ANSWER KEY
SAMPLE PAPER -1
COMPUTER SCIENCE (083) - XII
TERM - 2

Q1. Evaluate the following postfix expression using stack and show the contents of stack after execution of each expression.   2

120, 45, 20, +, 25, 15, −, +, *

ANS:

S. No.	Scanned Element	Operation	Stack Status
1	120	PUSH	120
2	45	PUSH	120, 45
3	20	PUSH	120, 45, 20
4	+	POP TWICE 45 + 20 = 65 PUSH	120 , 65
5	25	PUSH	120 , 65, 25
6	15	PUSH	120, 65, 25, 15
7	-	POP TWICE 25 − 15 =10 POP	120 , 65 ,10
8	+	POP TWICE 65 + 10 =75 POP	120 ,75
9	*	POP TWICE 120 * 75 = 9000 POP	9000

OUTPUT: 9000

Q2. (i) Expand the following: 1

POP , XML

(ii) Beauty lines fashion incorporation is a fashion company with design unit and market unit at Bangalore 135m away from each other. The company recently connected their LANs using Ethernet cable to share the stock related information. But after joining their LAN's they are not able to show the information due to loss of signal in between. So, Which device should you suggest to be installed for a smooth communication?   1

ANS: (I) POP : **Post Office Protocol**   **(1)**

XML : **extensible markup language**.

(II) Repeater (1)

Q3. What is the purpose of GROUP BY clause in MySQL? How is it different from ORDER BY clause?

Ans. The GROUP BY clause can be used to combine all those records that have identical value in a particular field or a group of fields.

Whereas, ORDER BY clause is used to display the records either in ascending or descending order based on a particular field. For ascending order ASC is used and for descending order, DESC is used. The default order is ascending order.

Q4. (i) Which method is used to create a connection between the MySQL database and Python?

ANS: connect ( )

   (ii) Which method returns the next row from the result set as tuple?

ANS: fetchone ( )

Q5. Write the output of the queries (a) to (d) based on the table, Graduate given below

SID	Name	Stipend	Subject	Average	Div
1	Karan	400	Physics	68	1
2	Divakar	450	Computers	68	1
3	Divya	300	Chemistry	62	2
4	Arun	350	Physics	63	1
5	Sabina	500	Mathematics	70	1
6	John	400	Chemistry	55	2
7	Robert	250	Physics	64	1
8	Rubina	450	Mathematics	68	1
9	Vikas	500	Computers	62	1
10	Mohan	300	Mathematics	57	2

(a) SELECT LEFT(NAME,3) FROM Graduate WHERE SNO>7;

(b) SELECT Name, Stipend FROM Graduate WHERE Subject="Chemistry" OR
    Subject="Physics";

(c) SELECT * FROM Graduate WHERE Subject LIKE 'C%' AND Average=68;

(d) SELECT Name FROM Graduate WHERE DIV=2;

ANS:

(a)

LEFT (NAME , 3)
Rub
Vik
Mih

(b)

Name	Stipend
Karan	400
Divya	300
Arun	350
John	400
Robert	250

(c)

SID	Name	Stipend	Subject	Average	Div
2	Divakar	450	Commputer	68	1

(d)

NAME
Divya
John
Mohan

Q6. . Is it compulsory to provide values for all columns of a table while adding records? Give an example.

Ans: No it is not compulsory to provide values for all columns of a table while adding records. We can use NULL values wherever values are missing.
e.g. INSERT INTO Employee VALUES (1,NULL,"Sales",89000);

Q7. Consider the following tables STORE and answer the questions: 2

Table: STORE

ItemNo	Item	Scode	Qty	Rate	LastBuy
2005	Sharpener Classic	23	60	8	31-JUN-09
2003	Balls	22	50	25	01-FEB-10
2002	Gel Pen Premium	21	150	12	24-FEB-10
2006	Gel Pen Classic	21	250	20	11-MAR-09
2001	Eraser Small	22	220	6	19-JAN-09
2004	Eraser Big	22	110	8	02-DEC-09
2009	Ball Pen 0.5	20	180	18	03-NOV-09

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

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

<div align="center">OR</div>

(a) Identify the candidate key(s) from the table STORE.

(b) Consider the table LOCATION given below:

Table: LOCATION

SCODE	LOCATION
20	SOUTH
21	NORTH
22	EAST
23	WEST

Which field will be considered as the foreign key if the tables STORE and LOCATION are related in a database?

ANS:

(a) Degree: 6

    Cardinality: 7

 (b) ItemNo should be made the primary key as it uniquely identifies each record of the table.

<div align="center">OR</div>

    a) Item

    b) Scode

<div align="center">

SECTION – B
Each question carries 3 marks
</div>

Q8. Write a function in Python PUSH(Arr), where Arr is a list of numbers. From this list push all numbers divisible by 5 into a stack implemented by using a list. Display the stack if it has at least one element, otherwise display appropriate error message.

 Ans)

```
def PUSH(Arr,value):
        s=[ ]
        for x in range(0,len(Arr)):
                if Arr[x]%5==0:
                        s.append(Arr[x])
        if len(s)==0:
                        print("Empty Stack")
```

else:

print(s)

OR

A linear stack called status contains the following information :

(i) Phone number of Employee

(ii) Name of Employee

Write the following methods to perform given operations on the stack status :

     (a) Push_element ( ) To Push an object containing Phone number of Employee and Name of Employee into the stack.

     (b) Pop_element ( ) To Pop an object from the stack and to release the memory.

ANS:

(i) def Push_element (Status, Top) :

     phone_no = int (input ("Enter phone number:"))

     emp_name = input ("Enter employee name :")

     St = (phone_no, emp_name)

     Status.append (St)

     Top =Top + 1

     return Top

(ii) def Pop_element (Status, Top) :

     Slen = len (Status)

     if (Slen <= 0) :

         print ("Status is empty")

     else :

         phone_no, emp_name = Status. Pop ( )

         Top = Top – 1

         print("Phone number %s and name %s deleted" % (phone_no, emp_name))

     return Top

Q9. (i) Rakesh wants to increase the price of some of the products by 20% , of his store whose price is less than 200. Assuming the following structure , what will be the query?

Pno	PName	Quality	Price

Ans. UPDATE ITEM SET Price=Price + Price * 0.2 WHERE Price<200 ;

The UPDATE command updates data of a table . While updating, the expression for update value can be assigned to the updating field. The records to be updated can be specified as WHERE condition.

9 (ii) Differentiate between DDL & DMLcommands. Identify DDL & DML commands from the following:- (UPDATE, SELECT, ALTER, DROP)

Ans) DDL stands for Data Definition language and comprises of commands which will change the structure of database object.

DML stands for Data Manipulation Language and comprises of commands which are used to insert, edit, view & delete the data stored in a database object. DDL Commands: ALTER, DROP DML Commands: UPDATE, SELECT

Q10. Mr Naman has to create a database named **School** in MYSQL. He now needs to create a table named **LIBRARY** in the database to store the records of various books. The table **LIBRARY** has the following structure: 2

Field	Type	Constraint
Book_no	Integer(4)	Primary key
Title	Varchar(40)	Not Null
Author	Varchar(30)	
Publisher	Varchar(30)	
Pages	Integer(4)	
Date_of_pub	Date	

Help him to complete the task by suggesting appropriate SQL commands.
ANS:

Use School;

Create Table LIBRARY

(

Book_no Int(4)   Primary key ,

Title Varchar(40)   Not Null,

Author   Varchar(30),

Publisher Varchar(30),

Pages Int(4),

Date_of_pub Date,

);

Section C

Each question carries 4 marks

Q11. Consider the following tables ACTIVITY and COACH. Write SQL commands for the following statements.

TABLE : ACTIVITY

Acode	ActivityName	Stadium	ParticipantsNum	PriceMoney	ScheduleDate
1001	Relay 100 x 4	Star Annex	16	10000	23-Jan-04
1002	High Jump	Star Annex	10	12000	12-Dec-03
1003	Shot Put	Super Power	12	8000	14-Feb-04
1005	Long jump	Star Annex	12	9000	01-Jan-04
1008	Discuss Throw	Super Power	10	15000	19-Mar-04

TABLE : COACH

Pcode	Name	Acode
1	Ahmad Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

a) To display the names of all activities with their Acodes in descending order.

b) To display sum of PriceMoney for the Activities played in each of the Stadium separately.

c) To display the coach's names and Acodes in ascending order of Acode from the table COACH.

d) To display the content of all activities for which ScheduleDate is earlier than 01-01-2004 in ascending order of ParticipantsNum.

ANS:

a) Select ActivityName , Acode from Activity Order By ActivityName DESC;

b) Select SUM(PriceMoney) from Avtivity Group By Stadium;

c) Select Name, Acode from Avtivity Order By Acode;

d) Select * from Activity where   ScheduleDate < '01-01-2004'
     Order By ParticipantsNum;

Q12.

(i) Write one advantage of bus topology of network. Also, illustrate how four computers can be connected with each other using star topology of network?   2
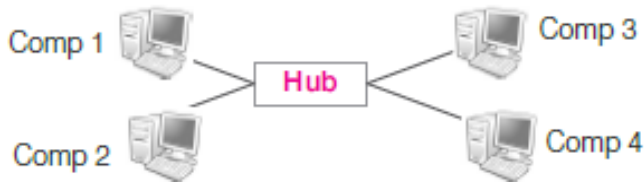
OR

(ii) Write one advantage and one disadvantage of using optical fibre cable.   2

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ANS:

(i) **Advantage of bus topology** In bus topology, computers can be connected with each other using server (host) along a single length of cable.
Four computers can be connected with each other using star topology in the following way:

OR

Discuss the functioning of a web browser and web server.

Ans. Web browsers became such a pervasive way to access information that users and organisations desired to access. So, web servers had to be extended to allow software application development and access to database.
A web server provides four major functions
(i) Surfing web pages.
(ii) Running gateway programs and returning output.
(iii) Controlling access to the server.
(iv) Monitoring and logging server access statistics.

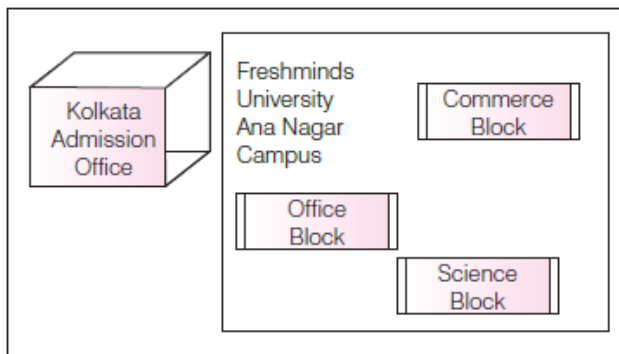ii) Write one advantage and one disadvantage of using optical fibre cable.
Ans. **Advantage of using optical fibre cable** It is immune to electrical and magnetic interference, i.e. the data does not get disturbed and pure data is retrieved on the other end.
Disadvantage of using optical fibre cable Connecting either two fibres together or a light source to a fibre is a difficult process.

Q13. Freshminds University of India is starting its first campus in Ana Nagar of South India with its centre admission office in Kolkata. The university has three major blocks comprising of Office block, Science block and Commerce block is in 5 km area campus.
As a network expert, you need to suggest the network plan as per (i) to (iv) to the authorities keeping in mind the distance and other given parameters.   4
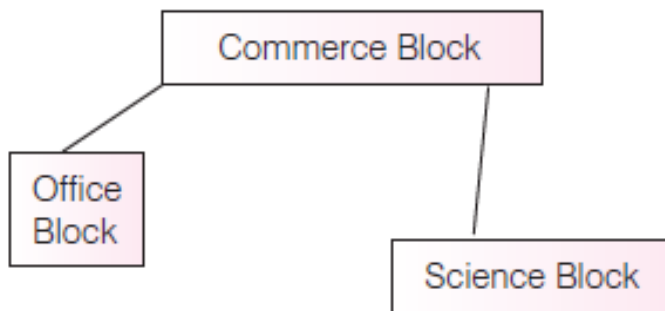

Expected number of computers to be installed at various locations in the university are as follows:	
Office Block	10
Science Block	140
Commerce Block	30
Kolkata Admission Office	8

Expected wire distancebetween various locations	
Office Block to Science Block	90 m
Office Block to Commerce Block	80 m
Science Block to Commerce Block	15 m
Kolkata Admission Office to Ana Nagar Campus	450 km

(i) Suggest the authorities, the cable layout amongst various blocks inside university campus for connecting the blocks.

(ii) Suggest the most suitable place (i.e. block) to house the server for this university with a suitable reason.

(iii) Suggest an efficient device form the following to be installed in each of the block to connect all the computers.

(a) Modem   (b) Switch   (c) Gateway

(iv) University is planning to connect its campus in Kolkata which is more than 100 km. Which type of network will be formed?

ANS:

(i)

(ii) The most suitable place to house the server is Science Block as it has maximum number of computers. Thus, reducing the cabling cost and increases efficiency of network.

(iii) (b) Switch is the device to be installed in each of the blocks to connect all the computers.

(iv) WAN