Blueprint (Term – 2)

	SECTION				TOTAL
	A	**B**	**C**		
UNIT I					
Data Structure: Stack	2	3			5
UNIT II					
Evolution of networking					
Data communication terminologies			2		
Transmission media	1		1		
Network devices			1		10
Network topologies and Network types			1	2	
Network protocol	1				
Introduction to web services			1		
UNIT III					
Database concepts					
Relational data model	2				
Structured Query Language	2	1			
	1	2	4		20
	1	3			
Aggregate functions, group by, having clause, joins	1				
	1				
Interface of python with an SQL database	2				
Total	**14 (7)**	**9 (3)**	**12 (3)**		**35**

SAMPLE PAPER – 01
TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35   **Time: 2 hours**

General Instructions

The question paper is divided into 3 sections – A, B and C
Section A, consists of 7 questions (1-7). Each question carries 2 marks.
Section B, consists of 3 questions (8-10). Each question carries 3 marks.
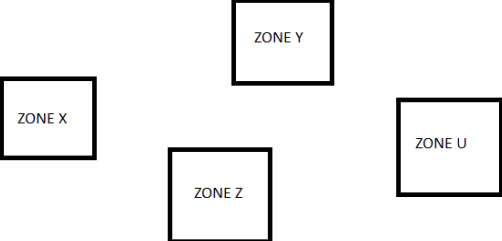*Section C, consists of 3 questions (11-13). Each question carries 4 marks.*
Internal choices have been given for question numbers 7, 8 and 12.

		SECTION -A Each question carries 2 marks	
Q. NO.	**Part No.**	**Questions**	**Marks**
1		Give any two characteristics of stacks.	2
2	(i)	Write the full form of ARPANET.	1
	(ii)	Out of the following, which transmission media requires a Line of Sight? Satellite, Laser, Microwave, Radio waves	1
3		… **Name1 VARCHAR(20)** **Name2 CHAR(20),** … If **Name1** stores value as 'Ram' and **Name2** stores value as 'Rama', then **Name1** will consume ____ characters''' space and **Name2** will consume ____ characters' space.	2
4		A resultset is extracted from the database using a cursor object by giving the following statement: data = cursor.fetchall() 1. How many records will be returned by the fetchall() function/method if 10 records were returned from the database? 2. What is the data type of 'data' after the execution of the above statement?	2
5		Consider the following table named ACCOUNT and write the output of the following queries: -	2

ACCOUNT

ACNO	C_NAME	BALANCE	TYPE	BRANCH
111	KAMLESH KJMAR	50000	SAVING	JAIPUR
112	SANDEEP JAIN	25000	SAVING	UDAIPUR
113	RAJESH SHARMA	30000	CURRENT	AJMER
114	OMESH	20000	CURRENT	JAIPUR
115	RITIK GUPTA	70000	SAVING	KOTA

a) SELECT SUM(BALANCE) FROM ACCOUNT;
b) SELECT MAX(BALANCE), MIN(BALANCE) FROM ACCOUNT;
c) SELECT COUNT(*) FROM ACCOUNT WHERE TYPE="SAVING";
d) SELECT AVG(BALANCE) FROM ACCOUNT WHERE ACNO IN(111,113);

6	(i)	Monika wants to see how many databases have already been developed in MySQL on her machine. What query she should write?	1
	(ii)	What is Join?	1
7		Consider the tables Item & Invoice:	2

Item

Item_No	Item_Name	Item_Price	Item_DOE
536	Soap	5.00	2022-11-30
204	Paste	10.00	2022-04-30
427	Tea	3.00	2022-07-31
1027	Oil	2.00	2022-10-31
1038	Toffee	6.00	2022-09-30

Invoice

Invoice_Id	Invoice_DT	Invoice_Amt	Item_No
10001	2022-01-02	15520.00	536
10002	2022-01-05	10320.00	204
10005	2022-01-09	10770.00	427
10011	2022-01-25	10000.00	1027
10028	2022-01-27	12000.00	1038

What will be the Primary Key, Degree and Cardinality of **Item** relation? Also, specify the reasons.

OR

What will be the Foreign Key, Degree and Cardinality of **Invoice** relation? Also, specify the reasons

		SECTION – B **Each question carries 3 marks**	
8		A company having a dictionary of various Departments and Number of computers (PC) available as key-value pairs. Write a program, with separate user-defined functions to perform the following operations: ● Push the keys (name of the Department) of the dictionary into a stack, where the corresponding value (Number of PC) is 25 or more. ● Pop and display the content of the stack. **For example** If the sample content of the dictionary is as follows: SETUP={"HR":10, "QUALITY":25, "SUPPORT":50, "PRODUCTION":20, "SUPPLY":25, } **The output from the program should be:** QUALITY SUPPORT SUPPLY **OR** A programmer wants to prepare a stack from the given list of integer elements, only for the numbers which are divisible by 3. Help him to create a program with user-defined functions which perform the following operations based on this list. ● Traverse the content of the list and push the numbers into a stack which are divisible by 3.	3

		● Pop and display the content of the stack. **For Example:** If the Sample Content of the list is as follows: N=[3,5,10,13,21,23,45,56,60,78] **Sample Output of the code should be:** 3,21,45,60,78	
9	(i)	A table TEACHER has attributes CODE, NAME, POST, CATEGORY. Write down the command to delete the attribute CATEGORY from this table.	1

	(ii)	Consider the following SQL statement: -
		    S1: CREATE TABLE employee (eno CHAR(3), name VARCHAR(20));
		    S2: INSERT INTO employee VALUES ('E01',RAHUL DRAVID');
		From S1 and S2, which one is DDL and which one is DML?
			2

10		Write the queries to create a database named as '**Company**' and then Create the following Table **STAFF** with use of NOT NULL and Primary Key constraints as described below: - **TABLE -STAFF**	3

StaffID	Char type data with length 5	PRIMARY KEY
FirstName	varchar type data with length 20	NOT NULL
LastName	varchar type data with length 15	
IsQualified	Char type data with length 4	

SECTION C
Each question carries 4 marks

11		Consider following tables and answer queries (i) to (iv)	4

SUPPLIER

SNO	SNAME	CITY
1	ABC Pvt	NEW DELHI
2	INDIA Enterprises	JAIPUR
3	Deep Ltd	UDAIPUR
4	G&G Corp	JAIPUR

ITEM

CODE	I_NAME	PRICE	SNO
C1	COLD DRINK	150	2
B2	BISCUITS	100	3
T3	TEA	200	1

a) Display Item code and item name whose price is more than 100 in the descending order of price.
b) Show Item name and their respective supplier name.
c) Display Supplier no, supplier name who have supplied item for which item code is B2.
d) List the Item name, price, and supplier name of item(s) which have been supplied by a supplier of JAIPUR.

12	(i)	Write the name of any four types of network topologies. OR What is the difference between XML and HTML?	2
	(ii)	Identify the Switching Technique: a) In this technique the resources are reserved for the duration of the data transfer process. b) In this technique the data is divided into smaller units before transmission.	2
13		ABC Corp. has set up its Branch at Srinagar for its office and web-based activities. It has 4 Zones of buildings as shown in the diagram: ZONE Y ZONE X ZONE U ZONE Z Branch to Branch Distance is: Number of Computers: a. Suggest the most suitable place (i.e., Zone) to house the ERP and BI Server of this organization with a suitable reason. b. Which device will you suggest to be placed/installed in each of these ZONEs to efficiently connect all the computers within these blocks/centers. c. Suggest the placement of a Repeater in the network with justification. b) Which is the most economic type of internet connection for the selected topology?	4

Branch to Branch Distance is:

Zone X to Zone Z	70m
Zone Z to Zone Y	60m
Zone Y to Zone X	135m
Zone Y to Zone U	70m
Zone X to Zone U	165m
Zone Z to Zone U	80m

Number of Computers:

Zone X	50
Zone Z	130
Zone Y	40
Zone U	15

SAMPLE PAPER – 02
TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35   Time: 2 hours

General Instructions

The question paper is divided into 3 sections – A, B and C
Section A, consists of 7 questions (1-7). Each question carries 2 marks.
Section B, consists of 3 questions (8-10). Each question carries 3 marks.
Section C, consists of 3 questions (11-13). Each question carries 4 marks.
Internal choices have been given for question numbers 7, 8 and 12.
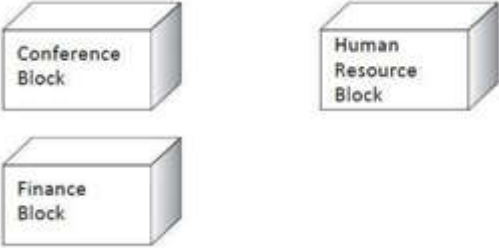
Q. No.	Part No.	SECTION -A Each question carries 2 marks Questions	Marks
1		Write any two possible operations in data structure.	2
2	(i)	Write the full form of WWW.	1
	(ii)	Out of the following, which is the fastest wired medium of Transmission? Telephone Cable, Twisted Pair Cable, Optical Fibre Cable	1
3		(a) What is the maximum value that can be stored in NUMERIC(6,2) ? (b) What should be the data type for the column Rate storing values less than Rs. 1000, e.g., 400.40 ?	2
4		A resultset is extracted from the database using a cursor object by giving the following statement: data = cursor.fetchall() 1. How many records will be returned by the fetchall( ) function/method if no record was returned from the database? 2. What is the length of 'data' after the execution of the above statement?	2
5		Write the output of the queries (a) to (d) based on the table, PLAYER given below:	2

PLAYER

PID	PNAME	GENDER	GAME	RANK
P01	JASPRIT	M	CRICKET	5
P02	SAYNA	F	BADMINTON	9
P03	SANIYA	F	TENNIS	15
P04	VIRAT	M	CRICKET	1
P05	LAKSHYA	M	BADMINTON	51

a) SELECT PNAME, GAME FROM PLAYER WHERE GENDER="F";
b) SELECT DISTINCT GAME FROM PLAYER;
c) SELECT PID, PNAME, RANK FROM PLAYER
   WHERE GAME="CRICKET" ORDER BY RANK;
d) SELECT * FROM PLAYER
   WHERE GENDER<>"M" AND RANK<10;

Q. No.	Part No.	Questions	Marks
6	(i)	Rohan wants to use a database titled as "Games" which has already been developed in MySQL on his machine. What query he should write?	1

	(ii)	What are the different types of join in SQL?	1
7		**Consider the table: PRODUCT**	2

Prod_Id	Prod_Name	Prod_DOM	Prod_Price	Prod_Qty
10001	TV	2022-01-02	15520.00	536
10002	Refrigerator	2022-01-05	10320.00	204
10005	Washing Machine	2022-01-09	10770.00	427
10011	Tablet	2022-01-25	10000.00	1027
10028	Laptop	2022-01-27	22000.00	1038
10039	Computer	2022-05-26	22800.00	103

(a) Identify the degree and cardinality of the Product table
(b) Which field should be made the Primary key & Candidate Keys?

OR

Consider the table **SALE** given below:

Sale_ID	Prod_ID	Discount
S001	10001	1000
S002	10002	2000
S002	10001	1000
S003	10003	500

(a) Identify the degree and cardinality of the Sale table.
(b) Identify the alternate keys from the Product table and which field will be considered as foreign key in the Sale Table if the tables Product & Sale are related in a database.

		SECTION – B **Each question carries 3 marks**	
8		JAVED has created a dictionary containing names and marks as key-value pairs of 5 students. Write a program, with separate user-defined functions to perform the following operations: ● Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) are more than 79. ● Pop and display the content of the stack. For example: If the sample content of the dictionary is as follows: R={"RAKESH":70, "OMESH":50, "VISWAS":70, "ANITA":80, "ANUSHRI":90} **The output from the program should be:** ANITA ANUSHRI **OR** Alam has a list containing 10 students' marks. You need to help him create a program with separate user-defined functions to perform the following operations based on this list. ● Traverse the content of the list and push the numbers higher than 33 into a stack. ● Pop and display the content of the stack. **For Example:** If the sample Content of the list is as follows: N=[12, 13, 34, 56, 21, 79, 98, 22, 35, 38] **Sample Output of the code should be:** 34,56,79,98,35,38	3

9	(i)	A table TEACHER has no primary key. Which command will be used to make one of its attribute named CODE its primary key?	1
	(ii)	Name two legal sublanguages of SQL (Structured Query Language).	2
10		Mr. Johnson wants to create a database EMP and then he wants to create a relation named as "Empl" in this database with the following details:	3

Attribute Name	Data expected to be stored	Data Type	Constraint
emp_id	Numeric value consisting of maximum 15 digits	int(15)	Primary Key
emp_name	Variant length string of maximum 50 characters	varchar(50)	Not duplicated and not empty
sal	Decimal point-based numeric value consisting of total 10 digits and 2 digits after decimal point	float(10,2)	
dob	Date type value	Date	

Write the queries for the above tasks.

SECTION C
Each question carries 4 marks

11		Consider following tables and answer queries (a) to (c) and write down the output of (d) : -	4

CUSTOMER

Cust_ID	CNAME	GENDER	CITY	CLUB_ID
C01	DEVESH	M	NEW DELHI	101
C02	SURAJ	M	JAIPUR	102
C03	SHEELA	F	UDAIPUR	102
C04	MEENAKSHI	F	JAIPUR	101
C04	AAKRITI	F	UDAIPUR	103

CLUB

CLUB_ID	CLUB_NAME	FEES
101	YOGA	800
102	MUSIC	1000
103	SPORTS	2000

a) Display Customer name along with their respective club name.
b) Show Customer name, customer id who have joined MUSIC Club.
c) Display Customer name, gender and club name of all customers who live in JAIPUR.
d) SELECT CNAME,CLUB_NAME FROM CUSTOMER,CLUB
WHERE CUSTOMER.CLUB_ID=CLUB.CLUB_ID and GENDER ="M";

12	(i)	Write the name of any four factors, which are essential to keep in mind while selecting a network topology. **OR** What is a Web Page and how is it different from a Website? Also, explain the concept of Index web-page?	2
	(ii)	Identify the Switching type based on the following characteristics :	2

		(a) Dedicated path/connection (b) The bandwidth used is dependent on actual data transmitted	

13		XYZ CONSULTANTS is a professional consultancy company. The company is planning to set up new offices in India with its hub at Gurugram. As a network adviser, you have to understand their requirements and suggest to them the best available solutions.
		
		Block-to-Block distance (in Mtrs.):
		
		Expected Number of Computers to be installed in each block:
		
		a) What will be the most appropriate block where the organization should plan to install their server?
		b) Draw a block-to-block cable layout to connect all the buildings in the most appropriate manner for efficient communication.
		c) What will be the best possible connectivity out of the following to connect the new set-up of offices in Dehradun with its London-based office?
		    (i) Infrared (ii) Satellite Link (iii) Ethernet Cable
		d) Which of the following devices will you suggest to connect each computer in each of the above buildings?
		    (i) Gateway (ii) Switch (iii) Modem
			4

Block-to-Block distance (in Mtrs.):

Block (From)	Block (To)	Distance
Human Resources	Conference	60
Human Resources	Finance	60
Conference	Finance	120

Expected Number of Computers to be installed in each block:

Block	Computers
Human Resources	125
Conference	25
Finance	60

SAMPLE PAPER – 03
TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35   **Time: 2 hours**

General Instructions

The question paper is divided into 3 sections – A, B and C
Section A, consists of 7 questions (1-7). Each question carries 2 marks.
Section B, consists of 3 questions (8-10). Each question carries 3 marks.
Section C, consists of 3 questions (11-13). Each question carries 4 marks.
Internal choices have been given for question numbers 7, 8 and 12.

		SECTION -A Each question carries 2 marks	
Q. No.	Part No.	Questions	Marks
1		Give a few application areas of the stack.	2
2	(i)	(a) What is the full form of IP? (b) What is the full form W3C?	1
	(ii)	Why is fiber optic transmission media faster as compared to other wired transmission media?	1
3		What should be the data type for the column DOB in a table STUDENT, e.g., 30-06-2002 What format does the SQL follow to store the DOB?	2
4		A resultset is extracted from the database using a cursor object by giving the following statement: data = cursor.fetchmany(5) 1. How many records will be returned by the fetchmany( ) function/method if 10 records were returned from the database? 2. What is the data type of 'data' after the execution of the above statement?	2
5		**Consider the following table FURNITURE. Write output produced by the following queries:**	2

Table: FURNITURE

FID	NAME	DATEOFPURCHASE	COST	DISCOUNT
B001	Double Bed	03-Jan-2018	45000	10
T010	Dining Table	10-Mar-2020	51000	5
B004	Single Bed	19-Jul-2021	22000	0
C003	Long Back Chair	30-Dec-2016	12000	3
T006	Console Table	17-Nov-2021	15000	12
B006	Bunk Bed	01-Jan-2021	28000	14

(a) SELECT SUM(DISCOUNT) FROM FURNITURE WHERE COST>15000;
(b) SELECT MAX(DATEOFPURCHASE) FROM FURNITURE;
(c) SELECT * FROM FURNITURE WHERE DISCOUNT>5 AND FID LIKE "T%";
(d) SELECT NAME , DISCOUNT FROM FURNITURE
     WHERE COST BETWEEN 21000 AND 30000;

6	(i)	Vaibhav wants to use a database titled "School" which has already been developed in MySQL on his machine but before using this database he wants to check the list of databases which have already been developed in MySQL on this machine. What query he should write?	1
	(ii)	What is Natural Join?	1
7		These are two tables with the following details:	2

Invoice

Invoice_Id	Invoice_DT	Invoice_Amt	Cust_Id*
10001	2021-01-02	15528.00	536
10002	2021-01-05	10326.00	204
10005	2021-01-09	10772.00	427

Customer

C_ID	Cust_name
204	Abraham
205	Brijendra
427	Kusum
536	Mrinal

*Referenced from Primary key Column of the Customer table.
 a) What will be the Primary Key in the invoice table? Also, specify the reasons to be selected.
 b) What will be the Degree and Cardinality of Customer table?
                              OR
 a) What will be the Degree and Cardinality of Invoice table?
 b) What will be the Foreign Key in the invoice table? Also, specify the reasons to be selected.

		SECTION – B **Each question carries 3 marks**	
8		Nivedita has started a new year's resolution to read 12 non fiction books by the end of 2022. For this purpose she has bought 20 such books. She stores the data in a dictionary as book_name,rating as key, value pair. Help her out a bit to organize her collection with help of Stack Data Structure. Write a program, with separate user defined functions to perform the following operations: ● Push the keys (book_name) of the dictionary into a stack, where the corresponding value (rating) are more than 8. ● Pop and display the content of the stack. For example: If the sample content of the dictionary is as follows: - B={"AI 2041: Ten Visions for Our Future":7.9, "Beginners: The Transformative Joy of Lifelong Learning":8.5, "Bravey: Chasing Dreams, Befriending Pain, and Other Big Ideas":9, "Chatter: The Voice in Our Head, Why It Matters, and How to Harness It":8.2, "The Code Breaker: Jennifer Doudna, Gene Editing, and the Future of the Human Race":7.5} **The output from the program should be:** Beginners: The Transformative Joy of Lifelong Learning, Bravey: Chasing Dreams, Befriending Pain, and Other Big Ideas, Chatter: The Voice in Our Head, Why It Matters, and How to Harness It	3

OR

Raghav has created a vocabulary list. You need to help him create a program with separate user defined functions to perform the following operations based on this list.
● Traverse the content of the list and push the entries having less than 7 charecters into a stack.
● Pop and display the content of the stack.

For Example:
If the sample Content of the list is as follows:
W=['Elucidate', 'Haughty', 'Pacify', 'Quip', 'Rapport', 'Urbane', 'Young','Zenith']

Sample Output of the code should be:
Pacify,Quip,Urbane,Young,Zenith

9	(i)	Differentiate ALTER TABLE and UPDATE command.	1
	(ii)	What is DDL? Identify the DML command(s) from the following commands: CREATE, UPDATE, INSERT, ALTER, DROP	2
10		Write a SQL statement to create a table named **Country** including columns country_id,country_name and region_id and make sure that no duplicate data against column country_id will be allowed at the time of insertion.	3

Attribute Name	Data type	Constraint
Country_id	char data type of length 4	Should not be empty and should be unique
Country_name	variable length character type with a length of 40	Should not be empty
Region_id	decimal with length of 10 with a precision of 0	Should not be empty

Write a query to describe the structure of this table after creation?

SECTION C
Each question carries 4 marks

11		Consider following tables and answer queries (i) to (iv): -	4
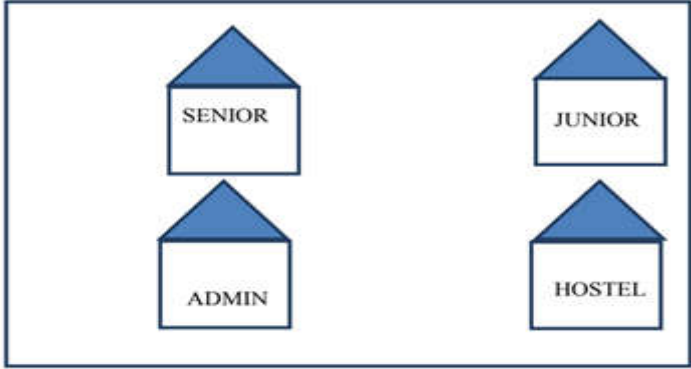
WORKER

WID	WNAME	JOB	SALARY	DNO
1001	RAHUL SHARMA	CLERK	15000	D03
1002	MUKESH VYAS	ELECTRICIAN	11000	D01
1003	SURESH	FITTER	9000	D02
1004	ANKUR	GUARD	8000	D01

DEPT

DNO	DNAME	LOCATION	MANAGER
D01	PRODUCTION	GROUND FLOOR	D K JAIN
D02	ACCOUNTS	1ST FLOOR	S ARORA
D03	SECURITY	1ST FLOOR	R K SINGH

a) How many departments are there on the first floor?
b) Display Worker name and their respective jobs whose name contains the

		string 'ESH'. c) Display the average salary of workers who are working in the "PRODUCTION" department. d) Display Worker name, Job and their respective manager.	
12	(i)	Illustrate how five (5) computers can be connected to each other using the star topology of the network. Write any two advantages of the star topology network. OR How is a website different from a web-service?	2
	(ii)	Identify the Switching type based on the following characteristics : - (a) Failure in the links does not stop the delivery of the data as these packets can be routed from other paths as well (b) Analog telephone network uses this technique	2
13		Kendriya Vidyalaya Jawahar Nagar is setting up the network between its Different Wings of school campus. There are 4 wings named as – SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H).	4

Distance between various wings are given below:

Wing A to Wing S	100m
Wing A to Wing J	200m
Wing A to Wing H	400m
Wing S to Wing J	300m
Wing S to Wing H	100m
Wing J to Wing H	450m

Number of Computers installed at various wings are as follows:

Wing	No. of Computers
Wing A	20
Wing S	150
Wing J	50
Wing H	25

a) Suggest the best wired medium and draw the cable layout to efficiently connect various wings of Kendriya Vidyalaya Jawahar Nagar.

b) Name the most suitable wing where the Server should be installed. Justify your answer.

c) Suggest a device and its placement that should be used to connect with the Internet provided by BSNL Telephone Network.

d) Which transmission media will be used to connect the campus with Regional Office to attend the conferences?

SAMPLE PAPER – 04
TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35   **Time: 2 hours**

General Instructions

The question paper is divided into 3 sections – A, B and C
Section A, consists of 7 questions (1-7). Each question carries 2 marks.
Section B, consists of 3 questions (8-10). Each question carries 3 marks.
Section C, consists of 3 questions (11-13). Each question carries 4 marks.
Internal choices have been given for question numbers 7, 8 and 12.

<table>
<tr><td colspan="4" align="center">SECTION –A
Each question carries 2 marks</td></tr>
<tr><td>Q. No.</td><td>Part No.</td><td>Questions</td><td>Marks</td></tr>
<tr><td>1</td><td></td><td>Define stack.</td><td>2</td></tr>
<tr><td rowspan="2">2</td><td>(i)</td><td>Expand the following:
(a) URL
(b) FTP</td><td>1</td></tr>
<tr><td>(ii)</td><td>Compare optical fiber and coaxial transmission media by writing two differences.</td><td>1</td></tr>
<tr><td>3</td><td></td><td>What should be the data type for the column IFSC_Code storing alphanumeric bank code having 11 characters, e.g. SBIN0066200 & data type for the column PINCode storing 6-digit numeric PIN code for any address in India, e.g. 324100</td><td>2</td></tr>
<tr><td>4</td><td></td><td>A resultset is extracted from the database using a cursor object by giving the following statement:
data = cursor.fetchone()
1. What is the data type of 'data' after the execution of the above statement if one record was returned from the database?
2. What is the data type of 'data' after the execution of the above statement if no record was returned from the database?</td><td>2</td></tr>
<tr><td>5</td><td></td><td>Consider the following table and write the output of the following queries:

ACCOUNT table and queries below</td><td>2</td></tr>
<tr><td>6</td><td>(i)</td><td>How to delete the whole database named Student_Data?</td><td>1</td></tr>
<tr><td></td><td>(ii)</td><td>What is the Cartesian product of two tables?</td><td>1</td></tr>
</table>

ACCOUNT

ACNO	C_NAME	BALANCE	TYPE	BRANCH
111	KAMLESH KUMAR	50000	SAVING	JAIPUR
112	SANDEEP JAIN	25000	SAVING	UDAIPUR
113	RAJESH SHARMA	30000	CURRENT	AJMER
114	OMESH	20000	CURRENT	JAIPUR
115	RITIK GUPTA	70000	SAVING	KOTA

a) SELECT TYPE, SUM(BALANCE) FROM ACCOUNT GROUP BY TYPE;
b) SELECT TYPE, MAX(BALANCE), MIN(BALANCE) FROM ACCOUNT
   GROUP BY TYPE;
c) SELECT BRANCH, COUNT(*) FROM ACCOUNT
   GROUP BY BRANCH HAVING COUNT(*)>1;
d) SELECT TYPE FROM ACCOUNT
   GROUP BY TYPE HAVING AVG(BALANCE)>40000;

7		Consider the table "Item" and answer the following questions:	2

Item_No	Item_Name	Item_Price	Item_DOE
1001	Soap	40.00	2022-11-30
1005	Paste	40.00	2022-04-30
1011	Tea	360.00	2022-07-31
1027	Tea	195.00	2022-10-31
1038	Toffee	3.00	2022-11-30

a. What is the degree and cardinality of this table?
b. Which field(s) can be selected as the candidate key?

OR

a. What is the degree and cardinality of this table after 3 more records insertion and 1 more attribute addition?
b. Which field can be selected as the primary key?

		SECTION – B **Each question carries 3 marks**	
8		YASH MOTORS have a dictionary of top performer EMPLOYEES and their SALES as key-value pairs of COMPANY. Write a program, with separate user-defined functions to perform the following operations: ● Push the keys (name of the EMPLOYEE) of the dictionary into a stack, where the corresponding value (SALES) is greater than 500000. ● Pop and display the content of the stack. **For example:** If the sample content of the dictionary is as follows: SALES={"SUNIL":700000, "ROHIT":400000, "RAJEEV":350000, "MAYANK": 750000, "RAHUL":1000000, } **The output from the program should be:** SUNIL MAYANK RAHUL Stack is empty now **OR** Saroj have a list of 10 numbers. You need to help him create a program with separate user-defined functions to perform the following operations based on this list. ● Traverse the content of the list and push the numbers into a stack which are divisible by 5. ● Pop and display the content of the stack. **For Example:** If the sample Content of the list is as follows: N=[2,5,10,13,20,23,45,56,60,78] **Sample Output of the code should be**: 5,10,20,45,60 Stack is empty now	3
9	(i)	Differentiate ALTER TABLE and UPDATE command?	1
	(ii)	Explain the difference between DDL and DML commands	2
10		Mrs. Akila has created a database named SAMPLE, after creating database she opened this database and then she wants to create a table named as "Item" in this database to store records. The table ITEM has the following structure:	3

TABLE:ITEM

Attribute Name	Data Type	Constraint
ITEM_NO	INTEGER	Primary Key
ITEM_NAME	varchar(25)	Not NULL
ITEM_PRICE	float(10,2)	
ITEM_DOE	date	

Write the Queries to create and open this "SAMPLE" database.
Write a Query to create the table ITEM in this database with the above said details.

SECTION C
Each question carries 4 marks

11   **Write queries (a) to (d) based on the tables TEACHER and STUDENT given below:**   4

Table: TEACHER

TEACHERID	NAME	DOB	STUDID	DESIG	SALARY
101	Rana	3-Feb-1989	1	Pgt	5000
102	Ramesh	8-Sep-1980	2	Prt	9000
103	Narayan	19-Jan-1999	3	Tgt	80000
104	Swati	30-Dec-1980	4	Prt	
105	Preeti	06-Apr-1984	1	Pgt	65000

Table: STUDENT

STUDID	STREAM	HOUSENO
1	Science	115
2	Arts	120
3	Commerce	18
4	Home Science	30

(a) To display the average salary of all teachers, designation wise.
(b) To display the name and respective stream name of each teacher whose salary is more than 65000
(c) To display the names of teachers whose salary is not known, in alphabetical order
(d) To display student id from the table TEACHER without repetition.

12 (i) Identify the type of topology from the following : -   2
i. Each node is connected with the help of a single cable
ii. Each node is connected with the help of an independent cable with central switching.

OR

Explain the difference between HTTP and HTTPS. (any two)

   (ii) What is the Data Transfer Rate (DTR)?   2

13   Unicorp Tech Training Ltd. is a Delhi-based organization which is expanding its office set-up to Jaipur. At the Jaipur office, they are planning to have 3 different blocks for Admin, Training, and Accounts-related activities. Each block has a number of computers, which are required to be connected in a network for communication, data, and resource sharing.   4

As a network consultant, you have to suggest the best network-related solutions for them for issues/problems raised by them in (i) to (iv), as per the distances between various blocks/locations and other given parameters.
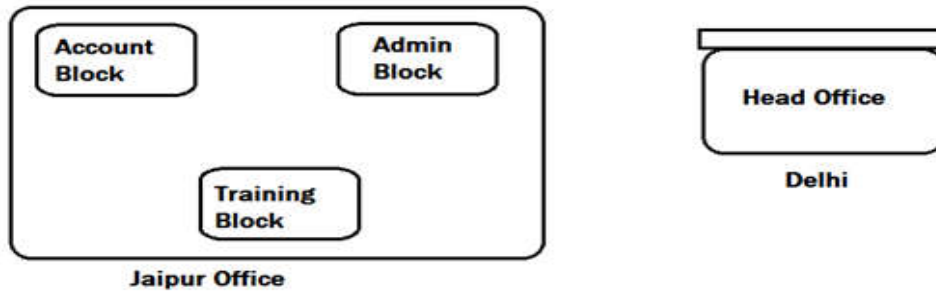
Shortest distances between various blocks/locations:

Admin Block to Accounts Block	310 Metres
Accounts Block to Training Block	160 Metres
Admin Block to Training Block	190 Metres
Delhi Head Office to Jaipur Office	700 Km

Number of computers installed at various blocks are as follows:

Training Block	130
Accounts Block	40
Admin Block	50

i.   Suggest the most appropriate block/location to house the SERVER in the JAIPUR office (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.

ii. Suggest the best-wired medium and draw the cable layout (Block to Block) to efficiently connect various blocks within the JAIPUR office compound.

iii. Suggest a device/software and its placement that would provide data security for the entire network of the JAIPUR office.

iv.   Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the JAIPUR office.

SAMPLE PAPER – 05
TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35   **Time: 2 hours**

General Instructions
The question paper is divided into 3 sections – A, B and C
Section A, consists of 7 questions (1-7). Each question carries 2 marks.
Section B, consists of 3 questions (8-10). Each question carries 3 marks.
Section C, consists of 3 questions (11-13). Each question carries 4 marks.
Internal choices have been given for question numbers 7, 8 and 12.

Q. No.	Part No.	**SECTION -A** **Each question carries 2 marks** Questions	Marks
1		What are the two major Stack operations?	2
2	(i)	Expand the following terms: - WWW , HTTP	1
	(ii)	Write the name of one guided and one unguided media.	1
3		Differentiate between int and float datatype in MYSQL.	2
4		A resultset is extracted from the database using a cursor object by giving the following statement: data = cursor.fetchmany(5) 1. How many records will be returned by the fetchmany( ) function/method if 3 records were returned from the database? 2. What is the data type of 'data' after the execution of the above statement?	2
5		Write the output of the queries (a) to (d) based on the table, **COACH** given below:	2

COACH

NO	CNAME	GAME	FEE
01	KAPIL	CRICKET	50000
02	VIJENDER	BOXING	90000
03	MARIA	TENNIS	15000
04	NEERAJ	ATHLETIC	51000
05	GOPICHAND	CRICKET	10000

a) SELECT SUM(FEE) FROM COACH WHERE GAME ='CRICKET';
b) SELECT MAX(FEE) FROM COACH ;
c) SELECT CNAME, GAME, FEE FROM COACH
   WHERE FEE BETWEEN 51000 AND 10000;
d) SELECT * FROM PLAYER WHERE GAME IN ("CRICKET", "BOXING");

Q. No.	Part No.	Questions	Marks
6	(i)	Which SQL command is used to display existing databases?	1
	(ii)	What is equi join? Explain with a suitable example.	1
7		Consider the table "**Sports**" given below:	2

Sp_id	Sp_Name	Sp_type	Sp_Exp
1001	Cricket	Outdoor	2
1005	Football	Outdoor	4
1011	Hand-ball	Outdoor	5
1027	Chess	Indoor	5
1038	Kho-Kho	Outdoor	4
1050	Hockey	Outdoor	3

Answer the followings:
a. What is the Degree and Cardinality of this table?
b. Which field(s) can be selected as the candidate key(s)?
<div align="center">**OR**</div>
After 2 more tuples insertion and one attribute added into this table. Now answer the following:
a. What is the Degree and Cardinality of this table after above changes?
b. Which field can be selected as the primary key? Also, specify the reason.

<div align="center">**SECTION – B**
Each question carries 3 marks</div>

8		BCCI has created a dictionary containing top players and their runs as key-value pairs of the cricket team. Write a program, with separate user-defined functions to perform the following operations: ● Push the keys (name of the players) of the dictionary into a stack, where the corresponding value (runs) is greater than 49. ● Pop and display the content of the stack. **For example:** If the sample content of the dictionary is as follows: SCORE={"KAPIL":40, "SACHIN":55, "SAURAV":80, "RAHUL":35, "YUVRAJ":110, } **The output from the program should be:** SACHIN SAURAV YUVRAJ **OR** Vikram has a list containing 10 integers. You need to help him create a program with separate user-defined functions to perform the following operations based on this list. ● Traverse the content of the list and push the ODD numbers into a stack. ● Pop and display the content of the stack. **For Example:** If the sample Content of the list is as follows: N=[12, 13, 34, 56, 21, 79, 98, 22, 35, 38] **Sample Output of the code should be:** 13,21,89,35	3
9	(i)	Ms. Shruti has created a table GAMES having attributes ID, GAME, NO_OF_PLAYERS. Later she wants to add a new attribute DURATION of integer type in this table. How can she do this? Write down a full command.	1
	(ii)	Define DDL & DML commands of SQL with example.	2
10		Write a Query to Create a database named as "COMPANY" and after creating write a query to open it?	3

Write a SQL statement to create a table named **Job** under this database **company** as per the following specifications: -.

FIELD NAME	DATA TYPE	REMARKS
JOB_ID	VARCHAR(10)	PRIMARY KEY
JOB_TITLE	VARCHAR(35)	NOT EMPTY
MIN_SAL	INTEGER	
MAX_SAL	INTEGER	
BONUS	INTEGER	

SECTION C
Each question carries 4 marks

| 11 | | **Write queries (a) to (d) based on the tables CUSTOMER and ORDER given below:** | 4 |

TABLE:CUSTOMER

CUSTOMERID	CUSTOMERNAME	CITY	COUNTRY
101	AMAN	JAIPUR	INDIA
102	SURESH	BARANG	GERMANY
103	ANAND	RODIX	MEXICO
104	RISHABH	TENDA	GERMANY
105	AARYAN	KOTA	INDIA

TABLE:ORDER

ORDERID	CUSTOMERID	ORDERDATE
1	101	12/5/2016
2	102	3/8/1990
3	101	21/9/2020

(a)To display customer name with their order id.
(b)To display the total number of customers country-wise.
(c)To display customer names in ascending order who have placed orders.
(d)To display the total number of customers whose city name starts with "J".

| 12 | (i) | Write down any two advantages and disadvantages of Bus topology? | 2 |

OR

Write any two differences between Web Pages and Website.

| | (ii) | List any four advantages of computer networks. | 2 |
| 13 | | TPU University is setting up its academic blocks at Udaipur and is planning to set up a network. The University has 3 academic blocks and one Human Resource Center as shown in the diagram below: | 4 |
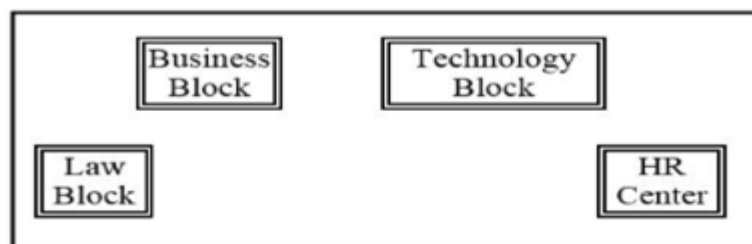
Center to Center distances between various blocks/center is as follows:

Law Block to Business Block	40m
Law Block to Technology Block	80m
Law Block to HR Centre	105m
Business Block to HR Centre	30m
Technology Block to HR Centre	15m

No of computers in various blocks/center is as follows:

Law Block	15
Technology Block	40
HR Centre	115
Business Block	25

a) Suggest an ideal layout for connecting these blocks/centers for wired connectivity.
b) Which device will you suggest to be placed/installed in each of these blocks/centers to efficiently connect all the computers within these blocks/centers.
c) Suggest the placement of a Repeater in the network with justification.
d) The university is planning to connect its admission office in Delhi, which is more than 780 km from the university. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer

TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)
MARKING SCHEME – SET 1

Maximum Marks: 35   **Time: 2 hours**

General Instructions
The question paper is divided into 3 sections – A, B and C
Section A, consists of 7 questions (1-7). Each question carries 2 marks.
Section B, consists of 3 questions (8-10). Each question carries 3 marks.
Section C, consists of 3 questions (11-13). Each question carries 4 marks.
Internal choices have been given for question numbers 7, 8 and 12.

Q. NO.	PART NO.	SECTION -A Each question carries 2 marks ANSWERS	MARKING INSTRUCTION	MARKS
1		Characteristics of Stacks: ● It is a LIFO (Last In First Out) data structure, ● The insertion and deletion happens at one end i.e. from the top of the stack ● The element access is linear in nature	1 mark for each point	2
2	(i)	Advanced Research Projects Agency NETwork.	1 mark for correct expansion	1
	(ii)	Laser and Microwave requires line of sight for the communication	½ mark for each correct answer	1
3		3,20	1 mark for each correct answer	2
4		1. 10 records 2. List	1 mark for each correct answer	2

5		a) SUM(BALANCE)
		    195000
		b) MAX(BALANCE) MIN(BALANCE)
		       70000 20000
		c) COUNT(*)
		    3
		d) AVG(BALANCE)
		    40000
			½ mark for each correct output	2

6	(i)	SHOW DATABASES;	1 mark for correct query	1
	(ii)	A join is used to combine rows from two or more tables, based on a related column between them.	1 mark for each correct definition	1
7		Primary Key=**Item_No** (This column is selected because it can identify all records of the table uniquely and not any value should be null) Degree=**4** Cardinality= **5** **OR** Foreign key=**Item_No** (This column is referenced in this invoice detailed table from Master Table Item's Primary Key column Item_No) Degree= **4** Cardinality=**5**	½ mark for correct field and ½ mark for justification ½ mark each for correct degree and cardinality	2
		SECTION – B Each question carries 3 marks		

8		SETUP={"HR":10, "QUALITY":25, "SUPPORT":50, "PRODUCTION":20, "SUPPLY":25, }
		
		def PUSH(STK,S):
		 STK.append(S)
		def POP(STK):
		 if STK!=[]:
		  return STK.pop()
		 else:
		  return None
		ST=[]
		for k in SETUP:
		 if SETUP[k]>=25:
		  PUSH(ST,k)
		 while True:
		  if ST!=[]:
		   print(POP(ST),end=" ")
		  else:
		   break
		# Or any other appropriate **program code**
		
		OR
		
		N=[3,5,10,13,21,23,45,56,60,78]
		def PUSH(S,N):
		 S.append(N)
		def POP(S):
		 if S!=[]:
		  return S.pop()
		 else:
		  return None
		ST=[]
		for k in N:
		 if k%3==0:
		  PUSH(ST,k)
		 while True:
		  if ST!=[]:
		   print(POP(ST),end=" ")
		  else:
		   break
		# Or any other appropriate **program code**
			1 mark for correct PUSH operation
			1 mark for correct POP operation
			1 mark for correct function calls and displaying the output
			
			Note: Marks to be awarded for any other correct logic given by the student
				3

9	(i)	ALTER TABLE Teacher DROP Category;	1 mark for correct command	1
	(ii)	S1: DDL S2: DML	1 mark for each correct command	2

10		CREATE DATABASE COMPANY;
		
		CREATE TABLE Staff
		(StaffID CHAR (5) PRIMARY KEY,
		   FirstName VARCHAR (20) NOT NULL,
		   LastName VARCHAR (15),
		   IsQualified CHAR(4))
		);
			1 mark for correct
			
			2 marks for correctly creating the table.
				3

		Section C Each question carries 4 marks		
11		a) SELECT CODE,I_NAME FROM ITEM WHERE PRICE>100 ORDER BY PRICE DESC; b) SELECT I_NAME, SNAME FROM SUPPLIER AS S, ITEM AS I WHERE S.SNO=I.SNO; c) SELECT SNO, SNAME FROM SUPPLIER AS S, ITEM AS I WHERE S.SNO=I.SNO AND CODE="B2"; d) SELECT I_NAME,PRICE, SNAME FROM SUPPLIER AS S, ITEM AS I WHERE S.SNO=I.SNO AND CITY="JAIPUR";	1 mark for each correct query	4
12	(i)	Bus, Star, Tree, Mesh, Ring, Hybrid **OR** 	XML	HTML
---	---
New tags can be created	Tags are pre-fixed, new tags cannot be created
It is case sensitive	It is case insensitive
Ordering of tags matters (nesting of tags must be in correct order)	Ordering of tags is immaterial
It focuses on the structure of data	It focuses on the presentation of data
Matching opening tags and closing tags must be there	Closing tags are optional		½ mark for each correct Topology Name 1 mark for each correct difference (Any two)	2
	(ii)	(a) Circuit Switching (b) Packet Switching	1 mark for each correct answer	2
13		(a) The most suitable place (i.e., Zone) to house the ERP and BI Server is Zone Z as it has the most number of computers; thus, cabling cost will be reduced and most traffic will be local. (b) Hub / Switch (c) Repeaters may be placed when the distance between 2 buildings is more than 100 meters. (d) An economic type of internet connection is Dial-up or broadband.	1 mark for each correct answer	4

TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)
MARKING SCHEME – SET 2

Maximum Marks: 35   **Time: 2 hours**

General Instructions

The question paper is divided into 3 sections – A, B and C

Section A, consists of 7 questions (1-7). Each question carries 2 marks.

Section B, consists of 3 questions (8-10). Each question carries 3 marks.

Section C, consists of 3 questions (11-13). Each question carries 4 marks.

Internal choices have been given for question numbers 7, 8 and 12.

Q. NO.	PART NO.	ANSWERS	MARKING INSTRUCTION	MARKS
		SECTION –A **Each question carries 2 marks**		
1		The major operations are: Traversal, Insertion, Deletion, Searching	1 mark for each point (Any two)	2
2	(i)	World Wide Web	1 mark for correct expansion	1
	(ii)	Optical Fiber Cable is the fastest medium of communication in a guided media	1 mark for correct answer	1
3		(a) 9999.99 (b) NUMBER(5,2)	1 mark for each correct answer	2
4		1. Zero 2. Empty List hence the length is zero	1 mark for each correct answer	2
5		a) (table below) b) (table below) c) (table below) d) (table below)	½ mark for each correct Output	2

a)

PNAME	GAME
SAYNA	BADMINTON
SANIYA	TENNIS

b)

GAME
CRICKET
BADMINTON
TENNIS

c)

PID	PNAME	RANK
P04	VIRAT	1
PO1	JASPRIT	5

d)

PID	PNAME	GENDER	GAME	RANK
P02	SAYNA	F	BADMINTON	9

Q. NO.	PART NO.	ANSWERS	MARKING INSTRUCTION	MARKS
6	(i)	USE GAMES;	1 mark for correct query	1
	(ii)	Type of Joins: - a) Cross Join/Cartesian Product b) Equi Join c) Natural Join	1 mark for correct answer	1

| 7 | | (a) Degree= 5, Cardinality= 6
(b)**Primary key= Prod_Id**
[As Primary Key = Candidate Keys - Alternate Keys]
Candidate Keys= Prod_Id, Prod_Name
[As Candidate Keys = Primary Key + Alternate Keys]

OR

(a) **Alternate keys= Prod_Name**
[As Alternate Keys = Candidate Keys - Primary Key]
Foreign Key = Prod_ID (Referenced in Sale Table from Product table's primary key column Prod_Id)
(b) Degree =3, Cardinality=4 | ½ mark each for correct degree and cardinality
½ mark for correct field and ½ mark for justification | 2 |

<div align="center">

SECTION – B
Each question carries 3 marks

</div>

| 8 | | <pre>R={"RAKESH":70,   "OMESH":50,   "VISWAS":70,   "ANITA":80,
"ANUSHRI":90}
def PUSH(S,N):
   S.append(N)
def POP(S):
   if S!=[]:
      return S.pop()
   else:
      return None
ST=[]
for k in R:
  if R[k]>79:
     PUSH(ST,k)
while True:
  if ST!=[]:
    print(POP(ST),end=" ")
  else:
     break</pre><div align="center">**OR**</div><pre>N=[12, 13, 34, 56, 21, 79, 98, 22, 35, 38]
def PUSH(S,N):
   S.append(N)
def POP(S):
   if S!=[]:
      return S.pop()
   else:
      return None
ST=[]
for k in N:
   if k>33:
PUSH(ST,k)
   while True:
      if ST!=[]:
         print(POP(ST),end=" ")
      else:
       break</pre> | 1 mark for correct PUSH operation
1 mark for correct POP operation
1 mark for correct function calls and displaying the output

Note: Marks to be awarded for any other correct logic given by the student | 3 |
| 9 | (i) | ALTER TABLE TEACHER ADD PRIMARY KEY(CODE); | 1 mark for correct command | 1 |
| | (ii) | **DDL** (**D**ata **D**efinition **L**anguage)
DML (**D**ata **M**anipulation **L**anguage) | 1 mark for each correct | 2 |

			sublanguages of SQL	
10		CREATE DATABASE EMP; CREATE TABLE EMPL (EMP_ID INT(15) PRIMARY KEY, EMP_NAME VARCHAR(50) NOT NULL UNIQUE, SAL FLOAT(10, 2) , DOB DATE);	1 mark for creating database. 2 marks for correctly creating the table.	3

<table>
<tr><td colspan="5" align="center">Section C
Each question carries 4 marks</td></tr>
<tr>
<td>11</td>
<td></td>
<td>a) SELECT CNAME,CLUB_NAME FROM CUSTOMER,CLUB
   WHERE CUSTOMER.CLUB_ID=CLUB.CLUB_ID;
b) SELECT CUST_ID,CNAME FROM CUSTOMER,CLUB
   WHERE CUSTOMER.CLUB_ID=CLUB.CLUB_ID and
   CLUB_NAME="MUSIC";
c) SELECT CNAME,GENDER,CLUB_NAME
   FROM CUSTOMER,CLUB
   WHERE CUSTOMER.CLUB_ID=CLUB.CLUB_ID and
   CITY="JAIPUR";
d)

<table>
<tr><td>CNAME</td><td>CLUB_NAME</td></tr>
<tr><td>DEVESH</td><td>YOGA</td></tr>
<tr><td>SURAJ</td><td>MUSIC</td></tr>
</table>
</td>
<td>1 mark for each correct query</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>(i)</td>
<td>The following factors are considered while selecting a topology:
1. Cost
2. Reliability
3. Scalability
4. Bandwidth capacity
5. Ease of installation
6. Ease of troubleshooting
7. Delay involved in routing information from one node to another.

<div align="center">OR</div>
<table>
<tr><td>A web page is a hypertext document provided by a website and displayed to a user in a web browser</td><td>A website typically consists of many web pages linked together in a coherent fashion.</td></tr>
<tr><td>It usually contains content regarding a single entity type.</td><td>It usually contains content regarding several entities.</td></tr>
<tr><td>It can be accessed through web browser.</td><td>It can be accessed using HTTP, DNS (Domain Name System) Protocols.</td></tr>
</table>

The index page is the first page of a website that contains links to other parts of the website</td>
<td>½ mark for each correct factor Name

½ mark for each correct definition of WebPage & Website

1 mark for definition of Index Page</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>(ii)</td>
<td>(a) Circuit Switching
(b) Packet Switching</td>
<td>1 mark for each correct answer</td>
<td>2</td>
</tr>
</table>

| 13 | | (a) Human Resources
(b)

(c) (ii) Satellite Link
(d) (ii) Switch | 1 mark for each
correct answer | 4 |

TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)
MARKING SCHEME – SET 3

Maximum Marks: 35   **Time: 2 hours**

General Instructions

The question paper is divided into 3 sections – A, B and C
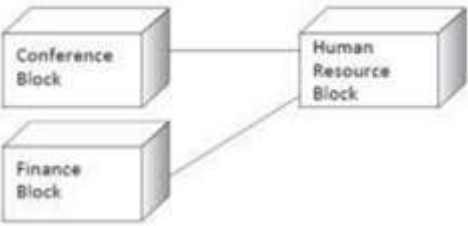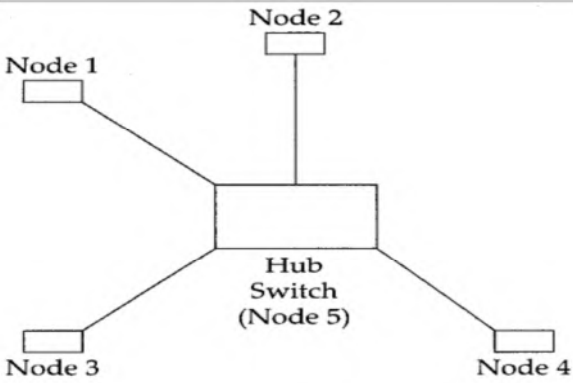Section A, consists of 7 questions (1-7). Each question carries 2 marks.
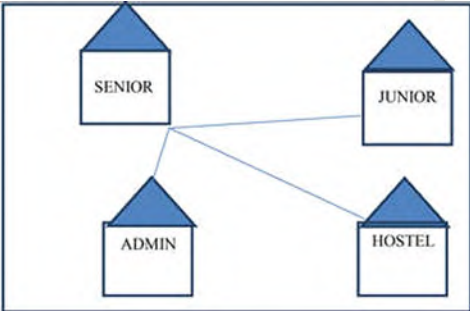Section B, consists of 3 questions (8-10). Each question carries 3 marks.
Section C, consists of 3 questions (11-13). Each question carries 4 marks.
Internal choices have been given for question numbers 7, 8 and 12.

Q.NO.	PART NO.	ANSWERS	MARKING INSTRUCTION	MARKS
		SECTION -A **Each question carries 2 marks**		
1		● Expression evaluation/Conversion (Prefix, Postfix) ● Backtracking (game playing, finding paths, exhaustive searching). ● Memory management (Function Calling) ● Program Counter in Operating System	1 mark for each point (Any two)	2
2	(i)	(a) Internet Protocol (b) World Wide Web Consortium	1 mark for correct expansion	1
	(ii)	Fiber optic transmits data as light, while other wired media transfer data as electricity. Light travels exponentially faster than electricity so fiber optic transmission media is faster.	1 mark for correct answer	1
3		DATE 'YYYY-MM-DD'	1 mark for each correct answer	2
4		1. 5 records 2. A list (datatype) containing 5 tuples	1 mark for each correct answer	2
5		(a)29 (b)17-Nov-2021 (c) <table><tr><td>T006</td><td>Console Table</td><td>17-Nov-2019</td><td>15000</td><td>12</td></tr></table> (d) <table><tr><td>NAME</td><td>DISCOUNT</td></tr><tr><td>Single Bed</td><td>0</td></tr><tr><td>Bunk Bed</td><td>14</td></tr></table>	½ mark for each correct output	2
6	(i)	SHOW DATABASES; USE SCHOOL;	½ mark for correct query	1
	(ii)	A natural join is a type of join operation that creates an implicit join by combining tables based on columns with the same name and data type. Natural join automatically filters out records based on equality on common attribute(s) and eliminates duplicated common attribute(s) from the resultant table.	1 mark for correct definition	1
7		(a) Primary Key=**Invoice_Id** (This column is selected because it can identify all records of the table uniquely and not any value should be null) (b) Degree= **2**	½ mark for correct field and ½ mark	2

		Cardinality= **4** **OR** (a) Degree= **4** Cardinality= **3** (b) Foreign key=**Cust_Id** (This column is referenced in this detailed table from Master Table Customer's Primary Key column C_ID)	for justification ½ mark each for correct degree and cardinality	

<div align="center">

SECTION – B
Each question carries 3 marks

</div>

8		B={"AI 2041":7.9, "Beginners":8.5, "Bravey":9, "Chatter":8.2, "The Code Breaker":7.5}
		
		def PUSH(S,N):
		   S.append(N)
		def POP(S):
		  if S!=[]:
		    return S.pop()
		  else:
		    return None
		BList=[]
		for i in B:
		  if B[i]>8:
		   PUSH(BList,i)
		  while True:
		   if BList!=[]:
		    print(POP(BList),end=" ")
		   else:
		    break
		#Or any other appropriate program code
		OR
		W=['Elucidate', 'Haughty', 'Pacify', 'Quip', 'Rapport', 'Urbane', 'Young','Zenith']
		
		def PUSH(S,W):
		   S.append(W)
		
		def POP(S):
		  if S!=[]:
		   return S.pop()
		  else:
		   return None
		
		WList=[]
		for i in W:
		  if len(i)<7:
		   PUSH(WList,i)
		while True:
		  if WList!=[]:
		   print(POP(WList),end=" ")
		  else:
		   break
		#Or any other appropriate program code
			1 mark for correct PUSH operation
			1 mark for correct POP operation
			1 mark for correct function calls and displaying the output
			
			Note: Marks to be awarded for any other correct logic given by the student
				3

9	(i)	<table><tr><td>ALTER TABLE</td><td>UPDATE</td></tr><tr><td>Used to change/modify the</td><td>Used to change/modify the</td></tr></table>	1 mark for correct command	1

		<table><tr><td>structure of the table</td><td>data in the table</td></tr><tr><td>It is a DDL command</td><td>It is a DML command</td></tr><tr><td>Being a DDL command it cannot be rolled back or undone</td><td>Since it DML command, it can be rolled back or undone</td></tr></table>		
	(ii)	● DDL stands for Data Definition Language ● It is the sub language of SQL ● DDL is used to Create, Modify or to delete the structure of a table/database ● Operation performed through DDL commands can not be rolled back ● DML Commands: UPDATE, INSERT	1 mark for definition of DDL and ½ mark for each correct DML command	2
10		CREATE TABLE Country (COUNTRY_ID char(4) NOT NULL, COUNTRY_NAME varchar(40) NOT NULL, REGION_ID decimal(10,0) NOT NULL, UNIQUE (COUNTRY_ID)); Desc Country; **OR** Describe Country;	2 marks for correctly creating the table. 1 mark for correct command.	3
		SECTION C **Each question carries 4 marks**		

11		a) SELECT COUNT(*) FROM DEPT
		    WHERE Location="1ST FLOOR";
		b) SELECT WNAME, JOB FROM WORKER
		    WHERE WNAME LIKE "%ESH%";
		c) SELECT AVG(SALARY)
		    FROM WORKER NATURAL JOIN DEPT
		    WHERE DNAME="PRODUCTION";
		d) SELECT WNAME, JOB, MANAGER
		    FROM WORKER W, DEPT D WHERE W.DNO=D.DNO;
			1 mark for each correct query	4

12	(i)	 Advantage(s) of Star Topology: 1. Fast Speed 2. If any local computer or link fails, the entire system does not collapse 3. Easy fault detection and isolation 4. Central node control 5. Easier to add/modify node without disturbing the entire network. **OR**	1 mark for correct diagram ½ mark for each correct advantage 1 mark for each correct difference (Any two)	2

S. N.	Web Service	Website
1	Doesn't have a user interface	Has a user interface (GUI)
2	Consumed by any application (like web, native, windows etc.) and require programming knowledge	Consumed by end user and doesn't require programming knowledge
3	Platform independent as they use open protocols	Cross-platform as they require tweaking to operate on different browsers, operating systems, etc.
4	Web services are accessed by HTTP methods	Websites are accessed by using their GUI components – buttons, text boxes, forms, etc.
5	Typically returns XML or JSON files, something that is easily decoded by a programmer	Typically returns HTML pages, images, media files etc.
6	Example, Google maps API is a web service that can be used by websites to display Maps by passing coordinates to it.	Example, https://kvsangathan.nic.in/ is a website that has a collection of related web pages

	(ii)	(a) Packet Switching (b) Circuit Switching	1 mark for each correct answer	2
13		(a) Best wired medium: Optical Fibre OR CAT5 OR CAT6 OR CAT7 OR CAT8 OR Ethernet Cable (b) Senior Wing(S) - Because it has a maximum number of computers. (c) Modem - Placed with the server at Senior Wing (S) (d) Transmission media : Optical Fiber/High Speed Broadband	1 mark for each correct answer	4

TERM - 2 SAMPLE PAPERS : 2022

TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)
MARKING SCHEME- SET 4

Maximum Marks: 35	Time: 2 hours

General Instructions

The question paper is divided into 3 sections – A, B and C

Section A, consists of 7 questions (1-7). Each question carries 2 marks.

Section B, consists of 3 questions (8-10). Each question carries 3 marks.
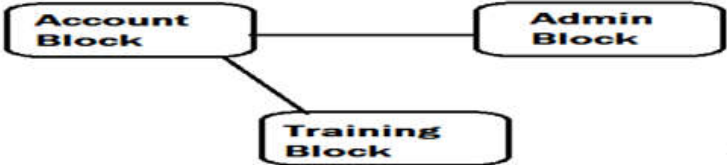
Section C, consists of 3 questions (11-13). Each question carries 4 marks.

Internal choices have been given for question numbers 7, 8 and 12.

<table>
<tr><td colspan="3" align="center">Section -A
Each question carries 2 marks</td><td></td><td></td></tr>
<tr><td>Q. NO.</td><td>PART NO.</td><td>ANSWERS</td><td>MARKING INSTRUCTION</td><td>MARKS</td></tr>
<tr><td>1</td><td></td><td>● A stack is a data structure that allows adding and removing elements at one end only.
● Every time an element is added, it goes on the top of the stack; the only element that can be removed is the element that was at the top of the stack.
● It follows Last In First Out or First In Last Out operations.</td><td>1 mark for each point</td><td>2</td></tr>
<tr><td>2</td><td>(i)</td><td>(a) URL: Uniform Resource Locator/Universal Resource Locator
(b) FTP: File Transfer Protocol</td><td>1 mark for correct expansion</td><td>1</td></tr>
<tr><td></td><td>(ii)</td><td>
<table>
<tr><td>Optical Fiber</td><td>Coaxial Cable</td></tr>
<tr><td>Optical Fiber is used to transmit the signal/data in light form.</td><td>Coaxial Cable is used to transmit the signal/data in electrical form.</td></tr>
<tr><td>The cost of optical fiber is high.</td><td>The cost of coaxial cable is less.</td></tr>
<tr><td>Installation and implementation of optical fiber is difficult.</td><td>Installation and implementation of coaxial cable is easy.</td></tr>
<tr><td>These cables are not affected due to the external magnetic field.</td><td>Coaxial cables are less affected by the external magnetic field.</td></tr>
<tr><td>Its maximum transmission speed is up to 10 Gbps.</td><td>Its maximum transmission speed is up to 10 Mbps.</td></tr>
</table>
</td><td>½ mark for each correct answer</td><td>1</td></tr>
<tr><td>3</td><td></td><td>CHAR(11) for IFSC_Code
NUMBER(6) for PINCode</td><td>1 mark for each correct answer</td><td>2</td></tr>
<tr><td>4</td><td></td><td>1. Tuple
2. None</td><td>1 mark for each correct answer</td><td>2</td></tr>
<tr><td>5</td><td></td><td>a) TYPE   SUM(BALANCE)
      SAVING   145000
      CURRENT   50000
b) TYPE   MAX(BALANCE)   MIN(BALANCE)
      SAVING   70000   25000
      CURRENT   30000   20000
c) BRANCH   COUNT(*)
      JAIPUR   2
d) TYPE</td><td>½ mark for each correct output</td><td>2</td></tr>
</table>

		SAVING		
6	(i)	DROP DATABASE Student_Data;	1 mark for correct query	1
	(ii)	CARTESIAN PRODUCT: ● All rows in the first table are multiplied with all rows in the second table. ● Number of Rows in resultant table=Number of Rows in first table X Number of rows in second table ● Number of Columns in resultant table=Number of Columns in the first table + Number of Columns in second table	1 mark for each correct definition	1
7		a. Degree=4, Cardinality=5 b. Item_No, Item_Name (As both are the candidates to become the primary key) OR a. Degree=5 ,Cardinality=8 b. Item_No (This column is selected because it can identify all records of the table uniquely and not any value should be null)	½ mark for correct field and ½ mark for justification ½ mark each for correct degree and cardinality	2

<div align="center">

SECTION – B
Each question carries 3 marks

</div>

8		SALES={"SUNIL":700000, "ROHIT":400000, "RAJEEV":350000, "MAYANK":750000, "RAHUL":1000000, }
		
		def PUSH(STK,S):
		 STK.append(S)
		def POP(STK):
		 if STK!=[]:
		  return STK.pop()
		 else:
		  return None
		ST=[]
		for k in SALES:
		 if SALES[k]>500000:
		  PUSH(ST,k)
		while True:
		 if ST!=[]:
		  print(POP(ST),end=" ")
		 else:
		  print("Stack is empty now")
		  break
		
		OR
		N= [2,5,10,13,20,23,45,56,60,78]
		
		def PUSH(S,N):
		 S.append(N)
		def POP(S):
		 if S!=[]:
		  return S.pop()
		 else:
		  return None
		ST=[]
		for k in N:
		 if k%5==0:
		  PUSH(ST,k)
			1 mark for correct PUSH operation
			1 mark for correct POP operation
			1 mark for correct function calls and displaying the output
			
			Note: Marks to be awarded for any other correct logic given by the student
				3

		while True:
		 if ST!=[]:
		   print(POP(ST),end=" ")
		 else:
		   print("Stack is empty now")
		   break		

9	(i)		½ mark for each correct difference	1

ALTER TABLE	UPDATE
Used to change/modify the structure of the table	Used to change/modify the data in the table
It is a DDL command	It is a DML command
It can not be rolled back	It can be rolled back

	(ii)		1 mark for each correct explaination	2

DDL	DML
It stands for Data Definition Language.	It stands for Data Manipulation Language.
It is used to create database schema and can be used to define some constraints as well.	It is used to add, retrieve or update the data.
It basically defines the column (Attributes) of the table.	It adds or updates the row of the table. These rows are called tuples.
DDL does not use the WHERE clause in its statement.	While DML uses WHERE clause in its statement.
It cannot be rolled back	It can be rolled back

10		CREATE DATABASE SAMPLE; USE SAMPLE; CREATE TABLE ITEM (ITEM_NO INT PRIMARY KEY, ITEM_NAME VARCHAR(25) NOT NULL, ITEM_PRICE FLOAT(10,2), ITEM_DOE DATE);	½ mark for correctly creating and opening database commands. 2 marks for correctly creating the table.	3

SECTION C **Each question carries 4 marks**		

11		(a) SELECT AVG(SALARY) FROM TEACHER GROUP BY DESIG; (b) SELECT NAME, STREAM FROM TEACHER, STUDENT WHERE TEACHER.STUDID= STUDENT.STUDID AND SALARY>65000; (c) SELECT NAME FROM TEACHER WHERE SALARY IS NULL ORDER BY NAME; (d)	1 mark for each correct query	4

		SELECT DISTINCT STUDID FROM TEACHER;		
12	(i)	(i) Bus Topology (ii) Star Topology **OR** <table><tr><td>HTTP</td><td>HTTPS</td></tr><tr><td>Lacks Security</td><td>Uses SSL certificates to protect the data being communicated</td></tr><tr><td>Uses port no. 80 by default</td><td>Uses port no. 443 by default</td></tr><tr><td>The data is not encrypted before sending</td><td>Data is encrypted before transmission</td></tr><tr><td>HTTP works on the Application layer</td><td>HTTPS works on the Transport Layer</td></tr><tr><td>Since no encryption is performed, this is faster</td><td>The data is encrypted before transmission, hence this is slower</td></tr></table>	1 mark for each correct Topology Name ½ mark for each correct difference (Any two)	2
	(ii)	It is the ratio of the total amount of digital data transferred between two points in some defined period of time and is measured in Bit Per Second (bps) or Bytes Per Second (Bps)	1 mark for correct definition and 1 mark for its unit(s)	2
13		(i) Training Block – Because it has the maximum number of computers. (ii) Best wired medium: Optical Fibre OR CAT5 OR CAT6 OR CAT7 OR CAT8 OR Ethernet Cable (iii) Firewall – Placed with the server at the Training Block OR Any other valid device/software name (iv) Device Name: WiFi Router OR WiMax OR RF Router OR Wireless Modem OR RF Transmitter Protocol: WAP OR 802.16 OR TCP/IP OR VOIP OR MACP OR 802.11	1 mark for each correct answer	4

TERM 2 EXAMINATION (2021-22)
SUBJECT: COMPUTER SCIENCE (Code: 083)
MARKING SCHEME – SET 5

Maximum Marks: 35	Time: 2 hours

General Instructions
The question paper is divided into 3 sections – A, B and C
Section A, consists of 7 questions (1-7). Each question carries 2 marks.
Section B, consists of 3 questions (8-10). Each question carries 3 marks.
Section C, consists of 3 questions (11-13). Each question carries 4 marks.
Internal choices have been given for question numbers 7, 8 and 12.

Q. NO.	PART NO.	ANSWERS	MARKING INSTRUCTION	MARKS
		SECTION –A **Each question carries 2 marks**		
1		-Addition of element is known as PUSH operation. It is done using TOP position. -Removal of element is known as POP operation. It is also done using TOP position.	1 mark for each point	2
2	(i)	World Wide Web , Hyper Text Transfer Protocol	1/2 mark for each correct answer	1
	(ii)	Guided Media : Twisted pair, coaxial cable , Fiber Optic Cable Unguided Media : Radio waves, Micro waves, Infrared waves	1/2 mark for each correct answer	1
3		<table><tr><td>**Int**</td><td>**float**</td></tr><tr><td>Int contains integral val es</td><td>float contains a number with decimal point values</td></tr><tr><td>it occupies till 4 bytes of storage.</td><td>it occupies till 8 bytes of storage</td></tr><tr><td>Ex 12</td><td>Ex 12.34</td></tr></table>	1 mark for each correct difference (minimum 2 differences to be given)	2
4		1. 3 records 2. List containing three tuples	1 mark for each correct answer	2
5		a) <table><tr><td>SUM(FEE)</td></tr><tr><td>60000</td></tr></table> b) <table><tr><td>MAX(FEE)</td></tr><tr><td>90000</td></tr></table> c) <table><tr><td>CNAME</td><td>GAME</td><td>FEE</td></tr><tr><td>VIJENDER</td><td>BOXING</td><td>90000</td></tr><tr><td>NEERAJ</td><td>ATHLETIC</td><td>51000</td></tr></table> d) <table><tr><td>NO</td><td>CNAME</td><td>GAME</td><td>FEE</td></tr><tr><td>01</td><td>KAPIL</td><td>CRICKET</td><td>50000</td></tr><tr><td>02</td><td>VIJENDER</td><td>BOXING</td><td>90000</td></tr><tr><td>05</td><td>GOPICHAND</td><td>CRICKET</td><td>10000</td></tr></table>	1/2 mark for each correct output	2
6	(i)	SHOW DATABASES;	1 mark for	1

			correct command	

	(ii)	It joins two tables on equality of values on matching column(s) in the specified tables.
		Example:
		     CUSTOMER(ID,NAME,CITY)
		     ORDER(ORDERID,ID,AMOUNT)
		     Select * from CUSTOMER,ORDER
		     where CUSTOMER.ID=ORDER.ID;
			1 mark for correct difference (Any one point may be given)	1

7		a. Degree=4, Cardinality=6 b. Sp_id, Sp_Name (These columns are the candidates to become the primary key) **OR** a. Degree=5, Cardinality=8 b. Sp_id (This column is selected because it can identify all records of the table uniquely and does not contain a NULL value)	1 mark each for correct degree and cardinality 1/2 mark for correct field and 1/2 mark for justification	2

<div align="center">

SECTION – B
Each question carries 3 marks

</div>

8		SCORE={"KAPIL":40, "SACHIN":55, "SAURAV":80, "RAHUL":35, "YUVRAJ":110, }
		
		def PUSH(S,R):
		 S.append(RUN)
		def POP(S):
		 if S!=[]:
		  return S.pop()
		 else:
		  return None
		ST=[]
		for k in SCORE:
		 if SCORE[k]>49:
		  PUSH(ST,k)
		while True:
		 if ST!=[]:
		  print(POP(ST),end=" ")
		 else:
		  print("The stack is empty now")
		  break
		#or any other suitable/correct program code
		               OR
		N=[12, 13, 34, 56, 21, 79, 98, 22,35, 38]
		
		def PUSH(S,N):
		 S.append(N)
		def POP(S):
		 if S!=[]:
		  return S.pop()
		 else:
		  return None
		ST=[]
		for k in N:
		 if k%2!=0:
		  PUSH(ST,k)
		while True:
			1 mark for correct PUSH operation
			1 mark for correct POP operation
			1 mark for correct function calls and displaying the output
			
			Note: Marks to be awarded for any other correct logic given by the student
				3

		if ST!=[]:
		  print(POP(ST),end=" ")
		  else:
		  print("The stack is empty now")
		  break
		#or any other suitable/correct program code		

9	(i)	ALTER TABLE Games ADD Duration int(3);	1 mark for correct command	1
	(ii)	DDL: - Data Definition Language (DDL) provides commands for defining relation schemas, deleting relations, creating indexes, and modifying relation schemas. For example: CREATE, ALTER, DROP etc... DML: - Data Manipulation Language (DML) includes commands for manipulating tuples in databases. For example: Insert, Delete, Update commands etc...	½ mark for each correct full form/definition ½ mark for each correct example	2

10		CREATE DATABASE COMPANY;
		USE COMPANY;
		
		CREATE TABLE JOB
		(
		   JOB_ID varchar(10) PRIMARY KEY,
		   JOB_TITLE varchar(35) NOT NULL,
		   MIN_SAL int ,
		   MAX_SAL int,
		   BONUS int
		);
			½ mark for each creating and opening database.
			
			2 marks for correctly creating the table.
				3

<div align="center">

Section C
Each question carries 4 marks

</div>

11		(a) SELECT CUSTOMERNAME,ORDERID FROM CUSTOMER,ORDER WHERE CUSTOMER.CUSTOMERID=ORDER.CUSTOMERID; (b) SELECT COUNTRY,COUNT(*) FROM CUSTOMER GROUP BY COUNTRY; (c) SELECT CUSTOMERNAME FROM CUSTOMER,ORDER WHERE CUSTOMER.CUSTOMERID=ORDER.CUSTOMERID ORDER BY CUSTOMERNAME; (d) SELECT COUNT(*) FROM CUSTOMER WHERE CITY LIKE "J%";	1 mark for each correct query	4
12	(i)	<table><tr><td>Advantages</td><td>Disadvantages</td></tr><tr><td>1. Easy to install and used for small networks. 2. Requires less cable</td><td>1. If the main cable fails the entire network collapses. 2. Difficult to troubleshoot</td></tr></table>	1/2 mark for each correct advantage/disvantage (Any two advantages and two disadvantages)	2

| | 3. Failure of one node does not affect the network functioning.
4. A new node can be easily added | 3. Slow, due to traffic on single cable
4. Only one device transmits at a time, other devices wait for their turn | |

OR

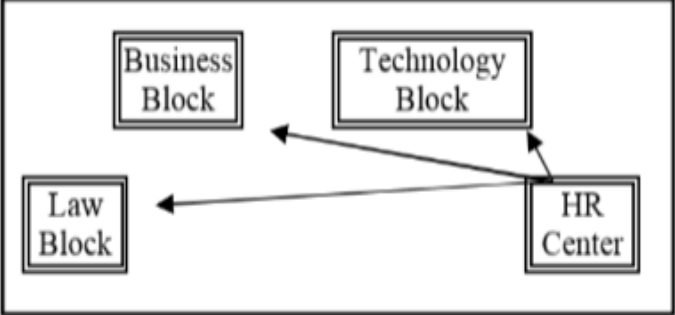| S. N.	Web Page	Website
1	It is a single document that is displayed by the web browser using a specific URL address that includes contents like text, media, etc. It also comprises links to many other relevant web pages.	It is a collection of many documents. Web browsers are used to access such documents using specific URL addresses attached to the website.
2	It usually contains content regarding a single entity type.	It usually contains content regarding several entities.
3	It can be accessed using a direct URL link or through a website.	It can be accessed through a domain address.
4	It is used to store the contents or resources that are to be displayed on a website.	It is a place that is used to display the content.
5	The web page URL includes the extension. i.e., the path of the file.	The website URL does not include any extension.
6	It is comparatively less complex to develop because it is just a smaller part of the website.	It is comparatively more complex to develop.
7	The web page address of any specific website directly depends on the website address (domain). This means, if the domain is down, the webpage will not work.	Website address (domain) is independent of the webpage address. In case the webpage is deleted due to any reason, the website will continue to work. All other linked web pages will also work as usual.
8	Contact Page, Registration Page, Sign Up Page, About Page, or any other page like this.	Amazon.com, Wikipedia.org, kvsangathan.nic.in, etc.

1 mark for each correct difference (Any two)

| (ii) | ● Resource Sharing.
● Cost efficient way of communication.
● Collaborative user interaction.
● Time-Saving.
● Provides better and reliable storage solutions. | ½ mark for each correct advantage (minimum four points should be given) | 2 |

13		a. b. Hub / Switch c. Repeater may be placed when the distance between 2 buildings is more than 100 meters. d. WAN, as the given distance is more than the range of LAN and MAN.	1 mark for each correct answer	4