask the user to input the number and find out whether the given number is Palindrome or not.

Ans: #include<stdio.h>

int main()

{

int m,n,r,pal=0;

printf("\nEnter a positive integer number?");

scanf("%d", &m);

n=m;

while(n!=0)

{

r=n%10;

pal=pal\*10+r;

n=n/10;

}

if(pal==m)

printf("\n%d is the palindrome number",m);

else

printf("\n%d is Not the palindrome number",m);

return 0;

}

7  
SET

## SEE QUESTIONS AND ANSWERS

Time: 2 hrs.

Full Marks: 50

## Group 'A' (10 Marks)

1. Answer the following questions in one sentence. [6x1=6]
- Which connector is used with coaxial cable?

Ans: BNC connector is used with coaxial cable.

- Why is data decryption necessary?

Ans: To convert encrypted (coded) data into readable form, we need to decrypt it.

- Which data types are used to store graphics and numeric characters in MS Access?

Ans: OLE object is used for graphics and numeric data type is used for numeric characters.

- List any two objects of MS Access.

Ans: The two objects of MS Access are: Table and Query.

- What is the function of MOD in QBASIC?

Ans: The function of the MOD operator in QBASIC is to find the remainder.

- Write the names of unary operators used in C language.

Ans: The unary operators used in C language are: increment (++) operator and decrement (--) operator.

2. Write the appropriate technical terms for the following. [2x1=2]

- The protection of computer systems and sensitive information from unauthorized access.

Ans: Cybersecurity

- The internet tool which is used to upload and download data.

Ans: FTP

3. Write the full forms of the following: [2x1=2]

- VOIP

Ans: Voice Over Internet Protocol

- ISDN

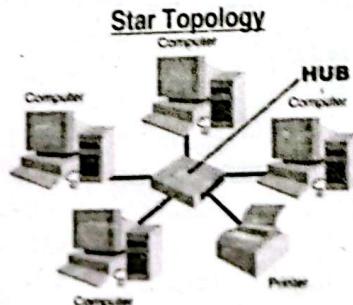
Ans: Integrated Service Digital Network

## Group 'B' (24 Marks)

4. Answer the following questions. [9x2=18]

- What is topology? Draw the figure of star topology.

Ans: Topology is the physical and logical arrangement of nodes connected in a network in LAN. Nodes include different devices, such as switches, routers and software, etc.



- b. What is cyber ethics? List out any two cybercrimes.

Ans: Cyber ethics is the moral standard that governs the use of computers. It refers to society's views about the use of computers, including both hardware and software.

Ransomware and hacking are the two common cybercrimes.

- c. What is hardware security? Write any two measures of software security.

Ans: The provision of securing computer hardware from being damaged or lost due to some intentional or unintentional harm is called hardware security.

Two measures of software security are given below:

- Use strong password

- Defragmentation

- d. What is e-governmence? Give any two examples.

Ans: E-governance is the use of information and communication technology, such as the Internet, to improve the process of governmental activities.

Following are the two examples of e-government examples.

- Short Messaging Service (SMS)

- Automated Telephone Information Services

- e. Define cloud computing with examples.

Ans: Cloud computing is the delivery of different services over the internet. The different resources include tools and applications, such as servers, data storage, databases and software.

The following are the examples of cloud computing:

**Cybersecurity:** Force point

**File sharing and data storage:** Dropbox

- f. Differentiate between Database and DBMS.

Ans: The following are the differences between a database and a DBMS:

Database	DBMS
i. It is a collection of related data of certain persons, and places of objects.	i. It is a set of the program used for creating managing and operating a database
ii. It stores data.	ii. It manages data.
iii. It can be in the form of paper or digital form.	iii. It is software and stored in the memory.
iv. Example: Mark Ledger, Dictionary, etc.	iv. Example: Oracle, MySQL, etc.

- g. What is a primary key? Write its importance.

Ans: A primary key is a unique key or set of keys in the table which uniquely defines each record in the table. primary key is important because it is used to ensure data integrity and prevent data redundancy.

h. What is data type? List any two data types of MS Access.

Ans: Data type is the type of data to be used or stored in the database. It also defines the memory space required to store the data.

The two data types are Text and Hyperlink.

i. Why is an update query necessary in the database system? Show its importance.

Ans: Update query is used to update, change, delete, and modify the existing records in the database. It is so important because it can update the entire records of a database at once.

5. Write down the OUTPUT of the given program. Show with dry run-in table. [2]

DECLARE SUB show()

CLS

CALL show

END

SUB show

FOR I =1 TO 7 STEP 3

S=S+I^3

NEXT I

PRINT S

END SUB

Ans: Dry Run

I=1 TO 7 STEP 3	S=S+I^3	PRINTS
	0+1^3 = 0+1 = 1	408
4 TO 7 STEP 3 YES	1+4^3 = 1+64 = 65	
7 TO 7 YES	65+7^3 = 65+343=408	
10 TO 7 NO LOOP EXITS		

The output is: 408

6. Rewrite the given program after correcting the bugs. [2]

REM displays records of the students from a data file

OPEN "STUDENT.DAT" FOR INP AS #1

CLS

WHILE NOT EOF

INPUT #1, SN, N\$,AD\$, C

PRINT SN, N\$,AD\$, C

NEXT

CLOSE #1

STOP

Ans: Debugged Program

REM displays records of the students from a data file

OPEN "STUDENT.DAT" FOR INPUT AS #1

CLS

WHILE NOT EOF (1)

INPUT #1, SN, N\$,AD\$, C

PRINT SN, N\$,AD\$, C

WEND

CLOSE #1

END

7. Study the following program and answer the given questions. [2]

DECLARE FUNCTION num(N)

FOR K=1 TO 5

READ N

Z=num(N)

SUM=SUM+Z

NEXT K

PRINT SUM

DATA 10, 12, 14, 5, 7,

END

FUNCTION num(N)

IF N MOD 2= 0 THEN num=N

END FUNCTION

Questions:

a. List the library functions used in the above program.

Ans: Oops! There are no library functions used in the above program.

b. Write the name of the function used in the above program.

Ans: The name of the function is num().

Group 'C' (16 Marks)

8. Convert/Calculate as per the instructions. [4x1=4]

a.  $(10111101)_2 = (?)_8$

Sol<sup>n</sup>: Arranging three bits from the right

Given binary bits	010	111	101
Equivalent to Octal	2	7	5

$(10111101)_2 = (275)_8$

b.  $(615)_{10} = (?)_{16}$

Sol<sup>n</sup>:

16	615	7 Rem
16	38	6
	2	

Hence,  $(615)_{10} = (267)_{16}$

c.  $(1011)_2 \times (101)_2 - (110)_2$

Sol:

$$\begin{array}{r}
 1011 \\
 \times 101 \\
 \hline
 1011 \\
 0000x \\
 \hline
 1011xx \\
 110111 \\
 -110 \\
 \hline
 110001
 \end{array}$$

d.  $(111110)_2 \div (110)_2$

Sol:

$$\begin{array}{r}
 101) 111110 (1010 \\
 -101 \\
 \hline
 111 \\
 -110 \\
 \hline
 10
 \end{array}$$

i. Quotient = 1010 Remainder = 10

- ii. a. Write a program in QBASIC to print the circumference of a circle using the SUB procedure and the volume of a cylinder using the FUNCTION procedure.

Ans: DECLARE FUNCTION VOL(R,H)

DECLARE SUB CIRC(R)

CLS

INPUT "Enter the radius and height of a cylinder"; R, H

PRINT "Volume of the Cylinder"; VOL(R,H)

CALL CIRC(R)

END

[4]

FUNCTION VOL(R,H)

VOL=3.1416\*R^2\*H

END FUNCTION

SUB CIRC(R)

C=2\*3.1416\*R

PRINT "Circumference of the Circle"; C

END SUB

- b. A sequential data file "SALARY.TXT" has several records with the fields Sno., Name, Address, Post and Salary of the employees. Write a program to display all the records whose salary is more than Rs.590,000/-.

[4]

Ans: OPEN "SALARY.TXT" FOR INPUT AS #1  
 CLS  
 WHILE NOT EOF(1)  
 INPUT #1, SN, NS, AD\$, PS, SAL  
 IF SAL>59000 THEN PRINT SN, NS, AD\$, PS  
 WEND  
 CLOSE #1  
 END

10. Write a program to read any three integer numbers from the keyboard and find the smallest number using C language.

Ans: #include<stdio.h>

```

int main()
{
    int p, q, r;
    printf("Enter any three positive integers?");
    scanf("%d%d%d", &p, &q, &r);
    if(p<q && p<r)
    {
        printf("\n%d is the smallest number", p);
    }
    else if(q<p && q<r)
    {
        printf("\n%d is the smallest number", q);
    }
    else
    {
        printf("\n%d is the smallest number", r);
    }
    return 0;
}
  
```

OR

Write a program to print the first 10 natural numbers using C language.

Ans: #include<stdio.h>

```

int main()
{
    int p;
    for(p=1;p<=10;p++)
    {
        printf("%d", p);
    }
    return 0;
}
  
```

8  
SET

## SEE QUESTIONS AND ANSWERS

Time: 2 hrs.

Full Marks: 50

## Group 'A' (10 Marks)

1. Answer the following questions in one sentence. [6x1=6]

a. How does extranet differ from intranet?

Ans: An intranet is a local network that is only accessible by employees of an organization. Extranets fall in the middle since they allow for some connections outside of the company, but they're not available to the public.

b. Write any two strong features of mobile computing.

Ans: The following are the strong features of mobile computing:

- i) A portable device that can be used during mobility.
- ii) It has limited processing and storage capability.

c. Which data type is used to store the remarks and gender of a student in the database like MS Access?

Ans: Remarks=&gt; Memo/Long Text and for Gender =&gt; Yes/No.

d. Mention any two main objects of MS Access.

Ans: The main objects of MS Access are Table and Query.

e. What is the use of the EOF() statement in QBASIC?

Ans: EOF means the end of the file. In the program, the do/while loop continues until the file has not reached its end because of eof().

f. Write any four keywords in the 'C' language.

Ans: Any four keywords in the 'C' language are: int, char, void, return

2. Write the appropriate technical terms for the following.

[2x1=2]

a. A way of maintaining state information in the server about a user's interactions with a website or web application.

Ans: Session

b. A device that connects and controls two dissimilar networks together.

Ans: Router

3. Write the full forms of the following: [2x1=2]

a. W3C

Ans: World Wide Web Consortium

b. VoIP

Ans: Voice Over Internet Protocol

## Group 'B' (24 Marks)

4. Answer the following questions in short. [9x2=18]

a. How is ring topology different from star topology? Illustrate.

Ans:

Star topology	Ring topology
i. In star topology, the nodes are connected to the central hub or router.	i. In ring topology, every node is connected to its left and right side nodes.

ii. In star topology, the only hub is the failure point.	ii. In ring topology, every node is the failure point.
iii. The cost of star topology is high.	iii. The cost of ring topology is low.

- b. What is cyber ethics? Give any two commandments of it.

Ans: Cyber ethics is a branch of applied ethics that examines moral, legal, and social issues at the intersection of computer/information and communication technologies. Two commandments of computer ethics are:

- Thou shalt not interfere with other people's computer work.
- Thou shalt not snoop around in other people's computer files.

c. How do you provide security to computer hardware? Write any two measures of software security.

Ans: The term computer hardware security refers to the protection of physical systems from accidental or intentional harm like equipment destruction, attacks, etc. The security provisions we can provide to our computer hardware system from unwanted hazards are:

- Insurance
- Power protection devices

d. Write any four importance of E-Governance.

Ans: The four importance of E-Governance are as follows:

- i. Citizen empowerment through access to information.
- ii. More efficient government management.
- iii. Less corruption in the administration.
- iv. Increased transparency in administration.

e. Define cloud computing. Write any two importance of it.

Ans: Cloud computing is the on-demand delivery of computing services, such as servers, storage, databases, networking, software, and analytics.

The following are the importance of cloud computing:

- i) It is safer rather than keeping files on a proprietary hard drive or local storage device.
- ii) Cloud-based storage makes it possible to save remotely.

f. Differentiate between DBMS and RDBMS with examples.

Ans: DBMS works in the database with a single table. Common examples of DBMS are Windows registry, Foxpro, Dbase III+, etc.

RDBMS works in the database with multiple tables in relation.

Common examples of RDBMS are SQL, MySQL, Postgres, Oracle, etc.

g. What is Table in MS Access? List any two advantages of it.

Ans: A table in MS Access is an object that plays the role of the building block of an entire database system in the computer. Its advantages are:

- i) Records in the table are easy to read and understand.
- ii) A table can store voluminous records.

h. Define the data validation rule. List any two advantages of using it.

Ans: A validation rule in a database is the field property as the set of rules for the limitation of data entry.

The two advantages of the data validation rule are as follows:

- i) Limits the range of data feed.
- ii) Maintains integrity and security of the records.

i. What is a report in MS Access? Write its importance.

Ans: A report is a significant object of MS Access. It provides the summarized result.

The following are the importance of reports in MS Access:

- i) It provides error-free results which cannot be edited and modified.
- ii) It provides analytical results.

5. Write down the OUTPUT of the given program. Show with a dry run in a table. [2]

DECLARE SUB SERIES()

CLS

CALL SERIES

END

SUB SERIES

X = 10

Y = 10

FOR P = 1 TO 7

PRINT X;

X = X + Y

Y = Y - 1

NEXT

END SUB

Ans: Dry Run

Loop (p)	X	Y
1	10	10
2	10+10 = 20	9
3	20+9 = 29	8
4	29+8 = 37	7
5	37+7 = 44	6
6	44+6 = 50	5
7	50+5 = 55	4

Output: 10, 20, 29, 37, 44, 50, 55

6. Rewrite the given program after correcting the bugs. [2]

REM to store records in the data file.

CLS

OPEN "student.txt" FOR INPUT AS #1

DO

INPUT "Enter Name, Address and Gender of student"; NS, AS,  
GS

INPUT #1, NS, AS, GS

INPUT "Add more Records (Y/N)"; AddMore\$

LOOP WHILE LCASE\$(AddMore\$) = "y"

CLOSE student.txt

END

Ans: After Debugging

REM to store records in the data file.

CLS

OPEN "student.txt" FOR OUTPUT AS #1

DO

INPUT "Enter Name, Address and Gender of student";

NS, AS, GS

WRITE #1, NS, AS, GS

INPUT "Add more Records (Y/N)"; AddMore\$

LOOP WHILE LCASE\$(AddMore\$) = "y"

CLOSE #1

END

7. Study the following program and answer the given questions. [2]

DECLARE FUNCTION SEES(NS)

CLS

INPUT "Enter any string"; XS

PRINT SEES(XS)

END

FUNCTION SEES(NS)

FOR I = 1 TO LEN(NS)

IF (MIDS(NS,I,1)) <> "A" OR (MIDS(NS,I,1)) <> "a" THEN

WS = MIDS(NS,I,1) + WS

ENDIF

NEXT

SEES = WS

END FUNCTION

Questions:

a. What is the main objective of the above program?

Ans: The main objective of the above program is to remove the letter "A" or "a" from the string.

b. List all the arguments used in the above program.

Ans: XS is an argument used in the above program.

## Group 'C' (16 Marks)

8. Convert / Calculate as per the instruction. [4x1=4]
- a.  $(1011101)_2 = (?)_{10}$

Ans:

Hexadecimal	Binary
A	1010
B	1011
C	1100
D	1101
E	1110

Arranging four bits from the right

Given binary bits with 4 bits	0101	1101
Equivalent to Hexa Decimal	5	D

$$(1011101)_2 = (5D)_{16}$$

b.  $(645)_{10} = (?)_{10}$

Ans:  $(645)_{10}$ 

$$\begin{aligned} &= 6 \times 8^2 + 4 \times 8^1 + 5 \times 8^0 \\ &= 6 \times 64 + 4 \times 8 + 5 \times 1 \\ &= 384 + 32 + 5 \\ &= (421)_{10} \end{aligned}$$

c.  $(1011)_2 + (110)_2 - (110)_2$

Ans:

$$\begin{array}{r} 1011 \\ \times 110 \\ \hline 1011 \\ 0000x \\ \hline 1011xx \\ 110111 \\ - 110 \\ \hline 110001 \end{array}$$

d.  $(1111)_2 \div (110)_2$

Ans:  $110 \ ) 111110 \ (101$

$$\begin{array}{r} -110 \\ 111 \\ -110 \\ \hline 1 \end{array}$$

Quotient = 1010 Remainder=1

9. a. Write a program in QBASIC to input Principal, Time and rate and calculate its Simple Interest using FUNCTION and Compound Interest using SUB procedure. [4]

Hint: Compound Interest:  $CI = P \left( 1 + \frac{r}{n} \right)^{nt} - P$

Ans: DECLARE FUNCTION si (p, n, r)

DECLARE SUB CI (p,n,t)

CLS

INPUT "Enter the Principal, Time and Rate"; p, n, r

PRINT "Simple Interest"; si (p,n,r)

CALL CI (p,n,r)

END

FUNCTION si (p,n,r)

$$si = (p * n * r) / 100$$

END FUNCTION

SUB CI (p,n,r)

$$C = p * (1 + (r/n)^(n*t)) - p$$

PRINT "Compound interest"; C

END SUB

- b. A data file "BOOKREC.REC" has stored data under the field heading BookID, BookName, Publisher, and Date of Publication. Write a program to display all the records of books whose publisher is "KcWebTechNepal" and whose Published Date is 2023. [4]

Ans: OPEN "BOOKREC.REC" FOR INPUT AS #1

CLS

WHILE NOT EOF(1)

INPUT #1, BID, BN\$, PS, D

IF PS = "KcWebTechNepal" AND D = 2023 THEN

PRINT BID, BN\$, PS, D

END IF

WEND

CLOSE #1

END

10. Write a program in C language to calculate the SUM of the first 10 Odd numbers. [4]

Ans: #include&lt;stdio.h&gt;

Int main()

{

int p,sum=0;

for(p=1; p&lt;=20; p+=2)

{

sum+=p;

}

printf("%d\n",sum);

return 0;

}

OR

Write a program in C language to input a number and find the SUM of all ODD numbers up to it. [4]

Ans: #include&lt;stdio.h&gt;

Int main()

{

int n, p, sum=0;

printf("Enter a number?");

scanf("%d", &amp;n);

for(p=1; p&lt;=n; p+=2)

{

sum+=p;

}

printf("%d\n",sum);

return 0;

}

9  
SET

## SEE QUESTIONS AND ANSWERS

Time: 2 hrs.

Full Marks: 50

## Group 'A' (10 Marks)

1. Answer the following questions in short. [6x1=6]

- a. List out two examples of bounded media.

Ans: Co-axial cable and Fiber Optic Cable are the two bounded media.

- b. Write two methods of software security.

Ans: The two methods of software security are:

- Applying password policy
- Installing antivirus software

- c. What is the default size of a text field in MS Access?

Ans: 255 characters is the default size of a text field in MS-Access.

- d. List any two examples of DBMS.

Ans: Foxpro and Oracle are the two examples of DBMS.

- e. Define arguments pass by reference.

Ans: The pass-by-reference in QBASIC is to pass the reference of an argument in the calling function to the corresponding formal parameter of the called function. The value passing from main module to sub module is known as reference.

- f. Why is the C program called middle-level language?

Ans: C programming language is often called a middle-level language because it has the properties of both high-level and low-level language.

2. Write the appropriate technical terms for the following.

[2x1=2]

- a. Device used to connect a PC with a telephone line.

Ans: Modem

- b. The fake attempt to obtain sensitive information, such as username and password by disguising oneself as a trustworthy entity.

Ans: Phishing

3. Write the full form of the following acronyms. [2x1=2]

- a. CDMA

Ans: Code Division Multiple Access

- b. IAAS

Ans: Information as a Service

## Group 'B' (24 Marks)

4. Answer the following questions. [9x2=18]

- a. Introduce the network architecture model.

Ans: The network structure that explains how the transmission of data takes place is network architecture. There are two types of network architecture. They are given below.

- i) Client-Server Network Model
- ii) Peer-to-peer Network Model

- b. What are the elements of digital citizenship?

Ans: Digital citizenship is a concept that refers to the responsible use of technology.

There are several elements of digital citizenship, including:

- Digital Access
- Digital Commerce
- Digital Communication
- Digital Literacy
- Digital Rights and Responsibility
- Digital Etiquette
- Responsibility to report bullying harassment, sexting or identity theft.
- Responsibility to download music, videos and other material legally.

- c. What is a power protection device? Write its role in computer security.

Ans: Power protection devices are computer hardware security tools that protect computer systems from the fluctuation of the power supply.

The role of power supply in computer security are:

- i) Voltguards resist the irregular power supply and provide regular and uniform power.
- ii) UPS provides a regular power supply in the case of power cut-off.

- d. Define VR. List some areas where AI can be beneficial.

Ans: Virtual Reality (VR) is a computer-simulated experience that seems as if it is quite real.

The various areas where AI is used:

- VR in Military
- VR in Sports
- VR in Education
- VR in Mental Health, etc.

- e. List out differences between DBMS and Database.

Ans: The following are the differences between DBMS and Database.

DBMS	Database
i. Database Management System is an application software to manage the voluminous records in the database.	i. A database is the collection of logically related records.
ii. Eg.: MS Access, My SQL, etc.	ii. Eg.: Dictionary, Tel_Directory, etc.

1. What is the table? Why is the primary key necessary in the table record?

Ans: The table is an object of MS Access. It is the foundation for the entire records in the database. It is in the form of rows and columns.

A primary key is necessary for table records because it defines each and every record uniquely. Also, it does not support the NULL value as well as duplication of data.

- g. Show the differences between Form and Report.

Ans: The following are the differences between form and report.

Form	Report
i. A form is an object of MS Access.	i. A report is an object of MS Access.
ii. It is a user interface for data entry.	ii. It is a summarized report of data.
iii. Records can be viewed and modified.	iii. Records cannot be modified and can be viewed only.

- h. What is data filtering? How is the select query different from the action query?

Ans: Data filtering is a type of service available in DBMS, which supports extracting required information from the database. Data filtering follows the condition set by the user.

Select query is the general type of query, where the user can do general operations by applying certain criteria. Action query is a special type of query where the user can perform some specific jobs only. E.g. Delete Records, Update Records, etc.

- i. List two differences between Manual and Computerized databases with examples.

Ans: The following are the differences between manual and computerized databases:

Manual Database	Computerized Database
i. Manual database is handled manually.	i. A computerized database is handled electronically.
ii. Chances of error or data redundancy.	ii. Reduction in data redundancy.
iii. Less reliable as it is not consistent.	iii. Highly reliable as it is consistent.

5. Write the output of the given program (Workout with dry run).

DECLARE FUNCTION SUM (a)

a= 9

PRINT SUM (a)

END

FUNCTION SUM (a)

FOR K = 1 TO a  
IF K MOD 2 = 0 THEN  
S = S + K  
END IF

NEXT K  
SUM = S  
END FUNCTION

Ans: Dry Run:

Looping (K)	K MOD 2 = 0	S=S+K
1	1	-
2	0	2
3	1	-
4	0	6
5	1	-
6	0	12
7	1	-
8	0	20
9	1	-
Sum=20		

6. Rewrite the following program after correcting the bugs. [2]

REM to create a new data file

CLS  
OPEN "ABC.DAT" FOR INPUT AS #2  
DO  
INPUT "Enter Name, RollNo and Total"; N\$, R, T  
INPUT #1, N\$, R, T  
INPUT "Supply more records Y/N"; Ch  
LOOP WHILE UCASE(Ch) = "Y"  
CLOSE #1  
END

Ans: After Debugging:

CLS  
OPEN "ABC.DAT" FOR OUTPUT AS #2  
DO  
INPUT "Enter Name, RollNo and Total"; N\$, R, T  
WRITE #1, N\$, R, T  
INPUT "Supply more records Y/N"; Ch\$  
LOOP WHILE UCASE\$ (Ch\$) = "Y"  
CLOSE #1  
END

7. Study the following program and answer the given questions. [2]

DECLARE FUNCTION exam\$(a\$)  
CLS  
INPUT "Enter any string"; X\$  
PRINT exam\$(X\$)  
END

FUNCTION exam\$(a\$)

FOR i= LEN (a\$) TO 1 STEP - 1

W\$=W\$+MID\$(a\$,i,1)

NEXT i

exam\$ = W\$

END FUNCTION

Questions:

- a. What will be the output of the above program if X\$ = "Computer"?

Ans: The expected output will be: retupmoC

- b. List out the actual and formal parameters used in the above program.

Ans: The actual and formal parameters used in the above program are:

Actual parameter : X\$ and Formal parameter: a\$.

Group 'C' (16 Marks)

8. Convert/Calculate as per the instruction. [4x1=4]

a.  $(DB7)_{16} = (?)_8$

Ans:

Hexadecimal	Binary
A	1010
B	1011
C	1100
D	1101
E	1110

Arranging bits from right.

Given Hexa-Decimal Number	D	B	7
Equivalent to Binary 4 bits	1101	1011	0111

Now,  $(110110110111)_2 = (?)_8$ 

Arranging 3-3 bits from the right.

Binary 3 bits group	110	110	110	111
Equivalent to Octal	6	6	6	7

Hence,  $(DB7)_{16} = (6667)_8$ 

b.  $(563)_8 = (?)_2$

Ans: Arranging bits from right

Given Octal Number	5	6	3
Equivalent to Binary 4 bits	101	110	011

Now,  $(563)_8 = (101110011)_2$ 

c.  $(1100)_2 + (1111)_2 - (101)_2$

Ans: 1100

+1111

11011

- 101

10110

d.  $(111011)_2 \div (100)_2$

Ans: 100 111011 ( 1110

- 100

110

- 100

101

- 100

11

- 00

11

Quotient = 1110 Remainder = 11

9. a. Write a program in QBASIC that asks the radius of the circle. Write a program to calculate the area and circumference of a circle. Create a user-defined function area (r) to calculate the area and sub-procedure cir(r) to calculate the circumference of a circle. [4]

[Hint:  $A=\pi r^2$ ,  $C=2\pi r$ ]

Ans: DECLARE FUNCTION area(R)

DECLARE SUB cir(R)

CLS

INPUT "Enter the radius of a circle"; R

PRINT "Volume of the Circle"; area(R)

CALL cir(R)

END

FUNCTION area(R,H)

area=3.1416\*R^2

END FUNCTION

SUB cir(R)

Circum=2\*3.1416\*R

PRINT "Circumference of the Circle"; Circum

END SUB

- b. A sequential data file called "STUD.DAT" has stored data under the field name student ID, Name, Gender and address. Write a program to display all the information of those whose gender is "F" and whose address is "KATHMANDU". [4]

Ans: OPEN "STUD.DAT" FOR INPUT AS #1

CLS

WHILE NOT EOF(1)

INPUT #1, StdID N\$, G\$, A\$

IF UCASE\$(G\$) = "F" AND UCASE\$(A\$) = "KATHMANDU" THEN

PRINT StdID N\$, G\$, A\$

END IF

WEND

CLOSE #1

END

10. Write a C program to calculate the sum of the following Series.  
1, 1, 2, 3, 5, 8 ..... up to 10<sup>th</sup> term. [4]

Ans: #include<stdio.h>

```
int main()
{
    int p=1, q=1, i;
    for (i=1; i<=5; i++)
    {
        printf("%d\t%d\t", p, q);
        p=p+q;
        q=q+p;
    }
    return 0;
}
```

OR

Write a C program to ask the user to input the number and find out whether the given number is Armstrong or not.

Ans: #include<stdio.h>

```
int main()
{
    int m, n, r, arm=0;
    printf("\nEnter a positive integer number?");
    scanf("%d", &m);
    n=m;
    while(n!=0)
    {
        r=n%10;
        arm=arm*10+r;
        n=n/10;
    }
    if(arm== m)
        printf("\n%d is the Armstrong number", m);
    else
        printf("\n%d is Not the Armstrong number", m);
    return 0;
}
```

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SET

## SEE QUESTIONS AND ANSWERS

Time: 2 hrs.

Full Marks: 50

### Group 'A' (10 Marks)

1. Answer the following questions in short. [6x1=6]

a. Define bandwidth.

Ans: Bandwidth can be defined as the maximum volume of data that can be transmitted through a communication system.

b. What is cyberbullying?

Ans: Cyberbullying is a kind of harassment using mobiles or computers.

c. What is AI?

Ans: Artificial Intelligence (AI) is an area of computer science that emphasizes the creation of intelligent machines that work and react like humans.

d. What is the storage size of memo and text data type in MS Access?

Ans: Text can store up to 255 characters and memo can store up to 65,535 characters.

e. What is a local variable?

Ans: Variables that are declared inside a module and which cannot be accessed by other modules are called local variables.

f. What is an operator in C language?

Ans: An operator in C language is a symbol that is used to perform mathematical operations.

2. Write the appropriate technical terms for the following. [2x1=2]

a. Secret group of characters that helps to protect files from unauthorized persons.

Ans: Password

b. A type of network in which every computer works as both client and server.

Ans: Peer-to-Peer Network

3. Write the full form of the following. [2x1=2]

a. ADSL

Ans: Asymmetric Digital Subscriber Line

b. TCP/IP

Ans: Transmission Control Protocol/Internet Protocol

### Group 'B' (24 Marks)

4. Answer the following questions. [9x2=18]

a. Distinguish between LAN and MAN.

Ans: The following are the differences between LAN and MAN:

LAN	MAN
i. Local Area Network is a network, limited to a small area like a room, a building, a school, etc. generally connected through wire-guided media.	i. Wide Area Network is a network that is extended to a large area, i.e., the whole world in which computers are connected through wireless media.

- |  |  |
|--|--|
| i. The speed of the LAN is high.   | ii. The speed of WAN is slower than LAN.                               |
| iii. LAN is owned and managed by an individual or an organization. Campus Area Network (CAN) is an example of LAN. | iii. WAN is owned by private or public. Internet is an example of WAN. |

**b. Write any four commandments of computer ethics.**

**Ans:** The following are the four commandments of computer ethics:

1. Thou shall not use a computer to harm other people.
2. Thou shall not interfere with other people's computer work.
3. Thou shall not snoop around in other people's computer files.
4. Thou shall not use a computer to steal.

**c. What is E-commerce? List any two E-commerce companies in Nepal.**

**Ans:** E-commerce, also known as electronic commerce or internet commerce, refers to the buying and selling of goods or services using the Internet. The two e-commerce companies in Nepal are *Sastodeal* and *Daraz*.

**d. What are the advantages of cloud computing?**

**Ans:** The advantages of cloud computing are as follows:

- Cloud allows us to quickly and easily access, and store information anywhere, anytime in the whole world using an internet connection.
- Cloud computing reduces both hardware and software maintenance costs for organizations.

**e. What is VR? Mention its application areas.**

**Ans:** An artificial environment created with computer hardware and software and presented to the user in such a way that it appears and feels like a real environment is called virtual reality (VR).

The following are the application areas of VR:

- i. It can be used in medical studies to enable students to know the human body structure.
- ii. It can be used in driving schools as it gives a real look at roads and traffic.

**f. What is DBMS? Give any two examples.**

**Ans:** A database management system (DBMS) is a computerized system that stores data, processes them and provides information in an organized form. Any two examples of DBMS are: MS Access and Oracle.

**g. What is a primary key? Write any two advantages.**

**Ans:** A field which uniquely identifies each and every record in a database is a primary key. Two advantages of the primary key are as follows:

- i. To reduce and control duplication of records in a table.
- ii. To set the relationship between tables.

**h. What is a query?**

**Ans:** A query is an important object of MS Access which is used to extract and arrange the records from a table.

**i. What is data sorting? What are its advantages?**

**Ans:** Data sorting is the process of arranging the records in ascending or descending order according to the specified field/fields.

The following are the advantages of data sorting:

- Quick retrieval of specific information.
- Systematic arrangement of records.

**5. Write down the output of the given program. [2]**

DECLARE SUB view(a)

CLS

A=3

CALL view (a)

END

SUB view(a)

FOR X=1 TO 6

PRINT a;

If a MOD 2 = 0 THEN

a=a/2

ELSE

a=a\*3+1

ENDIF

NEXT X

END SUB

**Ans: Dry Run Table:**

Var.	Var.	O/P	Condition
A	X	3 10 5 16 8 4	A MOD 2=0
3	1		3 MOD 2=0 1=0 NO
10	2		10 MOD 2=0 0=0 YES
5	3		5 MOD 2=0 1=0 NO
16	4		16 MOD 2=0 0=0 YES
8	5		8 MOD 2=0 0=0 YES
4	6		4 MOD 2=0 0=0 YES
2	7	Loop terminates	

The series generated by the above program is 3, 10, 5, 16, 8, 4

**6. Rewrite the given program after correcting the bugs. [2]**

REM to add more records in an existing data file.

OPEN "ADDREC.DAT" FOR INPUT AS #1

DO

INPUT "Enter name, Post and Salary";N\$, P\$, S\$

WRITE #1, N\$, P\$, S

INPUT "Add More Records(Y/N)";more\$

LOOP WHILE CASE\$(more\$)="Y"

END

Ans: After Debugging:

```

REM to add more records in a data file.
OPEN "ADDREC.DAT" FOR APPEND AS #1
DO
INPUT "Enter name, Post and Salary"; N$, P$, S
WRITE #1, N$, P$, S
INPUT "Add More Records(Y/N)"; more$
LOOP WHILE UCASE$(more$)="Y"
CLOSE #1
END

```

7. Study the following program and answer the given questions. [2]

```

DECLARE FUNCTION test$(A$)
CLS
INPUT "A string"; X$
PRINT test$(X$)
END

```

```

FUNCTION test$(A$)
FOR K=LEN(A$) TO 1 STEP -1
OK$=OK$+MID$(A$,K,1)
NEXT K
test$=OK$
END FUNCTION

```

Questions:

- a. What are the formal and actual parameters in the above program?

Ans: Formal parameter: A\$, and the Actual parameter: X\$ .  
b. What are the library functions used in the program?

Ans: Len(), MID\$()

## Group 'C' (16 Marks)

8. Convert/Calculate as per the instruction. [4x1=4]

a.  $(CCA)_{16} = (?)_2$

Ans:

Hexadecimal	Binary
A	1010
B	1011
C	1100
D	1101
E	1110

Arranging bits from the right.

Given Hexa-Decimal Number	C	C	A
Equivalent to Binary 4 bits	1100	1100	1010

Hence,  $(CCA)_{16} = (110011001010)_2$ 

b.  $(654)_{10} = (?)_8$

Ans:  $(654)_{10}$ 

	Rem
8	654
8	81
8	10
	1

$(654)_{10} = (1216)_8$

c.  $(111011)_2 \div (110)_2$

Ans:  $100) 111011$  (1110 Quotient

$$\begin{array}{r}
\underline{-100} \\
x110 \\
\underline{-100} \\
101 \\
\underline{-100} \\
11 \\
\underline{-00} \\
11 \text{ (Remainder)}
\end{array}$$

d.  $(10101 - 1110)_2 \times (10)_2 = (?)_2$

Ans:  $10101$ 

$$\begin{array}{r}
\underline{-1110} \\
111 \\
111 \\
\underline{\times 10} \\
000 \\
\underline{111x} \\
1110
\end{array}$$

9. a. Write a program in QBASIC that asks a number and finds its FACTORIAL using FUNCTION fact() and FACTORS using SUB procedure factors(). [4]

Ans: `DECLARE FUNCTION fact(n)``DECLARE SUB factor(n)``CLS``INPUT "A number"; n``PRINT "The Factorial of the given number="; fact(n)``CALL factor(n)``END``FUNCTION fact(n)``F=1``FOR Y=1 TO n``F=F*Y``NEXT Y``facto=F``END FUNCTION``SUB factor(n)``FOR Y=1 TO n``IF n MOD Y = 0 THEN PRINT Y;``NEXT Y``END SUB`

- b. Create a sequential data file "info.dat" to retrieve the records with the fields, name of employees, post and salary having salary above Rs. 45,000/- and the post is "Officer". [4]

Ans: OPEN "info.dat" FOR INPUT AS #1

```
CLS
WHILE NOT EOF(1)
INPUT #1, n$, P$, sal
IF UCASE$(P$)="OFFICER" AND sal >45000 THEN
PRINT n$, P$, sal
END IF
WEND
CLOSE #1
END
```

10. Write a C program for finding the greater of any two input numbers. [4]

Ans: #include<stdio.h>

```
int main()
{
int m, n;
printf("Enter any two numbers");
scanf("%d%d",&m,&n);
if(m>n)
printf("\n%d is the greater number",m);
else
printf("\n%d is the greater number",n);
return 0;
}
```

OR

Write a program in C language to find whether an input number is Odd or Even.

Ans: #include<stdio.h>

```
int main()
{
int m;
printf("Enter a number");
scanf("%d", &m);
if(m%2==0)
printf("\n%d is an EVEN number",m);
else
printf("\n%d an ODD number",n);
return 0;
}
```

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SET

## SEE QUESTIONS AND ANSWERS

Time: 2 hrs.

Full Marks: 50

### Group 'A' (10 Marks)

1. Answer the following questions in one sentence. [6x1=6]
- Write the names of any two search engines.

Ans: The two search engines are Google and Yahoo.

- What is social media?

Ans: Social media is a web-based application that allows users to connect, interact and share files with several users.

- Which data type is suitable to store photographs of students in MS Access?

Ans: OLE is used to store photographs of students in MS Access.

- Which view is used to modify a table structure in MS Access?

Ans: Design view is used to modify a table structure in MS Access.

- Which statement is used to call sub-procedure?

Ans: CALL is used to call sub-procedure.

- Write any two data types used in C language.

Ans: Float and int are the two data types used in the C language.

2. Write appropriate technical terms for the following. [2x1=2]

- A system of copying data and information residing in a computer into another location.

Ans: Uploading

- A company which provides services of Internet.

Ans: ISP (Internet Service Provider)

3. Write the full form of the following. [2x1=2]

- FTP

Ans: File Transfer Protocol

- MAN

Ans: Metropolitan Area Network

### Group 'B' (24 Marks)

4. Answer the following questions. [9x2=18]

- What is a computer network? Write any two advantages of it.

Ans: The group of computers interconnected with each other through transmission media for the purpose of sharing hardware, software and other resources is called a computer network. The two advantages of it are:

- It helps to share expensive hardware.
- It helps to share the database.

- Define software security. Write any two protection measures for it.

Ans: The measure adopted to protect our computer software from intentional or accidental loss or damage is called software security.

The following are the two protection measures of software security:

- Regular backup
- Password

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SET

## SEE QUESTIONS AND ANSWERS

Time: 2 hrs.

Full Marks: 50

## Group 'A' (10 Marks)

1. Answer the following questions in one sentence: [6x1=6]

- a. Write the names of any two popular websites.

Ans: The two popular websites are [www.google.com](http://www.google.com) and [www.nepalnews.com](http://www.nepalnews.com).

- b. What is communication media?

Ans: The media through which our data travels from one place to another is communication media or a transmission channel.

- c. Which data type is suitable to store details of a student in MS Access?

Ans: A memo or long text is used to store details of a student in MS Access.

- d. Which view is used to view the data in the table structure in MS Access?

Ans: Datasheet view is used to view the data in the table structure in MS Access.

- e. How do you call a user-defined function in function procedure?

Ans: By rewriting the UDF function name in the main module we call a function procedure.

- f. Write any two keywords used in C language.

Ans: Void and struct are the two keywords used in C language.

2. Write the appropriate technical terms for the following. [2x1=2]

- a. A system of copying data and information residing from a remote computer into another location.

Ans: Downloading

- b. A law to govern cyber security.

Ans: Cyber law

3. Write the full form of the following. [2x1=2]

- a. PPP

Ans: Point-to-Point Protocol

- b. MODEM

Ans: Modulator and Demodulator

## Group 'B' (24 Marks)

4. Answer the following questions. [9x2=18]

- a. What is a local area network (LAN)? Write any two advantages of it.

Ans: The set of computers interconnected with each other mostly with cable media in a specific area for the purpose of sharing hardware, software and other resources is called a local area network (LAN). The two advantages of it are:

- Data transfer rate is faster.
- Easy to set up.

- b. Define hardware security. Write any two protection measures for it.

Ans: The provision of securing tangible parts of a computer from intentional or accidental loss or damage is called hardware security.

The two protection measures of hardware are as follows:

- Regular Maintenance
- Insurance

- c. What is a web browser? Write any two popular browsers.

Ans: An application software which runs in the client's computer and acts as a waiter/waitress of a restaurant for providing service to the user is a web browser. The two popular web browsers are Google Chrome and Mozilla Firefox.

- d. Define e-business. Write any two demerits of it.

Ans: A business that includes the process of buying and selling goods and services through the Internet is called e-business.

The following are the two demerits of e-business:

- (i) Insecurity
- (ii) Expensive to set up

- e. Write any two positive impacts of ICT in your society.

Ans: The two advantages of ICT are:

- (i) Sharing of ideas, views and opinions
- (ii) Cheaper means of communication

- f. What is a database? Write any two advantages of it.

Ans: A database is the collection of logically related records that enhances/supports scientific and systematic access to the records.

The two advantages of database are as follows:

- It helps to reduce the duplication of data.
- It helps in faster access to data.

- g. What is a foreign key? Write its significance.

Ans: The primary key which sets the relationship between two or more tables is called a foreign key. The primary key of one table in relation to another becomes a foreign key.

It plays a significant role in setting the relationship in RDBMS between two or more tables.

- h. Define attribute and tuple.

Ans: The column of a database table is called an attribute.

The row of a database table is called a tuple or often a record.

- i. Define query. Write any two uses of it.

Ans: Query is an object of MS Access that allows the user to analyze the data in a database table.

The following are the two uses of a query:

- It allows to set criteria for data manipulation.
- It allows to put formula for specific calculations.

5. Write the output of the given program (Workout with a dry run). [2]

DECLARE SUB OPS(A)

CLS

A=1

CALL OPS(A)

END

SUB OPS(A)

FOR p=1 TO 5

PRINT A;

A=A+p

NEXT J

END SUB

Ans: Dry run

A	p (1 TO 5)
1	1
1 + 1 = 2	2
2 + 2 = 4	3
4 + 3 = 7	4
7 + 4 = 11	5

Output: 1, 2, 4, 7, 11

6. Rewrite the given program after correcting the bugs. [2]

REM program to generate 1, 2, 4, 7, 11, .... upto the 10th terms

DECLARE SUB series(A)

CLS

A=1

CALLING series(A)

END

SUB series(A)

FOR K = 1 to 10

PRINTF A;

A=A+B

NEXT K

END series ()

Soln: Debugged program

DECLARE SUB series(A)

CLS

A=1

CALL series(A)

END

SUB series(A)

FOR K = 1 to 10

PRINT A;

A=A+K

NEXT K

END SUB

7. Study the following program and answer the given questions: [2]

DECLARE FUNCTION find (N)

X = 10

Z = find (X)

PRINT Z

END

FUNCTION find (N)

FOR j=1 TO N

SM=SM+j

NEXT j

Yokeho = SM

END FUNCTION

- a. What is the name of the function of the procedure above?

Ans: "find" is the name of the function in the above program.

- b. How many times does the statement SM=SM+J execute in the above program?

Ans: The statement sm=sm+j executes 10 times in the above program.

Group 'C' (16 Marks)

8. Convert/Calculate as per the instruction: [4x1=4]

- a.  $(1111101)_2$  into Hexadecimal

Soln:

Hexadecimal	Binary
A	1010
B	1011
C	1100
D	1101
E	1110

Arranging bits from RIGHT.

Given Binary Number	0111	1101
Equivalent to Hexa- Decimal Number	7	D

Therefore,  $(1111101)_2 = (7D)_{16}$ .

- b.  $(123)_{10}$  into Binary

Soln:

REM		
2	123	1
2	61	1
2	30	0
2	15	1
2	7	1
2	3	1
		1

$(123)_{10} = (1111011)_2$

c.  $(1010)_2 \times (101)_2 = (?)_2$

Soln: 1010

$\times 101$

1010

0000x

1010xx

110010

d. Divide  $(101110)_2$  by  $(110)_2$

Soln: 110) 101110 (111 quotient

-000

1011

-110

1011

-110

1010

-110

100

9. Answer the following questions. [4×2=8]

a. Write a program in QBASIC that asks the length and breadth of a box and calculates its volume and perimeter. Create a user-defined function to calculate volume and a subprogram to calculate perimeter. [Hint: (Volume = LxBxH, Perimeter=2x(L+B))] [4]

Ans: DECLARE FUNCTION vol (l, b, h)

DECLARE SUB peri (l, b)

CLS

INPUT "Enter length and breadth and height"; l, b, h

CALL peri (l, b)

v = vol (l, b, h)

PRINT "Volume="; v

END

SUB peri (l, b)

p = 2\*(l+b)

PRINT "Area is"; p

END SUB

FUNCTION vol (l, b, h)

vol = l\*b\*h

END FUNCTION

b. Write a program to create a sequential data file "staff.dat" to store the staff's name, salary and post according to the user's choice. [4]

Ans: OPEN "staff.dat" FOR OUTPUT AS #1

CLS

up:

INPUT "Name, salary and post of staff"; n\$, s, p\$

WRITE #1, n\$, s, p\$

INPUT "Press Y to add more records"; x\$

IF UCASE\$(x\$) = "Y" THEN GOTO up

CLOSE #1

END

10. Write a program that asks for a number and check whether it is divisible by 5 and 7 or not. [4]

Ans: #include <stdio.h>

int main ( )

{

int n;

printf("Enter any number");

scanf("%d", &n);

if (n%5==0 && n%7==0)

{

printf("%d is divisible by 5 and 7 both", n);

}

else

{

printf("%d is not divisible by 5 and 7 both", n);

}

return 0;

}

OR

Write a program in C language to display the first 10 even numbers.

Ans:

#include <stdio.h>

int main ( )

{

int i;

for(i = 2; i<=20; i=i+2)

{

printf("%d \t", i);

}

return 0;

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