Time -2 hrs   **M. Marks- 35**
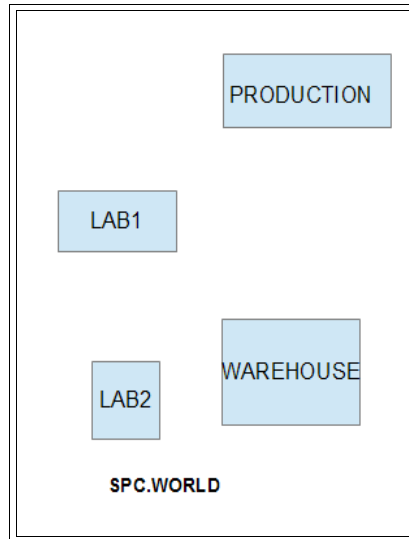
General Instructions:

- This question paper is divided into 3 sections A, B and C.
- Section A has 7 Questions (1-7). Each of 2 marks.
- Section B has 3 Questions (8-10). Each of 3 marks.
- Section C has 3 Questions (11-13). Each of 4 marks.
- Question 7, 8 and 12 has internal choices

Q No	Part No	Section A Each Question carries 2 marks Question	Marks
1		Give two characteristics of Queue.	2
2	a	Expand the following i. CDMA ii. IMAP	1
	b	Out of the following networking device which is used in Data-Link layer? Router, Switch, Repeater, Gateway	1
3		Explain the difference between ALTER and UPDATE commands citing an example in MySQL	2

4		A result set is extracted by using cursor object by giving the following statement
		>>> spccur=spcdatabase.cursor()
		>>> spccur.execute("show databases")
		>>> Y=spccur.fetchall()
		
		a. How many records are returned?
		b. What is the type of the object **Y**?
			2

5		Write the output of the queries based on the table carmaster below ``` mysql> select * from carmaster; +------------+----------------------+-------------+ | company	model	rateperhour | +------------+----------------------+-------------+ | Audi	2019 Audi A8	120
BMW	2019 BMW 5 Series	74
Cadillac	2019 CT 6	80
Lamborghini	Aventador	239
Lexus	2020 LS	80
Mercedes	2019 Mercedes S Class	90
Telsa	2019 Model 3	67
Volvo	2020 XC 60	71 | +------------+----------------------+-------------+ 8 rows in set (0.03 sec) ```	2

		a. select * from carmaster where company not in('Audi','Telsa'); b. select * from carmaster where rateperhour>80 order by rateperhour desc; c. select * from carmaster where model like '201%'; d. select sum(rateperhour) from carmaster;	
6	i	Name the command that displays the table structure.	1
	ii	Consider another table rental as shown below. If we apply inner join on rental taking carmaster as the first table, what will be the cardinality of the output in this instant? NB: Table rental stores transaction data ``` mysql> select * from rental; +--------+-------+----------+ 	pid	hours	company	 +--------+-------+----------+ 	101023	15	Cadillac
101078	45	Audi
101454	65	Volvo
101488	75	Volvo
101956	67	Cadillac | +--------+-------+----------+ 5 rows in set (0.00 sec) ```	1
7		Consider the tables shown below and answer the following: ``` mysql> select * from itemmast; +---------+---------------+-----------+------------+----------+ 	item_no	item_nm	item_manu	item_price	item_qty	 +---------+---------------+-----------+------------+----------+ 	10	laptop	pineapple	165000	26
11	printer	XP	17600	87
12	wireless mouse| XP	1760	287 | +---------+---------------+-----------+------------+----------+ 3 rows in set (0.06 sec) mysql> select * from itemtran; +---------+---------+-----------+------------+----------+-------------+ | tran_no	item_no	cust_name	cust_phone	qty_sold	total_sales | +---------+---------+-----------+------------+----------+-------------+ | 900	11	xyc	9087	2	35200
901	11	abc	9667	1	17600
902	10	abc	9667	1	165000
903	12	abc	9667	1	1760
904	10	spc	5050	1	165000	 +---------+---------+-----------+------------+----------+-------------+ 5 rows in set (0.05 sec) ``` a. What is the cardinality of the table itemmast? b. Which field you will consider as the foreign key in itemtran? OR a. Why the itemtran table can't have any record with item_no = 13 at this instant? b. What is the degree of the table itemmast?	2
		Section B Each Question carries 3 marks	
8		Consider the dictionary D , D={'Red':3,'Yellow':6,'Orange':6,'Blue':4} Code a user defined function that accepts the dictionary as a parameter and pushes only the values in a list. Finally it pops everything from the list. The output of the function should be , 4 6 6 3	3

		OR Code in Python to populate a list with 20 random numbers between 60 and 600. Pass the list as a parameter to a user defined function that will traverse the list and push the numbers divisible by 5 or by 7 into a stack that is implemented by another list. Finally the function will pop everything.	
9	i	Consider the table carmaster. Give SQL command to add a field noofgears, int type after the attribute model. ``` +-------------+-------------+------+-----+---------+-------+ 	Field	Type	Null	Key	Default	Extra	 +-------------+-------------+------+-----+---------+-------+ 	company	varchar(30)	NO	PRI		
model	varchar(30)	YES		NULL	
rateperhour	int(11)	YES		NULL		 +-------------+-------------+------+-----+---------+-------+ ```	1
	ii	Give SQL command to update the field noofgears to 6 for all the records of the table carmaster	1
	iii	Give SQL command to drop the field noofgears now.	1
10		Give SQL commands to create the following tables suppliers and orders ``` mysql> describe suppliers; +---------------+-------------+------+-----+---------+-------+ 	Field	Type	Null	Key	Default	Extra	 +---------------+-------------+------+-----+---------+-------+ 	supplier_id	int(11)	NO	PRI	NULL	
supplier_name	varchar(35)	YES		NULL	| +---------------+-------------+------+-----+---------+-------+ 2 rows in set (0.02 sec) mysql> describe orders; +-------------+-------------+------+-----+---------+-------+ | Field	Type	Null	Key	Default	Extra | +-------------+-------------+------+-----+---------+-------+ | order_id	int(11)	NO	PRI	NULL	
supplier_id	int(11)	YES	MUL	NULL	
order_date	varchar(30)	YES		NULL		 +-------------+-------------+------+-----+---------+-------+ 3 rows in set (0.01 sec) ```	3
		Section C **Each Question carries 4 marks**	
11		Consider the tables itemmast and itemtran as shown before in Q 7 and construct SQL query for the following a. To display total_sales by item_no from itemtran table b. Add a column remarks of varchar type after item_qty in itemmast table c. Add a remark entry 'Price hike likely' in itemmast for the item laptop d. Display all records from itemmast where remarks is having null entry	4
12	i	What is the difference between POP and IMAP? **OR** Name the 7 layers of ISO-OSI model	2
	ii	State the difference between the two transport layer protocols TCP and UDP	2
13		SPC.WORLD is a research facility in Aurach in Kitzbühel Austria that pioneers in promoting world class electronic gadgets that can withstand sub freezing temperature and can be installed in remote facilities throughout the world. A rough sketch of the campus is shown here with some additional parameters. You have to answer the subsequent queries based on it	4

SPC.WORLD

Distance in meters
LAB1 to LAB2 68 m
LAB1 to WAREHOUSE 28 m
LAB1 to PRODUCTION 45 m

LAB2 to PRODUCTION 100 m
LAB2 to WAREHOUSE 18 m

WAREHOUSE to PRODUCTION 95 m

NO of Interconnected devices (as PCs etc)
PRODUCTION 24
LAB1 88
LAB2 70
WAREHOUSE 16

a. Suggest the various possible fiber optic cable layout (topology)
b. Where you will require switches and repeaters?
c. Considering the importance of the campus what is your suggestion to avoid possible Cyber attacks?
d. How to connect this campus in Austria with the one located in Germany?