

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.
- All questions are compulsory.

Section A (Each question carries 2 marks)

Q No	Part No.	Question	Marks																														
1.		What is stack? Why it is called LIFO data structure?	2																														
2	(i)	Which protocol is used to exchange files on Internet?	1																														
	(ii)	Expand the following Terms: CDMA, URL	1																														
3		What do you mean by domain of an attribute in DBMS? Explain with an example.	2																														
4		Rohan Wants to delete a table “STUDENT” physically from the database “SCHOOL”, based on the given code fill the statement 1 and statement 2: import mysql.connector mydb=mysql.connector.connect(host="localhost",user="root",passwd="12345",database="SCHOOL") mycursor=_____ #statement 1 mycursor.execute(_____) #statement 2	2																														
5		Write the output of the queries (a) to (d) based on the table, Mobile given below: <table border="1"><thead><tr><th>M_Id</th><th>M_Company</th><th>M_Name</th><th>M_Price</th><th>M_Mf_Date</th></tr></thead><tbody><tr><td>MB001</td><td>Samsung</td><td>Galaxy</td><td>15000</td><td>12-02-2013</td></tr><tr><td>MB003</td><td>Nokia</td><td>N1100</td><td>12500</td><td>15-04-2011</td></tr><tr><td>MB004</td><td>Micromax</td><td>Unite 3</td><td>5500</td><td>17-10-2016</td></tr><tr><td>MB005</td><td>Sony</td><td>XperiaM</td><td>25000</td><td>20-11-2017</td></tr><tr><td>MB006</td><td>Oppo</td><td>SelfieEx</td><td>18500</td><td>21-08-2010</td></tr></tbody></table> a) SELECT MAX(M_Mf_Date), MIN(M_Mf_Date) FROM Mobile; b) SELECT * FROM Mobile WHERE M_Price>15000 AND M_Company LIKE "S%"; c) SELECT M_Mf_Date FROM Mobile WHERE M_Name IN ("Galaxy", "Unite 3"); d) SELECT AVG(M_Price) FROM Mobile;	M_Id	M_Company	M_Name	M_Price	M_Mf_Date	MB001	Samsung	Galaxy	15000	12-02-2013	MB003	Nokia	N1100	12500	15-04-2011	MB004	Micromax	Unite 3	5500	17-10-2016	MB005	Sony	XperiaM	25000	20-11-2017	MB006	Oppo	SelfieEx	18500	21-08-2010	2
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6	(i)	What is the difference between where clause and having clause in SQL?	1																														
	(ii)	Write the output of the following SQL queries based on the Mobile table given in Question No. 5 : select M_Price * 0.1 as discount FROM MOBILE;	1																														
7		Given the Table TRAINER <table border="1"><thead><tr><th>TID</th><th>TNAME</th><th>CITY</th><th>HIREDATE</th><th>SALARY</th></tr></thead><tbody><tr><td>101</td><td>SUNAINA</td><td>MUMBAI</td><td>1998-10-15</td><td>90000</td></tr><tr><td>102</td><td>ANAMIKA</td><td>DELHI</td><td>1994-12-24</td><td>80000</td></tr><tr><td>103</td><td>DEEPTI</td><td>CHANDIGARH</td><td>2001-12-21</td><td>82000</td></tr><tr><td>104</td><td>MEENAKSHI</td><td>DELHI</td><td>2002-12-25</td><td>78000</td></tr><tr><td>105</td><td>RICHA</td><td>MUMBAI</td><td>1996-01-12</td><td>95000</td></tr></tbody></table>	TID	TNAME	CITY	HIREDATE	SALARY	101	SUNAINA	MUMBAI	1998-10-15	90000	102	ANAMIKA	DELHI	1994-12-24	80000	103	DEEPTI	CHANDIGARH	2001-12-21	82000	104	MEENAKSHI	DELHI	2002-12-25	78000	105	RICHA	MUMBAI	1996-01-12	95000	2
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		a. What is Degree and Cardinality of the above table? b. Which field should be made as the primary key? Justify your answer OR What is the difference between candidate key and Alternate key? Explain with example.																				
Section B (Each question carries 3 marks)																						
8		Reva has created a dictionary containing Product names and prices as key value pairs of 4 products. Write a user defined function for the following: • PRODPUSH() which takes a list as stack and the above dictionary as the parameters. Push the keys (Pname of the product) of the dictionary into a stack, where the corresponding price of the products is less than 6000. Also write the statement to call the above function. For example: If Reva has created the dictionary is as follows: Product={"TV":10000, "MOBILE":4500, "PC":12500, "FURNITURE":5500} The output from the program should be: ['FURNITURE', 'MOBILE'] OR Shaan has a list containing 14 integers. You need to help him create a program with separate user defined function to perform the following operation based on this list. • NUMUSH() which takes a list as stack and the above list of numbers as the parameters. push the numbers of the list which are divisible by 5 into a stack. Also write the statement to call the function. For Example: If the sample Content of the list is as follows: M=[2, 10,13,17,25,32,38,44, 56, 60,21, 74, 35,15] Sample Output of the code should be: [10, 25, 60, 35, 15]					3															
9	(i)	Write the actual datatypes as per the following Structure requirement during creation of a table: <table><tr><td>Field</td><td>Description</td><td>Actual Datatype with length</td></tr><tr><td>PID</td><td>11 digit number</td><td></td></tr><tr><td>ProdName</td><td>Can be upto 25 characters</td><td></td></tr><tr><td>DateofManufacture</td><td>Date of Manufacture</td><td></td></tr><tr><td>Price</td><td>7 digits number which includes 2 places after decimal point.</td><td></td></tr></table>					Field	Description	Actual Datatype with length	PID	11 digit number		ProdName	Can be upto 25 characters		DateofManufacture	Date of Manufacture		Price	7 digits number which includes 2 places after decimal point.		2
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	(ii)	Vani created a table named Customer that have fields Cno, Custname, Address, Amount. Now she wants to increase the width to 30 Characters of the column "Address". Write the SQL command for it.					1															
10		a) "Zenith" Company conducts workshops for employees of organizations. The company requires data for workshops that are organized. Write SQL query to create a Database named as "Zenith" and create a table 'Workshop' with the following structure: <table><tr><td>Field</td><td>Type</td><td>Constraint</td></tr><tr><td>Workshopid</td><td>Integer</td><td>Primary Key</td></tr><tr><td>Title</td><td>Varchar(50)</td><td></td></tr><tr><td>DateWorkshop</td><td>Date</td><td></td></tr><tr><td>NumSpeakers</td><td>Integer</td><td></td></tr></table>					Field	Type	Constraint	Workshopid	Integer	Primary Key	Title	Varchar(50)		DateWorkshop	Date		NumSpeakers	Integer		3
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b) Zenith company wants to insert a row in the table 'Workshop'. Write the command for it.

Section C (Each question carries 4 marks)

11 Write queries for (i) to (iv) which are based on the tables.
Table: VEHICLE

VCODE	VEHICLETYPE	PERKM
V01	VOLVO BUS	150
V02	AC DELUX BUS	125
V03	ORDINARY BUS	80
V05	SUV	30
V04	CAR	18

Table: TRAVEL

CNO	CNAME	TRAVELDATE	KM	VCODE	NOP
101	K. Niwal	13-12-2015	200	V01	32
103	Adarsh Kumar	21-03-2016	120	V03	45
105	Shyam Sen	23-04-2016	450	V02	42
102	Ravi Kisan	13-01-2016	80	V02	40
107	John Malina	10-02-2015	65	V04	2
104	Sahanabhuti	28-01-2016	90	V05	4
106	Ramesh Jaya	06-04-2016	100	V01	25

Note:

· PERKM is Freight Charges per kilometre.

· KM is kilometres Travelled

· NOP is number of passengers travelled in vehicle.

i. To display CNO, CNAME, TRAVELDATE from the table TRAVEL in descending order of CNO.

ii. To display the CNAME ,VEHICLETYPE of all customers who are travelling by VEHICLE with code V03 or V05

iii. To display the CNO and CNAME of those customers from the table TRAVEL who travelled between '13-12-2015' and '21-03-2016'.

iv. To display the VCODE,CNAME,VEHICLETYPE from both the tables with distance travelled (km) more than 100 Km.

12 (i) What is the difference between hub and switch? Which is more preferable in a large network of computers and why? 2

(ii) Write two advantages of using an optical Fiber cable over an Twisted Pair cable to connect two service stations which are 200m away from each other. 2

OR

Differentiate between Website and webpage. Write any two popular example of online shopping.

13

4

NMS Training Institute is planning to set up its centre in Bhubaneswar with four specialised blocks for Medicine, Management, Law courses along with an Admission block in separate buildings. The physical distances between these blocks and the number of computers to be installed in these blocks are given below. You as a network expert have to answer the queries raised by their board of directors as given in (i) to (iv).

Shortest distances between various locations in metres:

Admin Block to Management Block	50
Admin Block to Medicine Block	30
Admin Block to Law Block	65
Management Block to Medicine Block	40
Management Block to Law Block	125
Law Block to Medicine Block	35

Number of Computers installed at various locations are as follows:

Admin Block	250
Management Block	100
Medicine Block	45
Law Block	95

The diagram shows four blocks arranged in a square pattern. At the top left is a cylinder labeled 'MANAGEMENT'. At the top center is a cylinder labeled 'MEDICINE'. At the top right is a cylinder labeled 'LAW'. At the bottom center is a cube labeled 'ADMIN'.

(i). Suggest the most suitable location to install the main server of this institution to get efficient connectivity.

(ii). Suggest by drawing the best cable layout for effective network connectivity of the blocks having server with all the other blocks.

(iii). Suggest the device to be installed in each of these buildings for connecting computers installed within the building.

(iv) Suggest the most suitable wired medium for efficiently connecting each computer installed in every building out of the following network cables:

- Coaxial Cable
- Ethernet Cable
- Single Pair
- Telephone Cable.