



**COMPUTER SCIENCE - NEW (083) (Revised)**  
**SAMPLE QUESTION PAPER 1 (2020-2021)**  
**CLASS- XII**

**Max. Marks: 70**

**Time: 3 hrs**

**General Instructions:**

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
  - a. Section – I is short answer questions, to be answered in one word or one line.
  - b. Section – II has two case studies questions. Each case study has 4 case-based subparts. An examinee is to attempt any 4 out of the 5 subparts.
4. Part - B is Descriptive Paper.
5. Part- B has three sections
  - c. Section-I is short answer questions of 2 marks each in which two questions have internal options.
  - d. Section-II is long answer questions of 3 marks each in which two questions have internal options.
  - e. Section-III is very long answer questions of 5 marks each in which one question has internal option.
6. All programming questions are to be answered using Python Language only

**Part-A**

**Section-I**

**Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.**

- 1. Identify the type of operator (Arithmetic, Logical, Relational etc.)?** [1]
- a. \*\*
  - b. !=
  - c. and
  - d. in

Ans. a. Arithmetic, b. Relational c. Logical d. Membership

- 2. Which constraint is used to ensure referential integrity of data?** [1]

Ans. FOREIGN KEY

- 3. What is Computer Network?** [1]

Ans. It is a group of computer systems and other computing hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users.

- 4. Which option causes a group function to discard all duplicate values and take only unique values.** [1]

Ans. DISTINCT

5. Name the Python Library modules which need to be imported to invoke the following functions :  
 i. `load()` [1]  
 ii. `exp()`

Ans. `pickle`  
`math`

6. Which operator is used to specify a list of values to match in a query? [1]

Ans. `IN`

7. \_\_\_\_\_ cable consist of solid wire core surrounded by one or more foils separated by an insulator. [1]

Ans. Coaxial Cable

8. A \_\_\_\_\_ is a networking device having multiple ports that are used for connecting multiple computers or segments of a LAN together. [1]

Ans. Hub

9. Write an SQL query to print details of the student from STUDENT Table, whose FIRST\_NAME ends with 's' and contains six alphabets. [1]

Ans.

Select \* from STUDENT where FIRST\_NAME like '\_\_\_\_s';

10. What is the value of x and y after executing these statements? [1]  
`x,y = 5,10`

a. `x=5, y=10`    b. `x=10, y=5`    c. `x=y=5.10`    d. The statement is incorrect

Ans. a is correct.

11. Select which false for Python function [1]

- a. A function is a code block that only executes when it is called.
- b. Python function always returns a value.
- c. A function only executes when it is called and we can reuse it in a program
- d. Python doesn't support nested function

Ans. d

12. Write single line expression to reverse a string `str = "amazing"`. [1]

Ans. `newstr = str[::-1]`

13. Which one of these is output of these commands? [1]

```
L = list( (1,2,3,4) )
L.pop(2)
print (L)
```

- a) [1,2,4]
- b) [1,3,4]
- c) (1,2,4)
- d) (1,2,4)

Ans. a

**14. CSV files are opened with \_\_\_\_\_ argument to suppress EOL translation. [1]**

Ans. newline

**15. Keyword \_\_\_\_\_ marks the start of function header. [1]**

Ans. def

**16. Which string method is used to implement the following: [1]**

- i. To count the number of character in the string.
- ii. To check whether the first character of string str is capital letter.

Ans.

- i. len(str)
- ii. str.capitalize()

**17. Write an SQL query to fetch "NAME" from EMP table using the alias name as "EMPLOYEE"? [1]**

Ans. Select NAME AS EMPLOYEE from EMP;

**18. Identify what cybercrime is committed in following case. [1]**

Nihir managed to download and watch latest movie from a suspicious site. What right of the owner has he violated?

Ans. He has violated IPR or Digital property rights

**19. Yuvna is receiving lots of unwanted mails from an unknown site. What are these mails called?[1]**

Ans. SPAM

**20. In f=open("data.txt", "r"), r refers to \_\_\_\_\_. [1]**

- a. File handle
- b. File object
- c. File Mode
- d. Buffer

Ans. c

**21. If you specify \_\_\_\_\_ in COUNT() function, it returns all rows, including duplicates and null. [1]**

Ans. \* (star)

## Section-II

Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question.  
Each question carries 1 mark

22. Observe the table 'Student' given below And Answer the following question

[5]

RollNo	Name	Acode	Class	Marks
1	Nabi Ahmad	101	11	95
2	Ravi Sahai	108	12	85
3	Jatin	101	11	98
4	Nazneen	103	12	87

- What is the cardinality and degree of the given table?
- In the above table, which column can be set as primary key?
- Insert the following data into the attributes RollNo and Name respectively in the given table.  
RollNo = 10, Name = "Priyanka"
- If we want to display maximum marks from the student table from the database School.  
Which command will he use from the following:
  - SELECT MAX(Marks) FROM student;
  - SELECT MAXIMUM(Marks) FROM student;
  - SELECT MAXIMUM Marks FROM School;
  - SELECT MAX(Marks) FROM School;
- If we wants to display whole the table student, i.e, all column and rows in the table. Write the query to display the same.

Ans.

- Degree: 5 Cardinality: 4.
- RollNo
- INSERT INTO student (Mno, Name, Qty) VALUES(110, "Pen",125);
- a
- SELECT \* FROM student;

23. Ronit has received a email.csv file which has email addresses of all students in the school. It has name and domain separated by semicolon. He has to print the addresses on the screen separated by @ sign. As a programmer, help him to successfully execute the given task. [5]

e.g. of email.csv

yuvna	gmail.com
nihir	msn.com

Expected Output on Screen

yuvna@gmail.com
nihir@msn.com

Program

a csv

```
with b ('email.csv') as csvfile:
    data = csv.reader(csvfile, c)
    for d in data:
        print( row[0], row[1], e )
```

- Name the command he should use to include csv library.
- Name the command he should use to access the file
- How should he use to indicate there is tab in between name and domain?
- What variable should be read from the data in for statement?
- What should he use to include @ in between name and domain in the print statement.

Ans.

```
import csv
```

```
with open('email.csv') as csvfile:
    data = csv.reader(csvfile, delimiter = '\t')
    for row in data:
        print(row[0],row[1], sep="@" )
```

### Part – B Section-I

24. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code. [2]

```
def main():
    r=input('enter any radius:')
    a=math.pi * math.pow(r,2)
    print "Area=",a
```

Ans.

```
import math
def main():
    r=int(input('enter any radius:'))
    a=math.pi * math.pow(r,2)
    print("Area=",a)
```

25. What is join in SQL? What is difference between Inner-join and Full join? [2]

Ans.

Join clause is used to combine rows from two or more tables, based on a related column between them. It is used to merge two tables or retrieve data from there.

**Inner join:** Inner Join in MySQL is the most common type of join. It is used to return all the rows from multiple tables where the join condition is satisfied.

**Full Join:** Full join returns all the records when there is a match in any of the tables. Therefore, it returns all the rows from the left-hand side table and all the rows from the right-hand side table.

26. Give Full forms of the following? [2]

1. UDP, 2. HTTP, 3. DNS, 4. TLS

Ans.

1. UDP- User Datagram Protocol
2. HTTP- Hypertext Transfer Protocol
3. DNS-Domain Name Resolution
4. TLS-Transport Layer Security

**27. What is the difference between DROP and DELETE Command in SQL?**

[2]

Ans.

DELETE	DROP
It removes some or all the tuples or rows from a table.	It removes entire schema, table, domain, or constraints from the database.
It is a Data Manipulation Language command	It is a Data Definition Language command.
WHERE clause is mainly used along with the DELETE command.	No clause required along with DROP command.

**28. Convert the following for loop into while loop.**

[2]

```
for i in range(5):
    for j in range(i):
        print('$',end=' ')
    print(' ')
```

Ans.

```
i = 0
while i < 5:
    j = 0
    while j < i:
        print('$',end=' ')
        j=j+1
    print(' ')
    i=i+1
```

**29. Find and write the output of the following python code:**

[2]

```
score=40
while score>1:
    score=score//2-1
    print(score)
```

Ans. output

```
19
8
3
0
```

**30. Find and write the output of the following python code:**

[2]

S="salute to the army"

```
def manip(string):
    count = 3
    while True :
        if string[0]=='s':
            string=string[2:]
        elif string[-1]=='y':
            string=string[:4]
        else:
            count+=1
            break
    print (count)
    return (string)
S = manip(S)
print (S)
```

Ans.

4  
lute

**31. Consider the following code: If y has the value 2 after executing the above program fragment, then what do you know about the initial value of x?** [2]

```
if x > 3:
    if x <= 5:
        y = 1
    elif x != 6:
        y = 2
    else:
        y = 3
else:
    y = 4
```

Ans. x has to be  $\geq 7$  for  $y=2$

**32. What is the importance of a primary key in a table? Explain with a suitable example.** [2]

Ans.

- A primary key is a set of one or more attributes that can uniquely identify tuples within the relation.
- For example, in the following table ITEM, the column Ino can uniquely identify each row in the table, hence Ino is the primary key of the following table.

Ino	Item	Quantity
1	Pen	200
2	CD	250
3	DVD	570
4	Duster	350

**33. What is NIC device and a MAC Address?****[2]**

Ans.

**Network interface card (NIC)** is a hardware component, typically a circuit board or chip, which is installed on a computer so that it can connect to a network. Each card represents a device and can prepare, transmit and control the flow of data on the network.

**MAC Addresses** are unique 48-bits hardware number of a computer, which is embedded into Network Interface Card(NIC) during the time of manufacturing. MAC Address is also known as Physical Address of a network device. In IEEE 802 standard, Data Link Layer is divided into two sublayers –

1. Logical Link Control(LLC) Sublayer
2. Media Access Control(MAC) Sublayer

MAC address is used by Media Access Control (MAC) sublayer of Data-Link Layer. MAC Address is word wide unique, since millions of network devices exist and we need to uniquely identify each.

**Section- II****34. Write a program to convert decimal number to binary.****[3]**

Ans.

```
i= 1
B_num= 0
D_num= int (input("Enter the decimal to be converted:"))
while D_num > 0:
    rem= D_num % 2
    B_num= B_num + (i * rem)
    D_num= D_num // 2
    i= i * 10
print("The binary of the given number is:", B_num )
```

**35. Write a program to display all the records in a file “python.txt” along with line/record number?**

Ans.

```
fh=open("python.txt","r")
count=0
rec=""
while True:
    rec=fh.readline()
    if rec=="":
        break
    count=count+1
    print(count,rec)
fh.close()
```

**OR**

**A text file “PYTHON.TXT” contains alphanumeric text. Write a program that reads this text file and prints only the numbers or digits in the file.**

**[3]**



Ans.

```
fh=open('python.txt','r')
rec=fh.read();
for a in rec:
    if a.isdigit():
        print(a,end=' ')
fh.close()
```

36. Consider the following tables GAMES and PLAYER and answer this question :

**Table : Games**

Gcode	GameName	Type	Number	Prize Money	Schedule Date
101	Carom Board	Indoor	2	5000	23-Jan-2004
102	Badminton	Outdoor	2	12000	12-Dec-2003
103	Table Tennis	Indoor	4	8000	14-Feb-2004
104	Chess	Indoor	2	9000	01-Jan-2004
108	Lawn Tennis	Outdoor	4	25000	19-Mar-2004

**Table : Player**

Pcode	Name	Gcode
1	Nabi Ahmad	101
2	Ravi Sahai	108
3	Jatin	101
4	Nazneen	103

Give the output of the following SQL queries:

[3]

1. SELECT COUNT(DISTINCT Number) FROM GAMES;
2. SELECT MAX(ScheduleDate), MIN(ScheduleDate) FROM GAMES
3. SELECT \* FROM Games WHERE PrizeMoney BETWEEN 5000 AND 10000 ;

Ans.

1.

COUNT (DISTINCT NUMBER)
2

2.

MAX(ScheduleDate)	MIN(ScheduleDate)
19-Mar-2004	12-Dec-2003

3.

Gcode	GameName	Type	Number	Prize Money	Schedule Date
101	Carom Board	Indoor	2	5000	23-Jan-2004
103	Table Tennis	Indoor	4	8000	14-Feb-2004
104	Chess	Indoor	2	9000	01-Jan-2004

37. Write a program to perform insert and display a Queue containing Members details as given in the following definition of each item: [3]

**MemberName**      **String**  
**Age**                      **integer**

Ans.

```
def INSERTQ(Arr):
    MemberName=input("enter data to be inserted: ")
    age=int(input("enter data to be inserted: "))
    data = [MemberName, age]
    Arr.append(data)

def Display(Arr):
    if Arr==[]:
        print("Queue Empty!")
    else:
        front= 0
        rear=len(Arr)-1
        for a in range(1,rear):
            print (Arr[a])
```

OR

Evaluate the following postfix notation of expression:

[3]

20, 10, +, 5, 2, \*, -, 10, /

Ans.

Scanned Elements	Operation	Stack Status
20	Push	20
10	Push	20,10
+	Pop twice 10+20=30 Push	30
5	Push	30,5
2	Push	30,5,2
*	Pop twice 5*2=10 Push	30,10
-	Pop twice 30-10=20 Push	20
10	Push	20,10
/	Pop twice 20/10=2 Push	2

Output 2

## Section III

38. Simply Coding is an online training company for IT related courses. The company is setting up their new campus in Delhi. You as a network expert have to study the physical locations of various blocks and the number of computers to be installed. In the planning phase, provide the best possible answers for the queries (i) to (v) raised by them. [5]

## Physical Location of the Building



## Block to Block Distances(in Mtrs.)

From	To	Distance
Admin	Faculty	100
Admin	Conference	80
Conference	Faculty	60

1. Suggest the most appropriate block, where Simply Coding should plan to install the server.
2. Suggest the most appropriate block to block cable layout to connect all three blocks for efficient communication.
3. Which type of network out of the following is formed by connecting the computers of these three blocks?
  - LAN
  - MAN
  - WAN
4. Suggest the placement of i) modem ii) Hub/Switch in the network.
5. Which wireless channel out of the following should be opted by Simply Coding to connect to students from all over the world?
  - Infrared
  - Microwave
  - Satellite

Ans.

1. Conference as this block contains the maximum number of computers.
2. Star topology
3. LAN
4. Each building should have hub/switch and Mode min case Internet connection is required.
5. Satellite connection

39. Consider the following tables WORKER and PAYLEVEL and answer this question:

**Table : WORKER**

ECODE	NAME	DESIGN	PLEVEL	DOJ	DOB
11	Radhe Shyam	Supervisor	P001	13-Sept-2004	23-Aug-1981
12	Chander Nath	Operator	P003	22-Feb-2010	12-Jul-1987
13	Fizza	Operator	P003	14-Jun-2009	14-Oct-1983
15	Ameen Ahmed	Mechanic	P002	21 –Aug-2006	13-Mar-1984
18	Sanya	Clerk	P002	19-Dec-2005	09-Jun-1983

**Table: Paylevel**

Plevel	Pay	Allowance
P001	26000	12000
P002	22000	10000
P003	12000	6000

Write SQL commands for the following statements:

[5]

1. To display the name of all Workers in descending order of DOB.
2. To display NAME and DESIGN of those Workers, whose PLEVEL is either P001 or P002
3. To display the content of all the workers table, whose DOB is in between '19-JAN- 1984' and '18-JAN-1987'.
4. To display most recent join date of worker.
5. To add a new row with the following:  
19, 'DayaKishore', 'Operator', 'P003', '19- Sep-2008', '11-Jul-1984'

Ans.

1. SELECT NAME FROM WORKER ORDER BY DOB DESC;
2. SELECT NAME, DESIGN FROM WORKER WHERE PLEVEL="P001" OR PLEVEL="P002";
3. SELECT \* FROM WORKER WHERE DOB BETWEEN '1984-01-19' AND '1987-01-18';
4. SELECT MIN (DOJ) FROM WORKER;
5. INSERT INTO WORKER VALUES (19,"DayaKishore", "Operator", "P003",'2008-09-19','1984-07-11')

40. A binary file "STUDENT.DAT" has structure (rollno, Name, marks). Write a function update() in Python that would take in roll no of a student and revised marks. Update the binary file as per data given by user. [5]

Ans.

```
def update():
    f = open("student.dat", "rb+")
    roll = int(input("Enter roll No to update:"))
    m = int(input("Enter marks to update: "))
    f.seek(0)
    try:
```

```
while True:
    current_pos = f.tell()
    data= pickle.load(f)
    if data[0]==roll:
        data2 = (roll,data[1],m)
        f.seek(current_pos)
        pickle.dump(data2,f)
        break
except Exception:
    f.close()
```

