

Sample Question Paper
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.	Question	Marks
1.		Give any two characteristics of stacks. Ans: i. It is a LIFO(Last in First Out) data structure . ii. The insertion and deletion can occur at only one end i.e. top of the stack	(2)
2.	(i)	Expand the following: SMTP , XML Ans: SMTP: Simple Mail Transfer Protocol XML: Extensible Markup Language	(1)
	(ii)	Out of the following, which is the fastest wired and wireless medium of transmission? Infrared, coaxial cable, optical fibre, microwave, Ethernet cable Ans: Fastest Wired Medium: Optical Fibre Fastest Wireless Medium: Microwave	(1)
3.		Differentiate between char(n) and varchar(n) data types with respect to databases. Ans: char(n): It refers to fixed length string data type. It can store upto 255 characters. If the value stored in this type of field is smaller than the specified size, blank spaces are added at the end of string value. So there is a wastage of space. varchar(n): It refers to variable length string data type. If the value stored in this type of field is smaller than the specified size, blank spaces are not added at the end of string value so	(2)

		there is no wastage of space.	
4.		<p>A resultset is extracted from the database using the cursor object (that has been already created) by giving the following statement. Mydata=cursor.fetchone()</p> <p>(a) How many records will be returned by fetchone() method? Ans: One record</p> <p>(b) What will be the datatype of Mydata object after the given command is executed? Ans: tuple</p>	(2)

5.	<p>Write the output of the queries (a) to (d) based on the table, Furniture given below:</p> <p>Table: FURNITURE</p> <table border="1"> <thead> <tr> <th>FID</th> <th>NAME</th> <th>DATEOFPURCHASE</th> <th>COST</th> <th>DISCOUNT</th> </tr> </thead> <tbody> <tr> <td>B001</td> <td>Double Bed</td> <td>03-Jan-2018</td> <td>45000</td> <td>10</td> </tr> <tr> <td>T010</td> <td>Dining Table</td> <td>10-Mar-2020</td> <td>51000</td> <td>5</td> </tr> <tr> <td>B004</td> <td>Single Bed</td> <td>19-Jul-2021</td> <td>22000</td> <td>0</td> </tr> <tr> <td>C003</td> <td>Long BackChair</td> <td>30-Dec-2016</td> <td>12000</td> <td>3</td> </tr> <tr> <td>T006</td> <td>Console Table</td> <td>17-Nov-2019</td> <td>15000</td> <td>12</td> </tr> <tr> <td>B006</td> <td>Bunk Bed</td> <td>01-Jan-2021</td> <td>28000</td> <td>14</td> </tr> </tbody> </table> <p>(a) SELECT SUM(DISCOUNT) FROM FURNITURE WHERE COST>15000; Ans:29</p> <p>(b) SELECT MAX (DATEOFPURCHASE) FROM FURNITURE ; Ans: 19-Jul-2021</p> <p>(c) SELECT * FROM FURNITURE WHERE DISCOUNT>5 AND FID LIKE "T%"; Ans:</p> <table border="1"> <tr> <td>T006</td> <td>Console Table</td> <td>17-Nov-2019</td> <td>15000</td> <td>12</td> </tr> </table> <p>(d) SELECT DATEOFPURCHASE FROM FURNITURE WHERE NAME IN ("Dining Table", "Console Table") ; Ans: 10-Mar- 2020 17-Nov-2019</p>	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 BackChair	30-Dec-2016	12000	3	T006	Console Table	17-Nov-2019	15000	12	B006	Bunk Bed	01-Jan-2021	28000	14	T006	Console Table	17-Nov-2019	15000	12	(2)
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6.	<p>(i) Which command is used to view the list of tables in a database? Ans: show tables;</p>	(1)																																								
	<p>(ii) Give one point of difference between an equi-join and a natural join. Ans: Equi-join: In this join, columns from two tables are compared for equality . Duplicate columns are also shown. Natural Join : In this join, only one columns is shown if there are two columns of same name in tables to be joined. Duplication of columns is not there.</p>	(1)																																								

7.	Consider the table, MOVIEDETAILS given below:				(2)
	MOVIEID	TITLE	LANGUAGE	RATING	PLATFORM
	M001	Minari	Korean	5	Netflix
	M004	MGR Magan	Tamil	4	Hotstar

M010	Kaagaz	Hindi	3	Zee5
M011	Harry Potter and the Chamber of Secrets	English	4	Prime Video
M015	Uri	Hindi	5	Zee5
M020	Avengers: Endgame	English	4	Hotstar

(a) Identify the degree and cardinality of the table.

Ans: Degree=5 Cardinality=6

(b) Which field should be made the primary key? Justify your answer.

Ans: MOVIEID should be made the primary key as it can uniquely identify records of the table.

OR

(a) Identify the candidate key(s) from the table **MOVIEDETAILS**.

Ans: MOVIEID and TITLE

(b) Consider the table **SCHEDULE** given below:

Table: **SCHEDULE**

SLOTID	MOVIEID	TIMESLOT
S001	M010	10 AM to 12 PM
S002	M020	2 PM to 5 PM
S003	M010	6 PM to 8 PM
S004	M011	9 PM to 11 PM

Which field will be considered as the foreign key if the tables **MOVIEDETAILS** and **SCHEDULE** are related in a database?

Ans: MOVIEID

8.	<p>Julie has created a dictionary containing names and marks as key value pairs of 6 students. Write a program, with separate user defined functions to perform the following operations:</p> <ul style="list-style-type: none"> ● Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) is greater than 75. ● Pop and display the content of the stack. <p>For example: If the sample content of the dictionary is as follows: R={"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90, "TOM":82}</p>	(3)
	<p>The output from the program should be: TOM ANU BOB OM</p> <p>ANS: def PUSH(R , STK): #STK is a list based stack for k in R: if R[k]>75: STK.append(k)</p> <p>def POP(STK): #STK is a list based stack if len(STK) == 0: print("Underflow") else: STK.pop() print("STACK CONTENTS") for item in STK: print(item,end=' ')</p> <p style="text-align: center;">OR</p> <p>Alam 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.</p> <ul style="list-style-type: none"> ● Traverse the content of the list and push the even numbers into a stack. ● Pop and display the content of the stack. <p>For Example: If the sample Content of the list is as follows: N=[12, 13, 34, 56, 21, 79, 98, 22, 35, 38]</p> <p>Sample Output of the code should be: 38 22 98 56 34 12</p> <p>Ans: def PUSH(N , STK): #STK is a list based stack for k in N: if k%2==0:</p>	

	<pre>STK.append(k) def POP(STK): #STK is a list based stack if len(STK) == 0: print("Underflow") else: STK.pop() print("STACK CONTENTS") for item in STK: print(item,end=' ')</pre>	
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9.	(i)	<p>A table, ITEM has been created in a database with the following fields: ITEMCODE, ITEMNAME, QTY, PRICE</p> <p>Give the SQL command to add a new field, DISCOUNT (of type Integer) to the ITEM table.</p> <p>Ans: Alter table ITEM add DISCOUNT int ;</p>	(1)																					
	(ii)	<p>Categorize following commands into DDL and DML commands?</p> <p>INSERT INTO, DROP TABLE, ALTER TABLE, UPDATE . . .SET</p> <p>Ans: DDL: DROP TABLE, ALTER TABLE DML: INSERT INTO, UPDATE...SET</p>	(2)																					
10.		<p>Charu has to create a database named MYEARTH in MySQL. She now needs to create a table named CITY in the database to store the records of various cities across the globe. The table CITY has the following structure:</p> <p>Table: CITY</p> <table border="1" data-bbox="366 1005 1098 1449"> <thead> <tr> <th>FIELD NAME</th> <th>DATA TYPE</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr> <td>CITYCODE</td> <td>CHAR(5)</td> <td>Primary Key</td> </tr> <tr> <td>CITYNAME</td> <td>CHAR(30)</td> <td></td> </tr> <tr> <td>SIZE</td> <td>INTEGER</td> <td></td> </tr> <tr> <td>AVGTEMP</td> <td>INTEGER</td> <td></td> </tr> <tr> <td>POLLUTIONRATE</td> <td>INTEGER</td> <td></td> </tr> <tr> <td>POPULATION</td> <td>INTEGER</td> <td></td> </tr> </tbody> </table> <p>Help her to complete the task by suggesting appropriate SQL commands.</p> <p>Ans: create database MYEARTH; use MYEARTH; create table CITY (CITYCODE CHAR(5) Primary Key, CITYNAME CHAR(30), SIZE INT, AVGTEMP INT, POLLUTIONRATE INT, POPULATION INT);</p>	FIELD NAME	DATA TYPE	REMARKS	CITYCODE	CHAR(5)	Primary Key	CITYNAME	CHAR(30)		SIZE	INTEGER		AVGTEMP	INTEGER		POLLUTIONRATE	INTEGER		POPULATION	INTEGER		(3)
FIELD NAME	DATA TYPE	REMARKS																						
CITYCODE	CHAR(5)	Primary Key																						
CITYNAME	CHAR(30)																							
SIZE	INTEGER																							
AVGTEMP	INTEGER																							
POLLUTIONRATE	INTEGER																							
POPULATION	INTEGER																							

Section C
Each question carries 4 marks

11.

Write queries (a) to (d) based on the tables **EMPLOYEE** and **DEPARTMENT** given below:

(4)

Table: EMPLOYEE

EMPID	NAME	DOB	DEPTID	DESIG	SALARY
120	Alisha	23- Jan- 1978	D001	Manager	75000
123	Nitin	10- Oct- 1977	D002	AO	59000
129	<u>Navjot</u>	12- Jul- 1971	D003	Supervisor	40000
130	Jimmy	30- Dec- 1980	D004	Sales Rep	
131	<u>Faiz</u>	06- Apr- 1984	D001	Dep Manager	65000

Table: DEPARTMENT

DEPTID	DEPTNAME	FLOORNO
D001	Personal	4
D002	Admin	10
D003	Production	1
D004	Sales	3

a) To display the average salary of all employees, department wise.

Ans: select AVG(SALARY) from EMPLOYEE group by DEPTID;

b) To display name and respective department name of each employee whose salary is more than 50000.

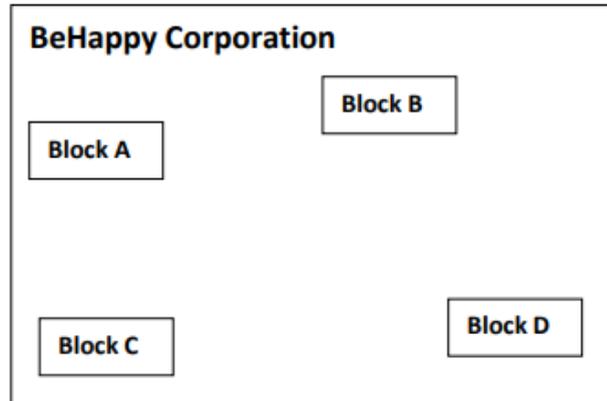
Ans: select NAME, DEPTNAME from EMPLOYEE, DEPARTMENT where EMPLOYEE.DEPTID=DEPARTMENT.DEPTID and SALARY>50000;

		<p>(c) To display the names of employees whose salary is not known, in alphabetical order. Ans: select NAME from EMPLOYEE where SALARY is null order by name;</p> <p>(d) To display DEPTID from the table EMPLOYEE without repetition. Ans: select distinct DEPTID from EMPLOYEE;</p>	
12.	(i)	<p>Give two advantages and two disadvantages of star topology</p> <p>Ans: Advantages a) It is easy to configure. b) Centralized control. c) It is easy to find and correct problems.</p> <p>Disadvantages a) Long cable length b) It may become difficult to attach new nodes c) If Central computer is dead, network stops working.</p> <p style="text-align: center;">OR</p> <p>Define the following terms: www , web hosting www: It is defined as a collection of protocols that are used to access any document on the internet. Web Hosting: It is the process of storing websites and web pages on a server in such a way that it is accessible through internet.</p>	(2)
	(ii)	<p>How is packet switching different from circuit switching?</p> <p>Ans: Packet switching: In packet switching, message is divided into fixed sized blocks called packets and then sent forward. There is no physical path between sender and receiver.</p> <p>Circuit switching In circuit switching, physical connection is established between sender and receiver before transmitting data. There is no limit on block size.</p>	(2)

13.

BeHappy Corporation has set up its new centre at Noida, Uttar Pradesh for its office and web-based activities. It has 4 blocks of buildings.

(4)



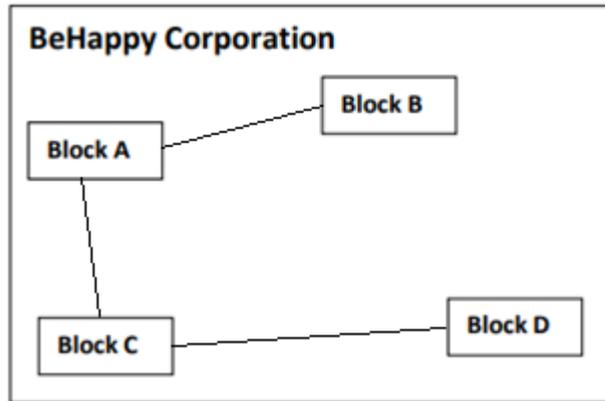
Distance between the various blocks is as follows:

A to B	40 m
B to C	120m
C to D	100m
A to D	170m
B to D	150m
A to C	70m

Numbers of computers in each block

Block A -	25
Block B -	50
Block C -	125
Block D -	10

- (a) Suggest and draw the cable layout to efficiently connect various blocks of buildings within the Noida centre for connecting the digital devices.



(b) Suggest the placement of the following device with justification

- i. Repeater
- ii. Hub/Switch

(i) Repeater : It may be placed between Block C and Block D as the distance between them is large.

(ii) Hub/Switch: It is required in each block to interconnect computers.

(c) Which kind of network (PAN/LAN/WAN) will be formed if the Noida office is connected to its head office in Mumbai?

Ans: WAN

(d) Which fast and very effective wireless transmission medium should preferably be used to connect the head office at Mumbai with the centre at Noida?

Ans: Satellite

		(a)	
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