KENDRIYA VIDYALAYA RAIPUR REGION
TERM-2 EXAMINATION 2021-22
SAMPLE QUESTION PAPER_1
CLASS – XII SUB: COMPUTER SCIENCE (083)

Time -90 minutes

M. Marks- 35

General Instructions: Programming language is Python.

- This question paper is divided into 3 sections A, B and C.
- Section A has 7 Questions (1-7).Each question carries 2 marks.
- Section B has 3 Questions (8-10). Each question carries 3 marks.
- Section C has 3 case-based Questions (11-13). Each question carries 4 marks.
- Internal choices have been given for question numbers 7,8 and 12.

<table>
<tr><td>Q.NO.</td><td>Section A</td><td></td></tr>
<tr><td></td><td>Each question carry 2 marks</td><td></td></tr>
<tr><td>1.</td><td>Write a function pop() which remove name from stack named "MyStack"</td><td>2</td></tr>
<tr><td>2.</td><td>i) Expand the following- HTTP , ARPANET</td><td>1</td></tr>
<tr><td></td><td>ii) What is MAC address? Give example also.</td><td>1</td></tr>
<tr><td>3</td><td>What is the difference between Primary Key and Foreign Key?.</td><td>2</td></tr>
<tr><td>4</td><td>Explain the following results retrieval methods with examples. fetchone () rowcount () .</td><td>2</td></tr>
<tr><td>5</td><td>Consider the following tables GAMES.Give outputs for SQL queries (i) to (iv).
Table: GAMES

<table>
<tr><td>GCode</td><td>GameName</td><td>Number</td><td>PrizeMoney</td><td>ScheduleDate</td></tr>
<tr><td>101</td><td>Carom Board</td><td>2</td><td>5000</td><td>23-Jan-2004</td></tr>
<tr><td>102</td><td>Badminton</td><td>2</td><td>12000</td><td>12-Dec-2003</td></tr>
<tr><td>103</td><td>Table Tennis</td><td>4</td><td>8000</td><td>14-Feb-2004</td></tr>
<tr><td>105</td><td>Chess</td><td>2</td><td>9000</td><td>01-Jan-2004</td></tr>
<tr><td>108</td><td>Lawn Tennis</td><td>4</td><td>25000</td><td>19-Mar-2004</td></tr>
</table>
(i) SELECT COUNT(DISTINCT Number) FROM GAMES;
(ii) SELECT MAX(ScheduleDate),MIN(ScheduleDate) FROM GAMES;
(iii) SELECT SUM(PrizeMoney) FROM GAMES;
(iv) SELECT * FROM GAMES WHERE PrizeMoney>12000;</td><td>2</td></tr>
<tr><td>6</td><td>i) Which keyword is used to remove duplicate records from relation.</td><td>1</td></tr>
<tr><td></td><td>ii) A table "Design" in a database has 5 columns and 2records. What is the degree and cardinality of this table?</td><td>1</td></tr>
<tr><td>7</td><td>Write SQL query to create a table ‘Inventory’ with the following structure:
<table>
<tr><td>Field</td><td>Type</td><td>Constraint</td></tr>
<tr><td>MaterialId</td><td>Integer</td><td>Primary key</td></tr>
<tr><td>Material</td><td>Varchar(50)</td><td>NOT NULL</td></tr>
<tr><td>Category</td><td>Char</td><td>DEFAULT E</td></tr>
<tr><td>DatePurchase</td><td>Date</td><td></td></tr>
</table></td><td>2</td></tr>
</table>

OR

Observe the following table and answer the part (i) and (ii) accordingly.

Pno	Name	Qty	PurchaseDate
101	Pen	102	12-12-2011
102	Pencil	201	21-02-2013
103	Eraser	90	09-08-2010
109	Sharpener	90	31-08-2012
113	Clips	900	12-12-2011

(i) Write the names of most appropriate columns, which can be considered as candidate keys.

(ii) What is the degree and cardinality of the above table?

Section – B

Each question carry 3 marks

8 Write a function in Python PUSH_IN(L), where L is a list of numbers. From this list, push all even numbers into a stack which is implemented by using another list. 3

OR

Write a function in Python POP_OUT(Stk), where Stk is a stack implemented by a list of numbers. The function returns the value which is deleted/popped from the stack.

9 i) Why is it not allowed to give string and date type argument for Sum() and Avg() functions? 1

ii)There is column C1 in a table T1.The following two statements:
select count(*) from T1; and select count(C1) from T1; are giving different output.What may be the possible reason? 2

10 i) Sanghi created two tables with City as Primary Key in Table1 and Foreign key in Table2 while inserting row in Table2 Mr Sanghi is not able to enter value in the column City. What is the possible reason for it? 1

ii)The Pincode column of table 'Post' is given below- 2

100001
1200012
1300013
1600017
1800018

Find the output

i) SELECT Pincode from Post where Pincode LIKE " %1" ;
ii) SELECT Pincode from Post where Pincode LIKE " 0%" ;

Section – C

Each question carry 4 marks

11 (4)

TRAINER

TID	TNAME	CITY	HIREDATE	SALARY
101	SUNAINA	MUMBAI	1998-10-15	90000
102	ANAMIKA	DELHI	1994-12-24	80000
103	DEEPTI	CHANDIGARG	2001-12-21	82000
104	MEENAKSHI	DELHI	2002-12-25	78000
105	RICHA	MUMBAI	1996-01-12	95000
106	MANIPRABHA	CHENNAI	2001-12-12	69000

COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	AGDCA	12000	2018-07-02	101
C202	ADCA	15000	2018-07-15	103
C203	DCA	10000	2018-10-01	102
C204	DDTP	9000	2018-09-15	104
C205	DHN	20000	2018-08-01	101
C206	O LEVEL	18000	2018-07-25	105

i)Display the Trainer Name, City & Salary in descending order of their Hiredate.

ii)To display the TNAME and CITY of Trainer who joined the Institute in the month of December 2001.

iii) To display TNAME, HIREDATE, CNAME, STARTDATE from tables TRAINER and COURSE of all those courses whose FEES is less than or equal to 10000.

iv) To display number of Trainers from each city.

12 (2)

i) Identify the type of topology on the basis of the following:
a. Since every node is directly connected to the server, a large amount of cable is needed which increases the installation cost of the network.
b. It has a single common data path connecting all the nodes.

(2)

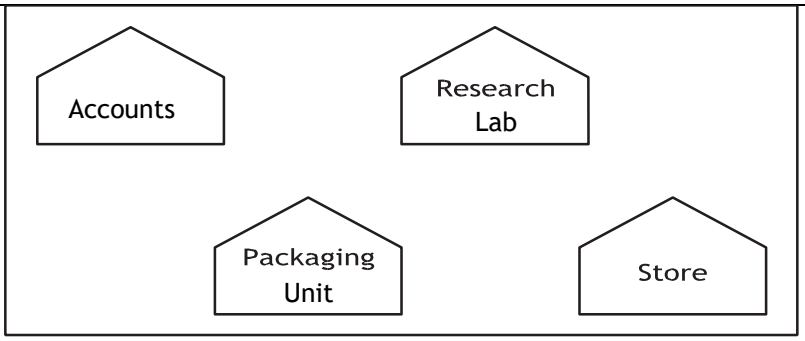
ii) Define the following:
(i)RJ-45 (ii)Ethernet

OR

What is protocol? Name 2 commonly used protocols.

13 (4)

Riana Medicos Centre has set up its new centre in Dubai. It has four buildings as shown in the diagram given below:



Distances between various buildings are as follows:

Accounts to Research Lab	55 m
Accounts to Store	150 m
Store to Packaging Unit	160 m
Packaging Unit to Research Lab	60 m
Accounts to Packaging Unit	125 m
Store to Research Lab	180 m

Building	No. of Computer
Accounts	25
Research Lab	100
Store	15
Packaging Unit	60

a network expert, provide the best possible answer for the following queries:

(i) Suggest the type of network established between the buildings.

(ii) Suggest the most suitable place (*i.e.*, building) to house the server of this organization.

(iii) Suggest the placement of the following devices with justification:
(a) Repeater (b) Hub/Switch

(iv) Suggest a system (hardware/software) to prevent unauthorized access to or from the network.

****All the Best****

KENDRIYA VIDYALAYA RAIPUR REGION

TERM-2 EXAMINATION 2021-22

CLASS – XII SUB: COMPUTER SCIENCE (083)

Marking Scheme_1

Section –A

Q1. def Pop(MyStack):
if len(MyStack) > 0:

```
 MyStack.pop()
else:
 print("Stack is empty.")
```
(2 M for correct code)

Q2.i) (i) HTTP - Hyper Text Transfer Protocol

(ii) ARPANET - Advanced Research Project Agency Network (½ for each)

ii) The NIC manufacturer assign a unique physical address to each NIC cars, this physical address is known as MAC address.

A MAC address is a 6-byye address with each byte separated by colon : example 10:BS:04:56:2E:FC (1/2 m for definition and 1/ for example) .

Q3. Primary key is the key which uniquely identifies a tuple but foreign key is the key which takes reference from primary key

ii)There is only one primary key in a table but there can be multiple foreign key on a table. (2 M for correct difference)

Q4. fetchone() :- The fetchone() method will return only one row from the result set in the form of tuple containing a record.

(B) rowcount() :- cursor.rowcount() that always return how many records have been retrieved so for using any of the fetch..() methods.

(1 M for each correct answer)

Q5. i) 2

ii)19-Mar-2004 12-Dec-2003

iii)59000

iv)

108	Lawn Tennis	4	25000	19-Mar-2004

(1/2 M for each correct answer)

Q6.i)distinct (1 M for correct answer)

ii) Degree – 5 cardinality-12 (1/2 M for each correct answer)

Q7. CREATE TABLE Inventory

(MaterialId INTEGER PRIMARY KEY,
Material Varchar(50)NOT NULL,
Category Char(2) DEFAULT='E',
DatePurchase Date); (2 M for correct answer)

OR

i) Candidate Key: Pno, Name

ii) Degree:4 Cardinality:5

Section-B

Q8.
```
top=-1
stk=[]
def PUSH_IN(L):       # Allow additions to the stack
  for i in L:
    if i%2==0:
stk.append(i)
       top=len(stk)-1
```
(½ marks for correct function header)
(1 mark for correct accessing of list elements)
(½ mark for correct condition for even number)
(½ mark for applying append() correctly)
(½ mark for assignment in variable top)

OR

```
def isEmpty(stk):        # checks whether the stack is empty or not
  if stk==[]:
```

```
        return True


    else:
      return False
  def POP_OUT(stk):
    if isEmpty(stk):  # verifies whether the stack is empty or not
      print(&amp;quot;Stack Underflow&amp;quot;)
    else:    # Allow deletions from the stack
      item=stk.pop()
      if len(stk)==0:
        top=-1
      else:
        top=len(stk)
      return item
```

(½ marks for correct POP_OUT() function header)
(½ mark for checking empty stack status)
(½ mark for removing item for stack)
(1 mark for assignment in variable top)
(½ mark for returning the deleted item)

Q9. i) String and dates are not real numbers that we calculate, so sum() or avg() functions are not valid for them.
ii)There may be a Null value. (1 M for each correct answer)

Q10. I) Mr Sanghi was trying to enter the name of City in Table2 which is not present in Table1 i.e. Referential Integrity ensures that value must exist in referred table.

i) i) 100001 ii)No output (1 M for each correct answer)

Q11. (i)SELECT TNAME, CITY, SALARY FROM TRAINER ORDER BY HIREDATE;
(ii)SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE BETWEEN '2001-12-01' AND '2001-12-31';
(iii)SELECT TNAME,HIREDATE,CNAME,STARTDATE FROM TRAINER, COURSE WHERE TRAINER.TID=COURSE.TID AND FEES<=10000;
(iv) SELECT CITY, COUNT(*) FROM TRAINER GROUP BY CITY;
(1 M for each correct query)

Q12. i) a. Star Topology b. Bus Topology (1M for each correct answer)

ii) a) RJ-45: RJ45 is a standard type of connector for network cables and networks. It is an 8-pin connector usually used with Ethernet cables.

(b)Ethernet: Ethernet is a LAN architecture developed by Xerox Corp along with DEC and Intel. It uses a Bus or Star topology and supports data transfer rates of up to 10 Mbps. (1M for each correct answer)

OR

A protocol means the rules that are applicable for a network or we can say that the common set of rules used for communication in network. Different types of protocols are : (i) HTTP : Hyper Text Transfer Protocol (ii) FTP : File Transfer Protocol (iii) SLIP : Serial Line Internet Protocol (iv) PPP : Point to Point Protocol (v) TCP/IP : Transmission Control Protocol/ Internet Protocol. ((1M for each correct definition and ½ M for each correct name))

Q13.i) LAN
ii) Research Lab

iii) hub in each building
iv)Firewall
(1 M for each correct answer)

KENDRIYA VIDYALAYA RAIPUR REGION

TERM-2 EXAMINATION 2021-22

SAMPLE QUESTION PAPER_2

CLASS – XII SUB: COMPUTER SCIENCE (083)

Time -90 minutes **M. Marks- 35**

General Instructions: Programming language is Python.

- This question paper is divided into 3 sections A, B and C.
- Section A has 7 Questions (1-7).Each question carries 2 marks.
- Section B has 3 Questions (8-10). Each question carries 3 marks.
- Section C has 3 case-based Questions (11-13). Each question carries 4 marks.
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<tr><td>Q.NO.</td><td><u>Section A</u></td><td>M</td></tr>
<tr><td></td><td>Each question carry 2marks</td><td></td></tr>
<tr><td>1.</td><td>Write a function Push() which takes number as argument and add in a stack "MyValue"</td><td>2</td></tr>
<tr><td>2.</td><td>Write two advantages and two disadvantages of network.</td><td>2</td></tr>
<tr><td>3</td><td>What is the difference between where and having clause in SQL.</td><td>2</td></tr>
<tr><td>4</td><td>Write a small python program to insert a record in the table books with attributes (title ,isbn).</td><td>2</td></tr>
<tr><td>5</td><td>Consider the following tables FACULTY and COURSES. Write SQL commands for the statements (i) to (ii) and give outputs for SQL queries (iii) to (iv).
FACULTY
<table>
<tr><td>F_ID</td><td>Fname</td><td>Lname</td><td>Hire_date</td><td>Salary</td></tr>
<tr><td>102</td><td>Amit</td><td>Mishra</td><td>12-10-1998</td><td>12000</td></tr>
<tr><td>103</td><td>Nitin</td><td>Vyas</td><td>24-12-1994</td><td>8000</td></tr>
<tr><td>104</td><td>Rakshit</td><td>Soni</td><td>18-5-2001</td><td>14000</td></tr>
<tr><td>105</td><td>Rashmi</td><td>Malhotra</td><td>11-9-2004</td><td>11000</td></tr>
<tr><td>106</td><td>Sulekha</td><td>Srivastava</td><td>5-6-2006</td><td>10000</td></tr>
</table>
COURSES
<table>
<tr><td>C_ID</td><td>F_ID</td><td>Cname</td><td>Fees</td></tr>
<tr><td>C21</td><td>102</td><td>Grid Computing</td><td>40000</td></tr>
<tr><td>C22</td><td>106</td><td>System Design</td><td>16000</td></tr>
<tr><td>C23</td><td>104</td><td>Computer Security</td><td>8000</td></tr>
<tr><td>C24</td><td>106</td><td>Human Biology</td><td>15000</td></tr>
<tr><td>C25</td><td>102</td><td>Computer Network</td><td>20000</td></tr>
<tr><td>C26</td><td>105</td><td>Visual Basic</td><td>6000</td></tr>
</table>
i) To display the details of courses whose fees is in the range of 15000 to 50000 (both values included).
ii) To increase the fees of all courses by 500 of “System Design” Course.
iii) Select COUNT(DISTINCT F_ID) from COURSES;
iv)Select Fname,Cname from FACULTY,COURSE where COURSE.F_ID=FACULTY.F.ID;</td><td>2</td></tr>
<tr><td>6</td><td>i) What is constraint?</td><td>2</td></tr>
</table>

ii) What are single row functions ?

7 Make difference between DELETE and DROP command. Explain with suitable examples of each. 2

OR

Differentiate between Alter and Update Command

Section – B

Each question carry 3 marks

8 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. 3

OR

Write a function in Python POP(Arr), where Arr is a stack implemented by a list of numbers. The function returns the value deleted from the stack.

9 Define degree and cardinality. Based upon given table write degree and cardinality. 3

PATIENTS

PatNo	PatName	Dept	DocID
1	Leena	ENT	100
2	Supreeth	Ortho	200
3	Madhu	ENT	100
4	Neha	ENT	100
5	Deepak	Ortho	200

10 In a database there are two tables 'LOAN' and 'BORROWER' as shown below:

LOAN

Loan_Number	Branch_name	Amount
L-170	Downtown	3000
L-230	RedWood	4000

BORROWER

Customer_Name	Loan_number
Jones	L-170
Smith	L-230
Hayes	L-155

(i) Write Degree and Cardinality of LOAN table.

(ii) Identify the Primary Key column in the LOAN table.

(iii) How many rows and columns will be there in the natural join of these two tables?

Section – C

Each question carry 4 marks

11 Consider the following table WORKERS and DESIG. Write SQL commands for the the statements (i) to (iv) .

WORKERS

W_ID	FIRSTNAME	LASTNAME	ADDRESS	CITY
102	Sam	Tones	33 Elm St.	Paris
105	Sarah	Ackerman	440 U.S 110	New York
144	Manila	Sengupta	24 Friends Street	New Delhi
210	George	Smith	83 First Street	Howard
255	Mary	Jones	842 VineAve.	Lsantiville
300	Robert	Samuel	9 Fifth Cross	Washington
335	Henry	Williams	12 Moore Street	Boston
403	Ronny	Lee	121 Harrison St.	New York
451	Pat	Thompson	11 Red Road	Paris

DESIG

W_ID	SALARY	BENEFITS	DESIGNATION
102	75000	15000	Manager
105	85000	25000	Director
144	70000	15000	Manager
210	75000	12500	Manager
255	50000	12000	Clerk
300	45000	10000	Clerk
335	40000	10000	Clerk
403	32000	7500	Salesman
451	28000	7500	Salesman

(i) To display W_ID Firstname, Address and city of all employees living in New York from the table WORKERS.
(ii) To Display the content of WORKERS table in ascending order of LASTNAME.
(iii) To display the Firstname ,Lastname and Total Salary of all Clerks from the tables WORKERS and DESIG , Where Total Salary is calculated as a Salary +Benefits.
(iv) To display the Minimum salary among Managers and Clerks from the table DESIG.

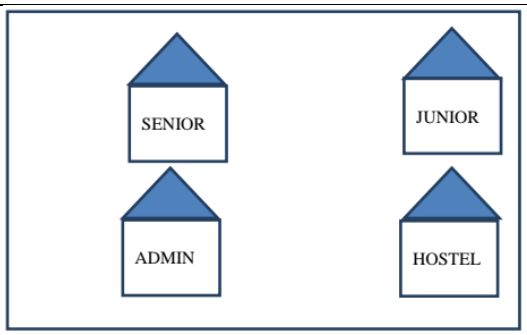
12 i) Define the following data communicating devices: 2
(a) Repeater (b)Gateway

OR

Define the following: (i)3G (ii)SMS

ii) Write the two advantages and two disadvantages of Bus Topology in network. 2

13 Multipurpose Public School, Bengaluru is Setting up the network between its Different Wings of school campus. 4
There are 4 wings named as SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H).



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:

Wings	Number 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 Multipurpose Public School, Bengaluru.
b. Name the most suitable wing where the Server should be installed. Justify your answer.
c. Suggest a device/software and its placement that would provide data security for the entire network of the School.
d. Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the campus of Multipurpose Public School, Bengaluru.

KENDRIYA VIDYALAYA RAIPUR REGION

TERM-2 EXAMINATION 2021-22
SAMPLE QUESTION PAPER_2
CLASS – XII SUB: COMPUTER SCIENCE (083)

Marking Scheme_2
Section –A

Q1.
```
MyValue=[]
def Push(value):
```

MyValue.append(value)

(2 M for correct code)

Q2. Advantages of network:

(a) We can share resources such as printers and scanners.

(b) We can share data and access files from any computer.

Disadvantages of network:

(a) If there is any problem in the server, then no communication can take place.

(b) Network faults can cause loss of data.

(c) If there is no privacy mechanism used then the entire network can be accessed by an unauthorized person.

Q3. Where is used with single row function where as having is used with group row function.

example- select designation,sum(salary) from desig group by designation having count(*) < 3;

select sum(benefits) from workers where designation = 'salesman';

(1 m for difference and 1 m for example)

Q4.
```
import mysql.connector as Sqlator
conn =sqlator.connect(host="localhost",user="root",passwd="",database="test")
cursor=con.cursor()
query="INSERT into books(title,isbn) values('{}'{})".format('Neelesh','5143')
cursor.execute(query)
con.close()
```
(2m for correct code)

Q5,i) Select * from Courses.where fees between 15000 and 50000;

ii)Update courses set fees = fees + 500 where Cname = "System Design";

iii) 4

iv)

Amit	Grid Computing
Rakshit	Computer Security
Rashmi Sulekha	Visual Basic Human Biology

(1/2 M for each correct answer)

Q6. i)A constraints is a condition or check application on a field or set of fields.

Example: NOT NULL (ensure that column con not have null value), CHECK (make sure that all value satisfy certain criteria), UNIQUE (ensure that all values in a column are different) etc.

ii) Single Row Function work with a single row at a time. A single row function returns a result for every row of a quired table

Examples of Single row functions are Sqrt(), Concat(), Lcase(), Upper(), Day(), etc.

(1 M for each correct answer)

Q7. DELETE is DML command while DROP is a DDL command. Delete is used to delete rows from a table while DROP is used to remove the entire table from the database. (2 M for correct difference)

OR

Alter command in DDL command but update command is DML Command.
Alter command is used to add,modify and delete a column from the table and update command is used to make changes in the record of the table

Q8.
```
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)
```
(3 M for correct code)

OR

```
def popStack(st) :
# If stack is empty
 if len(st)==0:
    print("Underflow")
else:
    L = len(st)
   val=st[L-1]
   print(val)
  st.pop(L-1)
```
(3 M for correct code)

Q9. No of attributes called degree and no. of tuples called cardinality. (1 M for each correct definition)
4 degree , 5 cardinality (1/2 M for each correct value)

Q10. (i) Degree: 3 Cardinality: 2

(ii) Loan_Number

(iii) Rows: 6 Columns: 5

(1 mark for each correct answer)

Q11. i)SELECT W_ID, Firstname, Address, City FROM workers WHERE City = 'New York';
(ii) SELECT * FROM Workers ORDER BY LASTNAME;
(iii) SELECT Firstname,Lastname, Salary + Benefits "Total Salary" FROM Workers,Desig WHERE Workers.W_ID = Desig.W_ID AND Designation = 'Clerk';
(iv) SELECT Designation, Min(salary) FROM Desig GROUP BY Designation HAVING Designation IN ('Manager','Clerk');
(1 M for each correct query)

Q12. Ans. I) (a) Repeater: Itis a device that amplifies and restoresthe signal before it gets degraded and transmitsthe

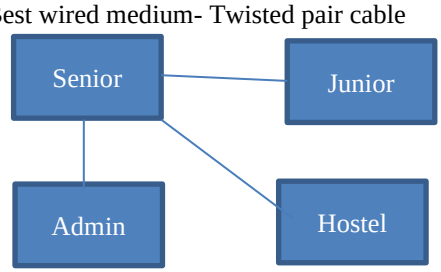
original signal back to the destination. A repeater is a regenerator and not an amplifier.

(b) Gateway: A gateway operates on all the seven layers of OSI model. A network gateway is a computer
which has internet-working capability of joining together two networks that use different base protocols. Gateway converts one protocol to another and can, therefore, connect two dissimilar networks.

OR

i) 3G: 3G (Third Generation) mobile communication technology is a broadband, packet-based transmission of text, digitized voice, video and multimedia at data rates up to 2 mbps, offering a consistent set of services to mobile computer and phone users no matter where they are located in the world.
(ii)SMS: SMS (Short Message Service) is the transmission of short text messages to and from a mobile phone, fax machine and IP address.
(1 M for each correct answer)
ii) Advantage: Easy to connect a computer or peripheral to a linear bus. Requires less cable length than a star topology.
Disadvantage : Slower as compared to tree and star topologies of network. Breakage of wire at any point disturbs the entire

Q13. a) Best wired medium- Twisted pair cable



(½ mark for correct wire medium and ½ mark for correct cable layout)

b)The server should be installed at Wing S(Senior) as per 80-20 rule i.e. maximum traffic should be local and minimum traffic should pass over backbone.

(½ mark for correct server block and ½ mark for correct justification)

c) Firewall.

(1 mark for correct answer, No partial marking)

d) Device: Wireless Access Point or Router or WiFi hotspot device or Wifi Dongle

Protocol: IEEE 802.11x or TCP/IP

(½ mark for correct Device and ½ mark for correct protocol)

All the Best

KENDRIYA VIDYALAYA SANGATHAN
REGIONAL OFFICE RAIPUR
Sample Question Paper- 3 TERM2 EXAM-2021-22
CLASS XII - COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35 Time: 2 hours

General Instructions

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- 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></td><td></td><td>Section –A
Each question carries 2 marks</td><td></td></tr>
<tr><td>Q. No</td><td>Part No.</td><td>Question</td><td>Marks</td></tr>
<tr><td>1.</td><td></td><td>Write an algorithm for pop operation in stack</td><td>(2)</td></tr>
<tr><td>2.</td><td>(i)</td><td>Expand the following:
POP, HTTP</td><td>(1)</td></tr>
<tr><td></td><td>(ii)</td><td>Write one advantage of star topology over bus topology.</td><td>(1)</td></tr>
<tr><td>3.</td><td></td><td>What is the difference between degree and cardinality of a table? What is the degree and cardinality of the following table?

<table><tr><td>EMPNO</td><td>ENAME</td><td>SALARY</td></tr><tr><td>1101</td><td>Pramod</td><td>48000</td></tr><tr><td>1102</td><td>Balswaroop</td><td>52600</td></tr></table></td><td>(2)</td></tr>
<tr><td>4.</td><td></td><td>Write the code to create the connection in which database’s name is Python, name of host, user and password can taken by user. Also, print that connection.</td><td>(2)</td></tr>
</table>

5. Write the output of the queries (i) to (iv) based on the table, COURSE given below: (2)

Table: COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	AGDCA	12000	2018-07-02	101
C202	ADCA	15000	2018-11-15	103
C203	DCA	10000	2018-10-01	102
C204	DDTP	9000	2018-09-15	104
C205	DHN	20000	2018-11-01	101
C206	O LEVEL	18000	2018-07-25	105

(i) SELECT DISTINCT TID FROM COURSE;

(ii) SELECT TID, COUNT(*), MIN(FEES) FROM COURSE GROUP BY TID HAVINGCOUNT(*)>1;

(iii) SELECT COUNT(*), SUM(FEES) FROM COURSE WHERE STARTDATE< '2018-09-15';

(iv) SELECT CID, CNAME FROM COURSE ORDER BY CNAME DESC.

6. (i) Which command is used to delete a table in a database? (1)

(ii) Define natural join. (1)

7. (2)

TABLE: FACULTY

F_ID	F_Name	Hire_date	Salary
102	Amit	12-10-1998	12000
103	Nitin	24-12-1994	8000
104	Rakshit	18-5-2001	14000
105	Rashmi	11-9-2004	11000
106	Sulekha	5-6-2006	10000

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

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

OR

Table: GAMES

GCode	GameName	Number	PrizeMoney	ScheduleDate
101	Carom Board	2	5000	23-Jan-2004
102	Badminton	2	12000	12-Dec-2003
103	Table Tennis	4	8000	14-Feb-2004
105	Chess	2	9000	01-Jan-2004
108	Lawn Tennis	4	25000	19-Mar-2004

Table: PLAYER

Pcode	Name	GCode
1	Nabi Ahmad	101
2	Ravi Sahai	108
3	Jatin	101
4	Nazneen	103
5	Anand	108

(i) Which field will be considered as the foreign key as per the above tables.

(ii) Identify the candidate key(s) from the table GAMES.

SECTION – B
Each question carries 3 marks

8. Pramod has created a dictionary containing EMPCODE and SALARY as key value pairs of 5 Employees of Parthivi Constructions. Write a program, with separate user defined functions to perform the following operations: (3)

- Push the keys (Employee code) of the dictionary into a stack, where the corresponding value (Salary) is less than 25000.
- Pop and display the content of the stack.

For example:
If the sample content of the dictionary is as follows:

		EMP={"EOP1":16000, "EOP2":28000, "EOP3":19000, "EOP4":15000, "EOP5":30000} The output from the program should be: EOP4 EOP3 EOP1 **OR** Aryan 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**um=[31, 55, 76, 89, 21, 45, 76, 68] Sample Output of the code should be: 45 21 89 31	
9.	(i)	A table, PERSON is created with following attributes: P_Id LastName FirstName Address City Give the SQL command to insert a new row in the PERSONS table.	(1)
	(ii)	Differentiate between ALTER and UPDATE commands in SQL	(2)
10.		Write the queries for the following questions using the table **Product** with the following fields, under the database STORE. (P_ Code, P_Name, Qty, Price) (i) Create a database STORE (ii) Display the price of product having code as P06. (iii) Display the name of all products with quantity greater than 50 and price less than 500.	(3)

Section C
Each question carries 4 marks

11. Write queries (a) to (d) based on the tables **Sender** and **Recipients** given below: (4)

Sender

SenderID	SenderName	SenderAddress	Sendercity
ND01	R Jain	2, ABC Appls	New Delhi
MU02	H Sinha	12 Newtown	Mumbai
MU15	S Jha	27/A, Park Street	Mumbai
ND50	T Prasad	122-K,SDA	New Delhi

Recipients

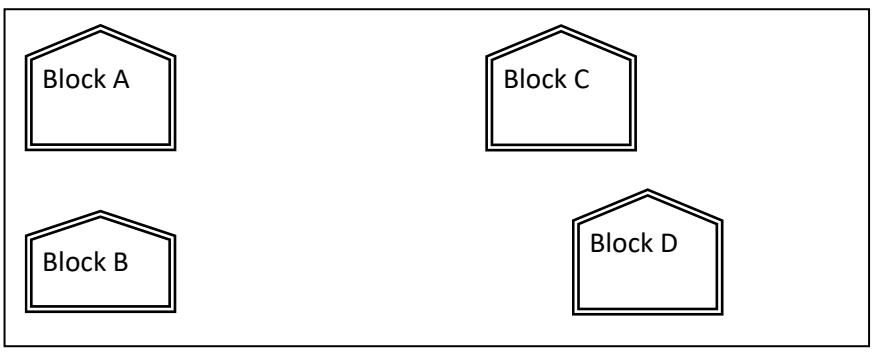
RecID	SenderID	RecName	RecAddress	recCity
KO05	ND01	R Bajpayee	5, Central Avenue	Kolkata
ND08	MU02	S Mahajan	116, A-Vihar	New Delhi
MU19	ND01	H Singh	2A, Andheri East	Mumbai
MU32	MU15	P K Swamy	B5, C S Terminals	Mumbai
ND48	ND50	S Tripathi	13, BI D Mayur Vihar	New delhi

(a) To display the names of all Senders from Mumbai

(b) To display the RecID, Sendername, SenderAddress, RecName, RecAddress for every Recipient

(c) To display Recipient details in ascending order of RecName

(d) To display number of Recipients from each city

12.	(i)	Give two advantages and two disadvantages of Radiowave **OR** Define the following terms: Modem, Bluetooth	(2)
	(ii)	What is the difference between star topology and bus topology of network?	(2)
13.		Shiva Multi Tech Corporation (SMTC) has set up its new center at four offices for web based activities. The 4 blocks of buildings are as shown in the diagram below:  Center to center distances between various blocks Black A to Block B — 50 m Block B to Block C — 150 m Block C to Block D — 25 m Block A to Block D — 170 m Block B to Block D — 125 m Block A to Block C — 90 m Number of Computers Black A — 25 Block B — 50 Block C — 125 Block D — 10 (a) Which of the following devices will be suggested by you to connect each computer in each of the block? ● Gateway ● Switch ● Modem . (b) Suggest the most suitable place (i.e. block) to house the server of this organisation with a suitable reason. (c) What will be the best possible connectivity out of the following, you will suggest to connect the new setup of offices in Bengalore with its London based office? ● Infrared ● Satellite Link ● Ethernet Cable (d) Company is planning to connect its Block in Hyderabad which is more than 20 km. Which type of network will be formed?	(4)

KENDRIYA VIDYALAYA SANGATHAN

REGIONAL OFFICE RAIPUR

MARKING SCHEME SAMPLE PAPER – 3 TERM2 EXAM-2021-22

CLASS XII - 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**	**Marking Instructions**	**Marks**
1.		**Algorithm Steps** 1. if (Top == – 1) write "Stack is empty" and go to step 4 2. ITEM = data [Top] 3. Top = Top – 1 4. Stop.	2 marks for correct answer.	(2)
2.	(i)	POP : Post Office Protocol HTTP: Hypertext Transfer Protocol	½ mark for each correct expansion	(1)
	(ii)	Advantage of star topology over bus topology : The star topology is the most reliable as there is a direct connection of every nodes in the network with the central node, so any problem in any node will affect the particular node only	1 mark for each correct answer	(1)
3.		**Degree**: The number of attributes or columns in a table is called the degree of the table. The degree of the given table is 3. **Cardinality:** The number of rows or records in a table is called the cardinality of the table. The cardinality of the given table is 2.	1 mark for correct difference. 1 mark for correct degree and cardinality.	(2)

4.		import mysql.connector mycon = mysql.connector.connect(host = "localhost", user = "root", passwd = "tiger", database = "Python") print(mycon)	½ mark for Import statement, ½ mark for printing connection object.1 mark for correct connection	(2)
5.		The output of the queries (i) to (iv) based on the table, COURSE. (i) **DISTINCT TID** 101 103 102 104 105 (ii) TID COUNT(*) MIN(FEES) 101 2 12000 (iii) COUNT(*) SUM(FEES) 2 30000 (iv) CID CNAME C206 O LEVEL C205 DHN C204 DDTP C203 DCA C201 AGDCA C202 ADCA	½ mark for each correct output	(2)
6.	(i)	DROP TABLE <TABLE NAME>	1 mark for correct answer	(1)
	(ii)	Natural Join: The join in which only one of the identical columns existing in both tables is present, No duplication of columns.	1 mark for correct answer.	(1)
7.		(a) Degree: 4 Cardinality: 5 (b) **F_ID** should be made the primary key as it uniquely identifies each record of the table.	½ mark each for correct degree and cardinality ½ mark for correct field and ½ mark for justification.	(2)

		OR (i) GCode (ii)GCode and GameName	½ mark for each correct field name 1 mark for correct answer	
		SECTION – B **Each question carries 3 marks**		
8.		**# Question No 8 (first option)** **EMP={"EOP1":16000, "EOP2":28000,** **"EOP3":19000, "EOP4":15000, "EOP5":30000}** **def PUSH(S,N):** **S.append(N)** **def POP(S):** **if S!=[]:** **return S.pop()** **else:** **return None** **ST=[]** **for k in EMP:** **if EMP[k]<25000:** **PUSH(ST,k)** **while True: if** **ST!=[]:** **print(POP(ST),end=" ")** **else:** **break** **OR** **# Question No 8 (second option)** **Num=[31, 55, 76, 89, 21, 45, 76, 68]** **def PUSH(S,N):**	1 mark for correct PUSH operation 1 mark for correct POP operation 1 mark for correct function calls and displaying the output 1 mark for correct PUSH operation	(3)

		`  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:`
		`  if ST!=[]:`
		`  print(POP(ST),end=" ")`
		`  else:`
		`  break`
			1 mark for correct POP operation
			
			1 mark for correct function calls and displaying the output	

9.	(i)	INSERT INTO PERSONS VALUES(3, 'Pettersen' 'Kerry' ,'Storgt 20','Dollas') #or similar command	1 mark for correct command	(1)
	(ii)	**Alter:** It belongs to DDL category. It changes the structure of the table. Columns can be added, modified , deleted etc **Update:** It belongs to DML category. It modifies data of the table. Data can be changed, updated with values and expressions.	2 marks for 2 correct difference.	(2)

10.		`(i) CREATE DATABASE STORE;`
		`(ii) SELECT Price FROM Product WHERE P_Code="P06";`
		`(iii) SELECT P_Name FROM Product WHERE Qty>50 AND Price<500;`
			1 mark for each correct query.	(3)

		Section C **Each question carries 4 marks**		

11.		`(a)SELECT SenderName FROM Sender where Sendercity = 'Mumbai';`
		
		`(b) SELECT RecID, Sendername, SenderAddress, RecName, RecAddress FROM Sender S, Recipients R WHERE S.SenderID = R.SenderID;`
		
		`(c)SELECT * FROM Recipients ORDER BY RecName;`		

		(d) SELECT COUNT(*) FROM Recipients GROUP BY recCity.		

		FROM EMPLOYEE GROUP BY DEPTID; (b) SELECT NAME, DEPTNAME FROM EMPLOYEE, DEPARTMENT WHERE EMPLOYEE.DEPTID= DEPARTMENT.DEPTID AND SALARY>50000; (c) SELECT NAME FROM EMPLOYEE WHERE SALARY IS NULL ORDER BY NAME; (d) SELECT DISTINCT DEPTID FROM EMPLOYEE;	1 mark for each correct query	(4)
12.	(i)	Advantages • Cheaper than wired network. • Provides mobility. • Easy to use over difficult terrain. Disadvantages • Insecure communication can be easily taped. • It is affected by the weather conditions such as rain, storms, thunder, etc OR **Modem**: It is a device that converts digital signal to analog signal (modulator) at the sender's site and converts back analog signal to digital signal (demodulator) at the receiver's end, in order to make communication possible via telephone lines. It enables a computer to transmit data over telephone or cable lines **Bluetooth:**It is used for exchanging data over a short distance from fixed and mobile devices. This type of media comes under PAN (Personal Area Network).	½ mark for each correct advantage / disadvantage 1 mark for each correct definition	(2)
	(ii)	**Star Topology:** All the nodes are directly connected with the central node or server. Easy to detect faults. It is fast in transmission. **Bus topology:** There is a single length of transmission medium on which various nodes are attached and the server can be anywhere in the transmission cable. Faults cannot be easily detected. Becomes slow with increase in node.	1 mark for each correct difference (minimum two points should be given.	(2)

13.		(a) Switch (b) Block C (c) Satellite Link (d) MAN		(4)

KENDRIYA VIDYALAYA SANGATHAN

REGIONAL OFFICE RAIPUR

Sample Question Paper - 4 TERM2 EXAM-2021-22

CLASS XII - 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.
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- 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.		Define stack. What is the significance of TOP in stack.	(2)
2.	(i)	Expand the following: **POP , FTP**	(1)
	(ii)	**Write any two advantages of Optical Fibre Cable.**	(1)
3.		What is a primary key? How many primary keys can be there in a table?	(2)
4.		Differentiate between fetchone() and fetchall() methods.	(2)

5. Write the output of the queries (a) to (d) based on the table, TRANSACT given below: (2)

Table: TRANSACT

TRNO	ANO	AMOUNT	TYPE	DOT
T001	101	2500	Withdraw	2017-12-21
T002	103	3000	Deposit	2017-06-01
T003	102	2000	Withdraw	2017-05-12
T004	103	1000	Deposit	2017-10-22
T005	101	12000	Deposit	2017-11-06

(a) To display minimum amount transaction from the table
(b) To display total amount withdrawn from table.
(c) To display ANO, DOT, AMOUNT for maximum amount transaction.
(d) To display all information DOT wise

6 (i) Which command is used to view the list of databases in a server? (1)

(ii) Define equi-join with example. (1)

7 Consider the tables given below: (2)

Table: ACTIVITY

ACode	ActivityName	ParticipantsNum	PrizeMoney	ScheduledDate
1001	Relay 100x4	16	10000	23-Jan-2004
1002	High jump	10	12000	12-Dec-2003
1003	Shot Put	12	8000	14-Feb-2004
1005	Long Jump	12	9000	01-Jan-2004
1008	Discus Throw	10	15000	19-Mar-2004

(a) Identify the candidate key(s) from the table : ACTIVITY

(b) What is the datatype of the field ScheduledDate

OR

Table: COACH

PCode	Name	ScheduledDate
1	Ahmad Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

(a) Identify the degree and cardinality of the table: COACH
(b) Which key should be used as Primary key from the above table.

<table>
<tr><td></td><td></td><td>SECTION – B
Each question carries 3 marks</td><td></td></tr>
<tr><td>8</td><td></td><td>Ashish students of class XII wants to enter details of student’s- Rollno, Name and grade in a stack. Help him to write Push() methods in Python to add student’s details. Display the student’s details.

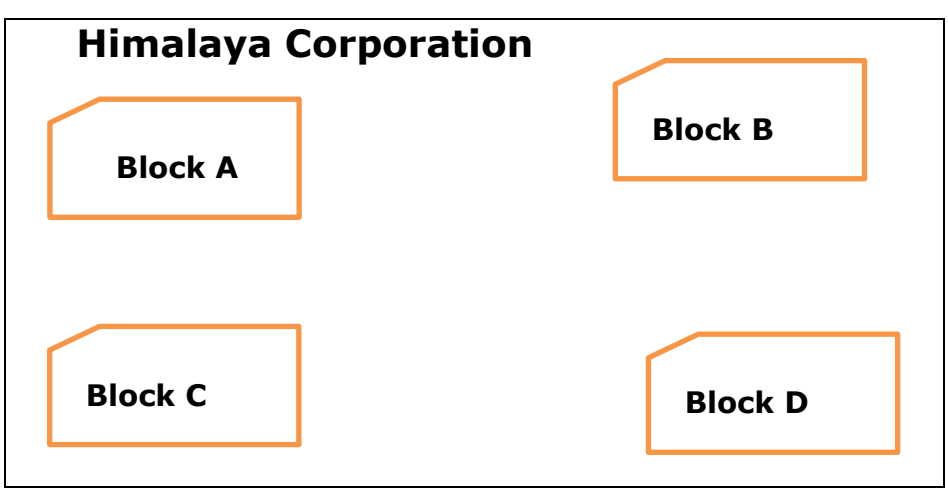
OR

Write a program to implement a stack for the students(studentno, name). Just implement Pop and display.</td><td>(3)</td></tr>
<tr><td>9</td><td>(i)</td><td>A table, STUDENT has been created in a database with the following fields.
ROLLNO, SNAME, FNAME, ADDRESS, PER, GRADE
Give the SQL command to delete a field, ADDRESS from the table.</td><td>(1)</td></tr>
<tr><td></td><td>(ii)</td><td>What is the differences between HAVING clause and WHERE clause?</td><td>(2)</td></tr>
<tr><td>10</td><td></td><td>Sagar has to create a database EMPDATA for his company and he wants to enter details of all the employees in the table EMPLOYEE. Table has the following structure: Table: EMPLOYEE

<table><tr><th>FIELD NAME</th><th>DATA TYPE</th><th>REMARKS</th></tr><tr><td>EMP_ID</td><td>CHAR(5)</td><td>PRIMARY KEY</td></tr><tr><td>EMP_NAME</td><td>CHAR(30)</td><td></td></tr><tr><td>DESIGNATION</td><td>CHAR(15)</td><td></td></tr><tr><td>BASIC</td><td>INTEGER(6)</td><td></td></tr><tr><td>ADDRESS</td><td>CHAR(20)</td><td></td></tr></table>
Help him to complete the task by suggesting appropriate SQL commands.</td><td>(3)</td></tr>
</table>

11		**ider the following tables GAMES and PLAYER. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii).** **Table: GAMES** (i) To display the name of all Games with their Gcodes. (ii) To display details of those games which are having PrizeMoney more than 7000. (iii) To display the content of the GAMES table in ascending order of ScheduleDate. (iv) To display sum of PrizeMoney for each of the Number of participation	(4)
12	(i)	Give one advantage and one disadvantage of Bus topology OR Define the following terms: URL, IP Address	(2)
	(ii)	Write the difference between LAN and MAN.	(2)
13		Himalaya Corporation has set up its new centre at New Delhi for its office and web-based activities. It has 4 blocks of buildings.	(4)

GCode	GameName	Number	PrizeMoney	ScheduleDate
101	Carom Board	2	5000	23-Jan-2004
102	Badminton	2	12000	12-Dec-2003
103	Table Tennis	4	8000	14-Feb-2004
105	Chess	2	9000	01-Jan-2004
108	Lawn Tennis	4	25000	19-Mar-2004



Distance between the various blocks is as follows:

A to B	50 m
B to C	110m
C to D	105 m
A to D	165 m
B to D	45 m
A to C	40 m

Numbers of computers in each block

Block A -	30
Block B -	45
Block C -	50
Block D -	75

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

(b) Suggest the placement of the following device with justification
   i. Repeater
   ii. Hub/Switch

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

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

[6]

KENDRIYA VIDYALAYA SANGATHAN

REGIONAL OFFICE RAIPUR

MARKING SCHEME SAMPLE PAPER – 4 TERM2 EXAM-2021-22

CLASS XII - 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.
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- 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**	**Marking Instructions**	**Marks**
1.		A stack is an abstract data type and a linear or user-defined data structure based on the principle of Last In First Out (LIFO). A stack is a list where insertion and deletion can take place only at one end called **Top**.	1 mark each for def. of stack and TOP.	(2)
2.	(i)	POP : Post Office Protocol. FTP: File Transfer Protocol.	½ mark for each correct expansion	(1)
	(ii)	Advantages of Optical Fibre Cable : 1. It is immune to electrical and magnetic fields. So, the data does not get disturbed and pure data is retrieved on the other end. 2. It guarantees secure transmission and has a very high transmission capacity.	1mark for correct answer	(1)
3.		It is a combination of one or more fields in a table that can uniquely identify a record. There can be only one primary key in a table. It plays an important role in identifying the records, because it is the primary key who carries unique values. The criteria for a field to become primary key is : It must be carrying unique and NOT NULL values.	2 mark for correct answer	(2)

4.		fetch(): It returns the next row from the result set as tuple. If there are no more rows to retrieve, None is returned. fetchall():It fetches all the rows of a query result. It returns all the rows as a list of tuples. An empty list is returned if there is no record to fetch.	2 mark for correct answer	(2)
5.		(i) To display minimum amount transaction from the table. **Ans.** select min(amount) from Transact; (ii) To display total amount withdrawn from table. **Ans.** select sum(amount) from Transact where type = "Withdraw"; (iii) To display ANO, DOT, AMOUNT for maximum amount transaction. **Ans.** select ANO, DOT, AMOUNT from Transact where AMOUNT = max(AMOUNT); (iv) To display all information DOT wise. **Ans.** select * from Transact order by DOT;	½ mark for each correct output	(2)
6.	(i)	SHOW TABLES;	1 mark for correct answer	(1)
	(ii)	Equi join is a simple SQL join condition that uses equal sign as a comparison operator. Syntax: SELECT col1, col2, col3 FROM table1, table2 WHERE table1.col1 = table2.col1;	1 mark for correct answer and syntax.	(1)
7.		(a) Acode, ActivityName (b) Date OR (a) Degree: 3 Cardinality :4 (b) PCode	½ mark for each correct field name 1 mark for correct answer OR ½ Mark each for correct degree & cardinality, 1 Mark for correct field name.	(2)

		SECTION – B **Each question carries 3 marks**		

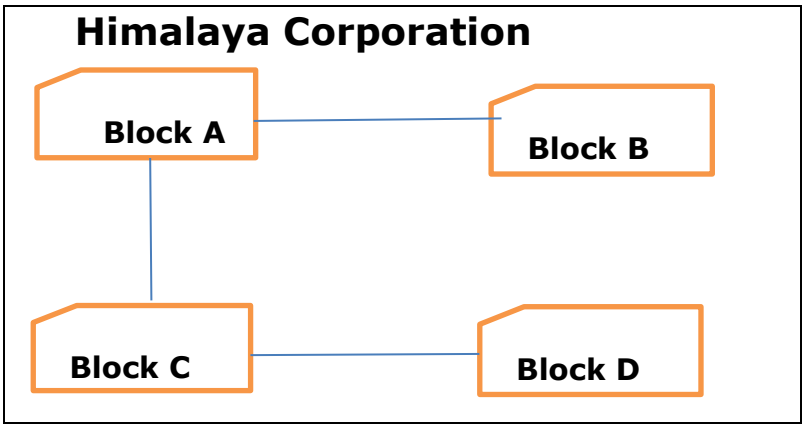
8.		**# Question No 8 (first option)**
		def push(stack):
		s=[]
		s.append(input("Enter student rollno?"))
		s.append(raw_input("Enter student name"))
		s.append(raw_input("Enter student grade"))
		stack.append(s)
		
		def display (stack):
		l=len(stack)
		print "STACK CONTENTS"
		for i in range(l-1,-1,-1):
		print stack[i]
		
		stack=[]
		print "Creating Stack"
		n = input("Enter the number of students")
		for i in range(n):
		student = []
		student.append(input("Enter student rollno?"))
		student.append(raw_input("Enter student name"))
		student.append(raw_input("Enter student grade"))
		stack, append(student) push(stack)
		display(stack)
			1 mark for correct PUSH operation
			
			1 mark for correct display() operation
			
			1 mark for correct function calls and entering the values for students.
				(3)

		OR **# Question No 8 (second option)**		

		stk=[]
		top=-1
		def POP():
		if(top==-1):
		print("NO STUDENT DATA")
		else:
		
		print("Student details are:", stk.pop())
		top=len(stk)-1
		def display():
		if(top==-1):
		print("NO STUDENT DATA")
		else:
		t=len(stk)-1
		print(stk[t])
		for i in range(t-1,-1,-1):
		print(stk[i])
		display()
		POP()
			1.5 mark for correct POP operation
			1.5 mark for correct function calls and displaying the output
			Note: Marks to be awarded for any other correct logic given by the student	

9.	(i)	ALTER TABLE STUDENT DROP COLUMN ADDRESS;	1 mark for correct command	(1)
	(ii)	Differences between HAVING clause and WHERE clause are: **HAVING:** HAVING clause is used to filter record from the groups based on the specified condition. HAVING clause implements in column operation. HAVING clause can contain aggregate function. **WHERE:** WHERE clause is used to filter the records from the table based on the specified condition. WHERE clause implements in row operation. WHERE clause cannot contain aggregate function.	2 Marks for 02 correct difference.	(2)
10		**CREATE DATABASE EMPDATA;** **CREATE TABLE EMPLOYEE (** **EMP_ID CHAR(5)PRIMARY KEY, EMP_NAME CHAR(30),** **DESIGNATION CHAR(15), BASIC INT(6)** **VGTEMP INT,** **ADDRESS CHAR(20)** **);**	½ mark for creating database. 2.5 marks for command to create a table.	(3)

11		(v) To display the name of all Games with their Gcodes. An: Select GCode, GameName from Games; (vi) To display details of those games which are having PrizeMoney more than 7000. Ans: Select * from Games where PrizeMoney>7000; (vii) To display the content of the GAMES table in ascending order of ScheduleDate. Ans: Select *from Games order by ScheduleDate; (viii) To display sum of PrizeMoney for each of the Number of participation Ans:Select SUM(PrizeMoney) from Games Group by Number.	1 Mark for each correct answer.	(4)
12		**Bus topology:** A bus topology is an arrangement in which the computers and the peripheral devices are connected to a common single data line. **Advantage**: All the nodes are connected directly, so very short cable length is required. **Disadvantage:** In case of any fault occurred in data transmission, fault isolation is very difficult. We have to check the entire network to find the fault. OR **URL:** A uniform resource locator, abbreviated URL, also known as web address, is a specific character string that constitutes a reference to a resource. In most web browsers, the URL of a web page is displayed on top inside an address bar. A URL is a formatted text string used by web browsers. **IP Address (Internet Protocol Address)** :The Internet Protocol (IP) is the method or protocol by which data is sent from one computer to another on the Internet. Each computer (known as a host) on the Internet has atleast one IP address that uniquely identifies it from all other computers on the Internet. (e) Suggest and draw the cable layout to efficiently connect various blocks of buildings within the New Delhi centre for connecting the digital devices. Ans: Bus Topology as follows or Star Topology.	1 Mark each for advantage & 1 Mark for disadvantage 1 Mark each for correct def. of URL and IP Address.	(2)

13		 (f) Suggest the placement of the following device with justification **Repeater :** Between C to D in Bus topology. Between A to D in Star Topology. To amplify the signal as the distance between these Blocks are greater than 90-100 Meters. **Hub/Switch**: In each Block to connect all computers together. (g) Which kind of network (PAN/LAN/WAN) will be formed if the Noida office is connected to its head office in Mumbai? Ans: WAN (h) Which fast and very effective wireless transmission medium should preferably be used to connect the head office at Mumbai with the centre at New Delhi? Ans: Satellite	1 Mark for each correct answer.	(4)

KENDRIYA VIDYALAYA SANGATHAN

REGIONAL OFFICE RAIPUR

SAMPLE PAPER – 5 TERM2 EXAM-2021-22

CLASS XII - 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

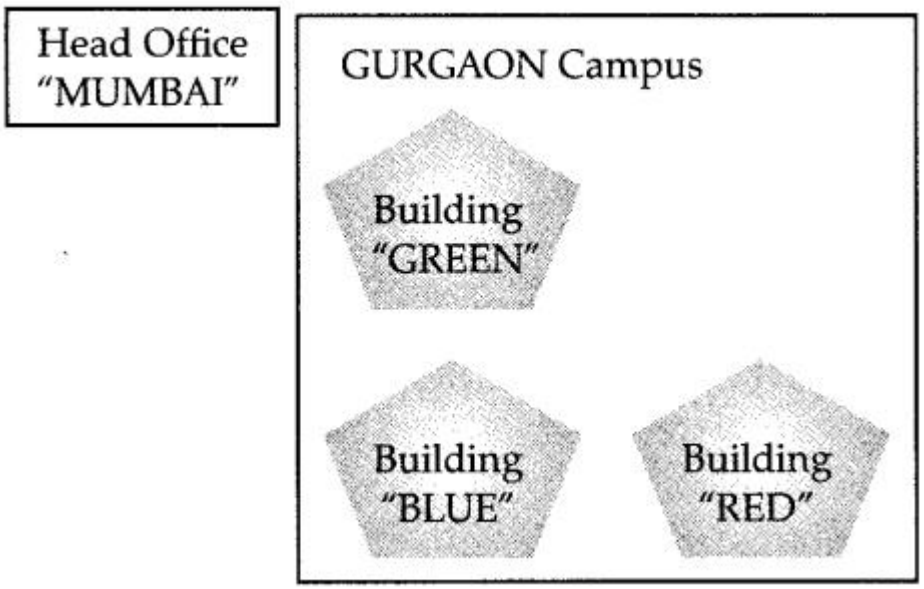
		Section -A **Each question carries 2 marks**	
Q. No	**Part No.**	**Question**	**Marks**
1.		What is push operation in stack ?	(2)
2.	(i)	Expand the following: **VoIP, WAN**	(1)
	(ii)	Write two characteristics of Wi-Fi.	(1)
3.		Write two wild card characters which are used with like operator?	(2)
4.		a. What is connection? What is its role? b. Which package must be imported in Python to create a database connectivity application?	(2)

<table>
<tr><td>5.</td><td></td><td>Write the output of the following on the basis of given Table : Product
<table><tr><th>Pid</th><th>P_name</th><th>Price</th><th>Qty</th></tr><tr><td>1</td><td>p1</td><td>240</td><td>23</td></tr><tr><td>2</td><td>p2</td><td>300</td><td>24</td></tr><tr><td>3</td><td>p3</td><td>320</td><td>43</td></tr><tr><td>4</td><td>p4</td><td>130</td><td>32</td></tr><tr><td>5</td><td>p5</td><td>100</td><td>17</td></tr></table>1. Select max(price) from product;
2. Select distinct(price) from product;
3. Select sum(price) where Qty > 30;
4. Select count(distinct(price)) from product;</td><td>(2)</td></tr>
<tr><td>6.</td><td>(i)</td><td>What do you mean by data redundancy?</td><td>(1)</td></tr>
<tr><td></td><td>(ii)</td><td>What do you mean by data integrity?</td><td>(1)</td></tr>
<tr><td>7</td><td></td><td>In a hospital, the patients are allocated to wards. A database named ‘Hospital’ is created. One table in this database is: WARD with WardId, WardName, NumOfBeds as columns and WardId as the primary key.
Write another suitable table you could expect to see in the ‘Hospital’ database, with 3 suitable columns identifying Primary key and Foreign key in the table that you expect.

OR
Is NULL value the same as 0 (zero)? Write the reason for your answer.</td><td>(2)</td></tr>
<tr><td></td><td></td><td>SECTION-B
Each question carries 3 marks</td><td></td></tr>
<tr><td>8</td><td></td><td>Write a function in python, MakePush(Package) and MakePop(Package) to add a new Package and delete a Package from a List of Package Description, considering them to act as push and pop operations of the Stack data structure.
OR
Write a function in python, Push(Stu) and MakePop(Stu) to add a new student and delete student from a List of Stu contain rollno, Sname and Class as list, considering them to act as push and pop operations of the Stack data structure</td><td>3</td></tr>
</table>

<table>
<tr><td>9</td><td>(i)</td><td>There is a column Salary in a Table EMPLOYEE. The following two statements are giving different outputs. What may be the possible reason?
SELECT COUNT(*) FROM EMPLOYEE;
SELECT COUNT(SALARY) FROM EMPLOYEE;</td><td>1</td></tr>
<tr><td></td><td>(ii)</td><td>Shanya Khanna is using a table Employee. It has the following columns. Admno, Name, Agg, Stream [column Agg contains aggregate marks] She wants to display highest Agg in each stream.
She wrote the following statement:
SELECT Stream, MAX(Agg) FROM Employee;
But she did not get the desired result. Rewrite the above query with necessary changes to help her get the desired output.</td><td>2</td></tr>
<tr><td>10</td><td></td><td>In a database STUDENT, there is a Table RESULT with the following contents:
Table :RESULT
<table>
<tr><th>REGNO</th><th>NAME</th><th>MARKS</th><th>SECTION</th><th>CLASSTEACHER</th><th>ADMNO</th></tr>
<tr><td>10004</td><td>Mohit</td><td>90</td><td>A</td><td>Ms Nathani</td><td>Z101</td></tr>
<tr><td>10211</td><td>Mukta</td><td>85</td><td>B</td><td>Mr. Gokhle</td><td>Z109</td></tr>
<tr><td>10923</td><td>Mohit</td><td>92</td><td>B</td><td>Mr. Gokhle</td><td>Z120</td></tr>
<tr><td>10313</td><td>Sana</td><td>80</td><td>A</td><td>Ms Nathani</td><td>Z234</td></tr>
</table>
(i) Identify the attributes, which can be chosen as Candidate Keys in the table RESULT.
(ii) Write SQL Query to change the Marks of Mukta to 95 in the table RESULT.</td><td>3</td></tr>
<tr><td>11</td><td></td><td>In a database there are two tables “ITEM” and “CUSTOMER” as shown below:
Table : ITEM
<table>
<tr><th>ID</th><th>ItemName</th><th>Company</th><th>Price</th></tr>
<tr><td>1001</td><td>Moisturiser</td><td>XYZ</td><td>40</td></tr>
<tr><td>1002</td><td>Sanitizer</td><td>LAC</td><td>35</td></tr>
<tr><td>1003</td><td>Bath Soap</td><td>COP</td><td>25</td></tr>
<tr><td>1004</td><td>Shampoo</td><td>TAP</td><td>95</td></tr>
<tr><td>1005</td><td>Lens Solution</td><td>COP</td><td>350</td></tr>
</table>
Table : CUSTOMER
<table>
<tr><th>C_ID</th><th>CustomerName</th><th>City</th><th>ID</th></tr>
<tr><td>01</td><td>Samridhh Ltd</td><td>New Delhi</td><td>1002</td></tr>
<tr><td>05</td><td>Big Line Inc</td><td>Mumbai</td><td>1005</td></tr>
<tr><td>12</td><td>97.8</td><td>New Delhi</td><td>1001</td></tr>
<tr><td>15</td><td>Tom N Jerry</td><td>Bangalore</td><td>1003</td></tr>
</table>
Write the command in SQL queries for the following:</td><td>4</td></tr>
</table>

		(i) To display the details of Items whose Price is in the range of 40 and 95(Both values included) **(ii)** To display the CustomerName, City from table Customer and ItemName and Price from table Item, with their corresponding matching ID. **(iii)** To increase the price of all the products by 50. **(iv)** To display the CustomerName of customer table whose city name start with 'N'.	
12	(i)	Identify the type of topology from the following: (i) In it, each node is connected with the help of a single co-axial cable. (ii) In it, each node is connected with the help of independent cable with the help of acentral switching (communication controller). OR Write the name of the most suitable wireless communication channels for each of thefollowing situations. (i) Communication between two offices in different countries. (ii) To transfer the data from one mobile phone to another.	2
	(ii)	Write one advantage and one disadvantage of using Optical fiber cable.	2
13		ABC Consultants are setting up a secured network for their office campus at Gurgaon for their day-to-day office and web-based activities. They are planning to have connectivity between three buildings and the head office situated in Mumbai. Answer the questions (i) to (iv) after going through the building positions in the campus and other details, which are given below :	4



Distances between various buildings:

Building "GREEN" to Building "RED"	110 m
Building "GREEN" to Building "BLUE"	45 m
Building "BLUE" to Building "RED"	65 m
Gurgaon Campus to Head Office	1760 km

Number of computers

Building "GREEN"	32
Building "RED"	150
Building "BLUE"	45
Head Office	10

i. Suggest the most suitable place (i.e., building) to house the server of this organization. Also give a reason to justify your suggested location.

ii. Suggest a cable layout of connections between the buildings inside the campus.

[4]

		iii. Suggest the placement of the following devices with justification: o Modem. o Switch. iv. The organization is planning to provide a high speed link with its head office situated in Mumbai using a wired connection. Which of the following cables will be most suitable for this job ? o Optical Fiber o Co-axial Cable o Ethernet Cable	

[5]

KENDRIYA VIDYALAYA SANGATHAN

REGIONAL OFFICE RAIPUR

MARKING SCHEME SAMPLE PAPER – 5 TERM2 EXAM-2021-22

CLASS XII - COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35 Time: 2 hours

General Instructions

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- 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.		Push operation refers to inserting an element in the stack. Since there's only one position at which the new element can be inserted — Top of the stack, the new element is inserted at the top of the stack	(2)
2.	(i)	**Voice over internet protocol** **Wide Area Network**	(1)
	(ii)	1. It is wireless network. 2. It is for short range.	(1)
3.		**% and underscore(_)**	(2)
4.		(a) A **Connection** (represented through a connection object) is the session between the application program and the database. To do anything with database, one must have a connection object. (b) There are multiple packages available through which database connectivity applications can be created in Python. One such package is **mysql.connector**.	(2)

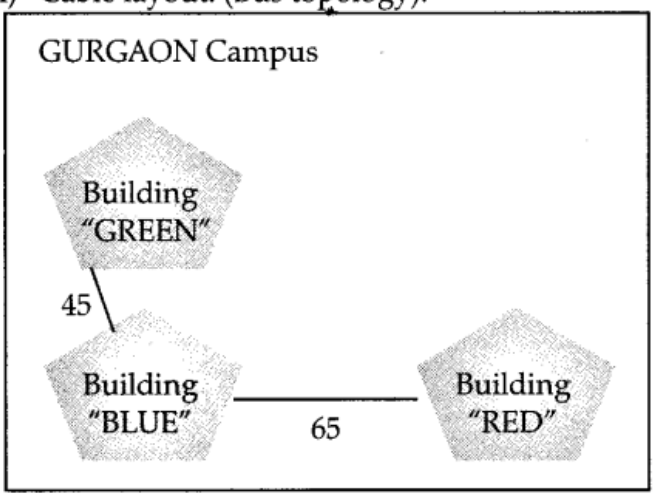
5		**Ans.a. 320** **Ans b.** **240** **300** **320** **130** **100** Ans c. **Error** **Ans. d. 5**	2
6.	(i)	Ans. Duplication of data in a table is called redundancy.	(1)
	(ii)	Data integrity means maintaining accuracy and consistency of data.	(1)
7		Table - Patient Columns - PatientId, PatientName, WardId Patient Id - Primary Key and WardId - Foreign Key (You can also mention other appropriate table with suitable columns) OR Null value indicates nothing or empty value. It does not represent 0 or space character. The column having Null value is ignored while applying aggregate functions like MIN, MAX or COUNT etc.	2
		SECTION-B **Each question carries 3 marks**	

		def MakePush(Package):
		a=int(input("enter package title : "))
		Package.append(a)
		
		def MakePop(Package):
		if (Package==[]):
		print("Stack empty")
		else:
		print ("Deleted element:",Package.pop())
		
		OR
		def Push(Stu):
		rollno=int(input("enter package title : "))
		Sname=int(input("enter package title : "))
		Class=int(input("enter package title : "))
		info=[rollno,Sname,Class]
			3

		Stu.append(info)
		
		def Pop(Stu):
		if (Stu==[]):
		print("Stack empty")
		else:
		print ("Deleted element:",Stu.pop())	

9	(i)	If SALARY column is defined as NULL and then if any employee's salary is missing then count function will not count those null valued salary. For example if EMPLOYEE table contains 10 record of employees and out of 10 employees say 7th employee's salary is not entered then output will be 10 and 9 for respective queries.	1
	(ii)	SELECT Stream ,MAX(Agg) FROM Employee GROUP BY Stream;	2
10		(i) **REGNO** and **ADMNO** can be chosen as Candidate Keys in the table RESULT. (ii) UPDATE RESULT SET MARKS=95 WHERE NAME="Mukta";	3
11		(i) SELECT * FROM ITEM WHERE PRICE >= 40 AND PRICE <= 95; (ii) SELECT CUSTOMERNAME, CITY, ITEMNAME, PRICE FROM CUSTOMER CUST,ITEM WHERE CUST.ID = ITEM.ID; **(iii)** UPDATE ITEM SET PRICE = PRICE + 50 ; (iv) SELECT CUSTOMERNAME FROM CUSTOMER WHERE CITY LIKE 'N%'	4
12	(i)	(i) Bus Topology (ii) Star Topology **OR** **(i)** Satellite (ii) Bluetooth	2
	(ii)	**Advantage:** (i) Not susceptible to electrical and magnetic interference i.e. free from EMI. (ii) High speed and Data Transmission capacity (iii) Secure Transmission **Disadvantage:** (i) Expensive and not suitable for domestic use. (ii) Fibers are fragile so installation is typical job. (iii) Difficult to solder/extend.	2
13		(i) The most suitable place to install server is building "RED" because this building have maximum computer which reduce communication delay.	4

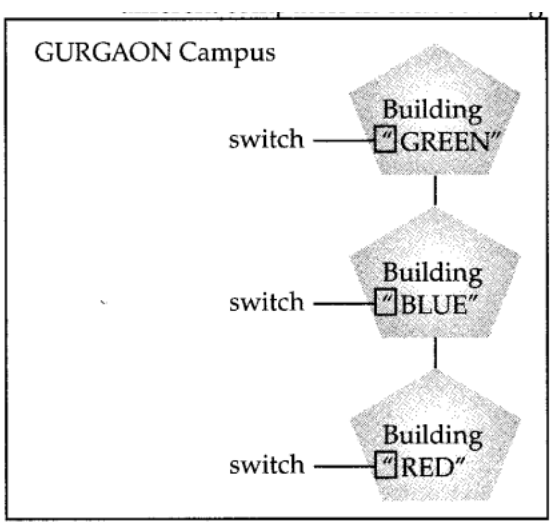
(ii) Cable layout. (Bus topology).



(iii) Modem -Red Building

In the layout a switch each, would be needed in all the buildings, to interconnect the group of cables from the different computers in each in

In the layout a switch each, would be needed in all the buildings, to interconnect the group of cables from the different computers in each building.



(iv) Optical fiber

[9]

KENDRIYA VIDYALAYA SANGATHAN

REGIONAL OFFICE RAIPUR

SAMPLE PAPER – 6 TERM2 EXAM-2021-22

CLASS XII - COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35 Time: 2 hours

General Instructions

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- 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.		Explain Push and POP operation of stack.	(2)
2.	(i)	Expand the following: 1. GSM **2.** GPRS	(1)
	(ii)	Which protocol is used to creating a connection with a remote machine?	(1)
3.		Differentiate between Alternate key and Candidate key.	(2)
4.		Explain the following 'results' retrieval methods with examples. A. fetchone () B. fetchall ()	(2)

5. **Answer the following questions on the basis the given table.** (2)

Admno	Name	Subject	Sex	Average
1001	Amit	Math	M	85.5
1002	Suman	English	F	90

a. How many attributes are there in above table?
b. How many tuples are there in above table?
c. What is the degree of above table?
d. What is the cardinality of above table?

6. (i) Write statement to open a database named "student". (1)

(ii) Which statement is used to show all existing table in database. (1)

7 (2)

Prathmesh has created the following table with the name 'Veterinary'.

Column Name	Constraint
AnimalId	Primary Key
VacinnationsDate	
AnimalName	Not Null
OwnerName	

One of the rows inserted is as follows :

AnimalId	VacinnationDate	AnimalName	OwnerName
A101	2015-02-12	Sheru	Amit Sharma

(i) What are the data type of columns **AnimalId** and **VacinnationDate** in the table Veterinary ?

(ii) Prathmesh is now trying to insert the following row

AnimalId	VacinnationDate	AnimalName	OwnerName
A102	2015-08-09	NULL	Abhimanyu Shah

Will he be able to successfully insert it? Give reason.

OR

Write a MySql command for creating a table "BANK" whose structure is given below:

		Table : BANK **Field Name** / **Datatype** / **Size** / **Constraint** Acct_number / Integer / 4 / Primary Key Name / Varchar / 3 / BirthDate / Date / / Balance / Integer / 8 / Not Null	
		SECTION-B **Each question carries 3 marks**	
8		Write a function in python, Push(Package) and Pop(Package) to add details of employee contain information (Empid, Ename and Salary) in the form of tuple in Package and delete a Package from a List of Package Description, considering them to act as push and pop operations of the Stack data structure OR Write a user define function to push an item of integer type into stack (function to push information of student include rollno and name in the form of list/tuple or dictionary.)	3
9	(i)	Write a SQL command to view the constraints of EMP table.	1
	(ii)	Mr. AllamRaju is using a table with following columns: Name, Class, Course_Id, Course_name He needs to display names of students, who have not been assigned any stream or havebeen assigned Course_name that ends with "economics". He wrote the following command, which did not give the desired result. SELECT Name, Class FROM Students WHREE Course_name=Null OR Course_name="%economics"; Help Mt AllamRaju to run the query by removing the error and write the correct query.	2
10		Consider the tables given below. **Table: Party** PartyId / Description / CostPerPerson P101 / Birthday / 400 P102 / Wedding / 700 P103 / Farewell / 350 P104 / Engagement / 450	3

Table: Client

ClientId	ClientName	Address	Phone	NoOfGuests	PartyId
C101	A.K. Antony	A-151, Adarsh Nagar	99101956	80	P101
C102	Fauzia Aria	K-5/52, Vikas Vihar	893466448	500	P102
C103	Rashi Khanna	D-6, Hakikat Nagar	981166568	50	P101
C104	S.K. Chandra	76-A/2, MG Colony, Adarsh Avenue.	65877756	100	P104

(i) Name the Primary keys in both the tables

(ii) 'P101' data is present twice in column 'PartyId' in 'Client' table – Is there any discrepancy? Give reason for your answer.

11

In a database company, there are two tables given below:

Table: SALES

SALESMANID	**NAME**	**SALES**	**LOCATIONID**
S1	ANITA SINGH ARORA	250000	102
S2	Y.P.SINGH	1300000	101
S3	TINA JAISWAL	1400000	103
S4	GURDEEP SINGH	1250000	102
S5	SIMI FAIZAL	1450000	103

Table: LOCATION

LOCATION ID	**LOCATIONNAME**
101	Delhi
102	Mumbai
103	Kolkata
104	Chennai

Write SQL queries for the following:

(i) To display SalesmanID, names of salesmen, LocationID with corresponding location names.

(ii) To display names of salesmen, sales and corresponding location names who have achieved Sales more than 1300000.

(iii) To display names of those salesmen who have 'SINGH' in their names.

(iv) Identify Primary key in the table SALES. Give reason for your choice.

4

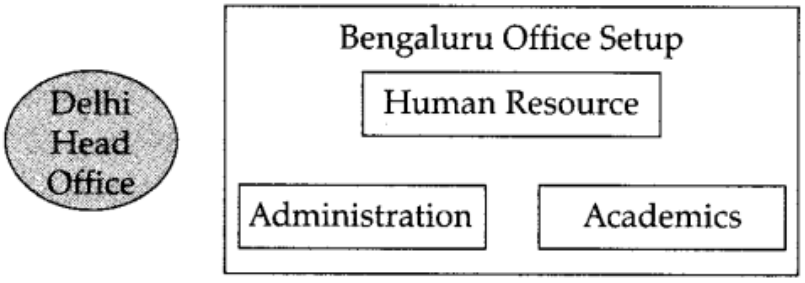
12 (i)

A school with 20 stand-alone computers is considering networking them together andadding a server. State 2 advantages of doing this.

OR

Distinguish between LAN and WAN.

2

	(ii)	Vidya College has three departments that are to be connected into a network. Whichof the following communication medium (out of the given options), should be usedby the college for connecting their departments for very effective High Speed communication? • Coaxial Cable • Optical Fiber • Ethernet Cable Also name the type of network (out of PAN/LAN/WAN) formed.	2
13		G.R.K International Inc. is planning to connect its Bengaluru Office Setup with its Head Office in Delhi. The Bengaluru Office G.R.K. international Inc. is spread across and area of approx. 1 square kilometer, consisting of 3 blocks – Human Resources, Academics and Administration. You as a network expert have to suggest answers to the four queries (i) to (iv) raised by them. Notes : Keep the distance between blocks and number of computers in each block in mind, while providing them the solutions.  **Shortest distances between various blocks:** Human Resources to Administration — 100 m Human Resources to Academics — 65 m Academics to Administration — 110 m Delhi Head Office to Bengaluru Office Setup — 2350 km **Number of computers installed at various blocks are as follows:** **BLOCK** — **No. of Computers** Human Resources — 155 Administration — 20 Academics — 100 Delhi Head Office — 20	4

		(i) Suggest the most suitable block in the Bengaluru Office Setup, to host the server. Give a suitable reason with your suggestion. (ii) Suggest the cable layout among the various blocks within the Bengaluru Office Setup for connecting the Blocks. (iii) Suggest a suitable networking device to be installed in each of the blocks essentially required for connecting computers inside the blocks with fast and efficient connectivity. (iv) Suggest the most suitable media to provide secure, fast and reliable data connectivity between Delhi Head Office and the Bengaluru Office Setup.	

KENDRIYA VIDYALAYA SANGATHAN

REGIONAL OFFICE RAIPUR

MARKING SCHEME SAMPLE PAPER – 6 TERM2 EXAM-2021-22

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

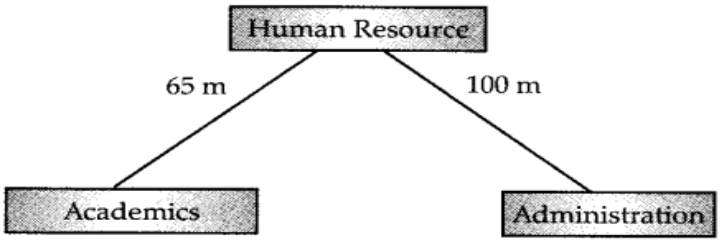
		Section -A **Each question carries 2 marks**	

Q. No	Part No.	Question	Marks
1.		Push operation refers to inserting an element in the stack. Since there's only one position at which the new element can be inserted — Top of the stack, the new element is inserted at the top of the stack. Pop operation refers to the removal of an element. .	(2)
2.	(i)	1. **GSM:** Global System for Mobile Communication. 2. **GPRS:** General Packet Radio Service.	(1)
	(ii)	**Telnet:** It is an older internet utility that lets us log on to remote computer system. It also facilitates for terminal emulation purpose.	(1)
3.		**Alternate Key**: ✓ A key that can act as a primary key but is not selected as primary key **Candidate Key**: ✓ A key that can be set as Primary key is called a candidate key.	(2)
4.		(A) **fetchone()** :- The fetchone() method will return only one row from the result set in the form of tuple containing a record. (B) **fetchall()** :- The fetchall() method return all the rows from the result set in the form of a tuple congaing the records.	(2)
5		a. How many attributes are there in above table? Ans. There are 5 attributes/columns b. How many tuples are there in above table? Ans. There are 2 tuples c. What is the degree of above table? Ans. degree – 5 d. What is the cardinality of above table? Ans. Cardinality – 2	(2)
6.	(i)	use student;	(1)
	(ii)	Show tables;	(1)
7		(i) Data type of AnimalId : Varchar/charData type of VaccinationDate : Date (ii) No Reason – Not Null Constraint applied on attribute AnimalName **OR** CREATE TABLE BANK (Acct_number INTEGER (4) PRIMARY KEY, Name VARCHAR(3) ,BirthDate DATE, Balance INTEGER (8) NOT NULL);	2

		Section -B	

8		def Push(Package):
		Empid=int(input("Enter Id of Employee: "))
		Ename=input("Enter Name of employee")
		Salary= int(input("Enter Salary of an employee"))
		T=(Empid, Ename ,Salary)
		Package.append(T)
		def Pop(Package):
		if (Package==[]):
		print("Stack empty")
		else:
		print ("Deleted element:",Package.pop())
		
		OR
		PUSH OPERATION ON STACK
		// function to push an item of integer type into stack
		stack=[ ]
		def push (stack):
		item=int(input("Enter the values of item"))
		stack.append(item)
		// function to push information of student include rollno and name in the form of list, tuple, dictionary
		
		stack=[ ]
		def push (stack):
		rollno=int(input("Enter rollno of student"))
		name =input("Enter Name of student")
		item=(rollno, name) \\ [rollno, name] \\ {rollno : "name"} \\ as per the problem
		stack.append(item)
			3

9	(i)	Desc EMP;	1
	(ii)	SELECT Name, Class FROM Students WHERE Course_name IS NULL OR Course_name LIKE '%economics';	2
10		(i) Primary key (Table : Party) - PartyId Primary key (Table : Client) - ClientId (ii) There is no discrepancy. PartyId is not the Primary key in table Client. Hence,repetition is permissible.	3
11		(i) Select SalesmanID, Name, LocationID, LocationName from SALES, LOCATIONWhere SALES.LocationID= LOCATION.LocationID ; (ii) Select Name, Sales, LocationName from SALES, LOCATION Where SALES.LocationID= LOCATION.LocationID And Sales>1300000; (iii) Select Name from SALES Where Name Like "%Singh%; (iv) Primary Key – SALESMANID , because it is containing unique value.	4

12	(I)	Sharing Resources- Resources like Printer, storage, Internet and files can be shared. Improved Communication- Communication among users can be faster using e-mail andother services. OR LAN is a local network spread over a building or campus in limited area whereas WAN isbig network and can spread across countries.	2
	(ii)	(i) Optical fiber (ii) LAN	2
13		(i) Human Resources because it has maximum number of computers. (ii)  (iii) Switch (iv) Satellite link	4