



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 question 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 what type of Python token are the ones below? [1]**
a. and b. _value c. True d. <=

Ans. a. Keyword, b. Variable c. Boolean Literal d. Operator

- 2. If a user does not enter a city in database, admin wants the city to be set to DELHI. Which constraint should he use in this case? [1]**

Ans. DEFAULT

- 3. Name the Python Library modules which need to be imported to invoke the following functions [1]**

- i. ceil()
- ii. randint()

Ans. (i) math (ii) random

- 4. _____ waves are high frequency waves that can be used to transmit data wirelessly. over long distances [1]**

Ans. Microwave

5. Data transfer rate of 10^{12} bytes is also called as _____ [1]

Ans. Terabyte

6. What is the value of x and y after executing these statements? [1]

```
x = 5
y = 10
x,y = y,x
```

- a. x=5, y=10 b. x=10, y=5 c. x = y = 10.5 d. The statement is incorrect

Ans. b is correct.

7. Give one difference between Trojan Horse and Computer Worm? [1]

Ans. Computer worms are programs that replicate themselves from system to system without the use of a host file, while Trojan horses are impostor files that claim to be something desirable but, in fact are malicious.

8. Ronit loves writing stories. However one day he sees someone else published his story on the net without his permission or giving him credit. What is this unauthorized use called? [1]

Ans. Unauthorized use is called Plagiarism, which means stealing someone else IP or intellectual work

9. Which one of these are valid statements to create a new list? [1]

- a. L = list((1,2,3,4))
- b. L = list("abcde")
- c. L = [1,2,3,4]
- d. All of the above

Ans. d

10. The load() function of pickle module performs unpickling. State True/False. [1]

Ans. True

11. Which function returns the maximum value from a given column or expression. [1]

Ans. MAX()

12. Write an SQL query to print all details of Workers from WORKER table in which DEPARTMENT name has "Admin"? [1]

Ans. Select * from Worker where DEPARTMENT like '%Admin%';

13. Write an expression to generate a random number to simulate a dice? Assume all libraries are included. [1]

Ans. `N = random.randint(1,6)`

14. Write an SQL query to fetch unique values of NAME from EMP table. [1]

Ans. `Select distinct NAME from EMP;`

15. What is the output of the following command? [1]

```
D = {"Class": 1, "Div": "H"}
print (D["Class"])
print ("Div" in D.values())
```

Ans. 1
False

16. Which command is used to change definitions of tables in SQL? [1]

Ans. `ALTER TABLE`

17. What do the underlined areas represent in the MAC address - 10:B5:03:63:2E:FC [1]

Ans. The first 3 bytes (24 bits) represent the manufacturer of the card, and the last 3 bytes (24 bits) identify the particular card from that manufacturer.

18. What is the output of the following code? [1]

```
total = 0
mydict={"Rose":12, "Tulsi":6, "Sunflower":2, "Lotus":10}
for akey in mydict:
    if len(akey)>4:
        total = total+mydict[akey]
print(total)
```

Ans. 18

19. Which of the following file types can be opened with notepad as well as ms excel? [1]

- a. Text Files
- b. Binary Files
- c. CSV Files
- d. None of these

Ans. c

20. Which clause is used to specify filtering condition for groups? [1]

Ans. `HAVING`

21. Which are 4 operations possible in data structure. [1]

Ans. The major operations are:

- Traversal
- Insertion
- Deletion
- Searching

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 'Club' given below and answer the following question:

[5]

Club				
Member_id	Member_Name	Address	Age	Fee
M001	Sumit	New Delhi	20	2000
M002	Nisha	Gurgaon	19	3500
M003	Niharika	New Delhi	21	2100
M004	Sachin	Faridabad	18	3500

- What is the cardinality and degree of the given table?
- Which can be considered as primary key?
- Write a query to display the Club table from Activity database.
- Insert the following data into the attributes Mno, Name and Qty respectively in the given table.
Member_id = M006, Member_Name = "Nilam" and Fee = 3000
- What is the minimum age of member. Write a query to display Minimum age of member in club.

Ans.

- Cardinality = 4 Degree = 5
- Member_id
- Select*from Club;
- INSERT INTO Club (Member_id, Member_Name, Fee) VALUES('M006', "Nilam",3000);
- SELECT Min(Age) FROM Club;

23. Riddhi receives a student.csv file with Student name and class. She is asked to take class as input from user and copy all the student names only into a new file result.csv. As a programmer, help her to successfully execute the given task.

[5]

e.g. Student.csv

Ajay,3
Mina,4
Jaya,3

User Input:

Enter class to search: 3

Output: result.csv

Ajay
Jaya

Ans.

```
import csv

file = open('result.csv', 'w', __a__);
writer = csv.writer(file)

c = __b__ ("Enter class to search: ")

with open('student.csv','r') as csvfile:
    data = csv.reader(csvfile)
    for row in data:
        if __c__ == c :
            __d__.writerow(row)

__e__.close()
```

- Fill in blank with parameter to be passed to remove the extra newline character
- Give the command to take in value from user.
- What variable/value should be compared with c in if statement?
- Which object need to be used to write the row?
- What needs to be closed before the program exit?

Ans.

```
import csv
file = open('result.csv', 'w', newline="" );
writer = csv.writer(file)

c = input ("Enter class to search: ")
with open('student.csv','r') as csvfile:
    data = csv.reader(csvfile)
    for row in data:
        if row[1] == c :
            writer.writerow(row)

file.close()
```

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]

```
for p in range(3)
    for q in range(3)
        print p*q
else
    print("outer loop ends")
```

Ans. for p in range(3):
for q in range(3):

```

    print(p*q)
else:
    print("outer loop ends")

```

25. Define the following :

[2]

- i. **Primary key**
- ii. **Foreign key**

Ans.

- (i) **Primary key:** It is a column (or columns) in a table that uniquely identifies each row. A primary key value is unique and cannot be null. There is only one primary key for a table.
- (ii) **Foreign key:** It is a column (or a set of columns) that refers to the primary key in another table i.e. it is used as a link to a matching column in another table.

26. Give Full forms of the following?

[2]

1. HTML, 2. GPRS, 3. NIC, 4. WAP

Ans.

1. HTML-Hypertext Markup Language
2. GPRS- General Packet Radio Service
3. NIC- Network Interface Card
4. WAP- Wireless Access Point

27. What is join in SQL? What is difference between equi-join and natural 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.

Equi join is a special type of join in which we use only an equality operator. Hence, when you make a query for join using equality operator then that join query comes under Equi join.

A **natural join** is a type of equi join which occurs implicitly by comparing all the same names columns in both tables. The join result has only one column for each pair of equally named columns.

28. Convert the following for loop into while loop.

[2]

```

for i in range(1,20,1):
    if i % 4 == 2:
        print(i,"mod", 4, "=2")

```

Ans. i=1

```

while i < 20:
    if i % 4 == 2:
        print (i,"mod",4,"=2")
    i = i + 1

```

29. What are the functions in Python?

[2]

Ans: In Python, functions are defined as a block of code that is executable only when it is called. The def keyword is used to define a function in Python.

Example:

```
def Func():
    print("Hello.. Welcome to Simply Coding")
Func(); #calling the function
```

Output: Hello.. Welcome to Simply Coding

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

[2]

```
mydict={(1,3):4}
def build(my_dict):
    my_dict[(1,4)]=8
    my_dict[(1,2)]=12
    sum=0
    for k in my_dict:
        sum+=my_dict[k]
    print(sum)
    return (my_dict)
print(build(mydict))
```

Ans.

24
{(1, 3): 4, (1, 4): 8, (1, 2): 12}

31. What is the output of the following program if the student.csv file contains following data?

[2]

Student.csv

Ronit, 200
Akshaj, 400

Program

```
import csv
d = csv.reader("student.csv")
next(d)
for row in d:
    print(row);
```

Ans. Akshaj, 400

32. What is the difference between 3G and 4G Technologies?

[2]

Ans.

3G TECHNOLOGY	4G TECHNOLOGY
It stands for 3rd generation technology.	It stands for 4th generation technology.
Maximum upload rate of 3G technology is 5 Mbps.	Maximum upload rate of 4G technology is 500 Mbps.
Maximum download rate of 3G technology is 21 Mbps.	Maximum download rate of 4G technology is 1 Gbps.
The frequency range of 3G technology is from 1.8 GHz to 2.5 GHz.	It's frequency range is from 2 GHz to 8 GHz.
It is a wide area cell based network	It is the integration of Wireless LAN as well

architecture.

as Wide Area cell based network architecture.

33. What is the difference between scalar and aggregate SQL functions?**[2]**

Ans.

Scalar	Aggregate
Scalar functions operate against a single value and return a single value.	SQL Aggregate Functions operate on complete sets of data and return a single result.
Scalar functions can be placed anywhere.	Aggregate functions can be placed only in select statement or with the clause having.

Section- II**34. Write a Python program to test if a variable is a list or tuple or a set.****[3]**

Ans.

```
#x = ['a', 'b', 'c', 'd']
#x = {'a', 'b', 'c', 'd'}
x = ('tuple', False, 3.2, 1)
if type(x) is list:
    print('x is a list')
elif type(x) is set:
    print('x is a set')
elif type(x) is tuple:
    print('x is a tuple')
else:
    print('Neither a list or a set or a tuple.')
```

35. Write a function LongLine() that accepts a filename and prints the file's longest line with its length?

Ans.

```
def LongLine(filename):
    longest=""
    file=open(filename)
    for line in file:
        if len(line)>len(longest):
            longest=line
    print("Longest line's length=",len(longest))
    print(longest)
```

Or**Write a function remLower() that accepts two filenames and copies all lines that do not start with a lowercase letter from the first file into the second.****[3]**

```
def remLower(infile,outfile):
```



```

output=open(outfile,"w")
file=open(infile)
for line in file:
    if not line[0] in "abcdefghijklmnopqrstuvwxyz":
        output.write(line)
output.close()
file.close()

```

36. Consider the following tables EMPLOYEE and SALGRADE and answer this question: [3]

Table : Employee

Ecode	Name	Design	SGrade	DOJ	DOB
101	Abdul Ahmad	Executive	S03	23-Mar-2003	13-Jan-1980
102	Ravi Chander	Head-IT	S02	12-feb-2010	22-Jul-1987
103	John Ken	Receptionist	S03	24-Jun-2009	24-Feb-1983
105	Nazar Ameen	GM	S02	11-Aug-2006	03-Mar-1984
108	Priyam Sen	CEO	S01	29-Dec-2004	19-Jan-1982

Table : SalGrade

Sgrade	Salary	HRA
S01	56000	18000
S02	32000	12000
S03	24000	8000

Give the output of the following SQL queries:

- Select count(sgrade), sgrade from employee group by sgrade;
- Select min(dob), max(doj) from employee;
- Select name, salary from employee e, sal-grade s where e.sgrade= s.sgrade and e.ecode<103';Ans.

i)

Count	Sgrade
2	S03
2	S02
1	S01

ii)

Min(dob)	Max(doj)
1980-01-13	1987-07-22

iii)

Name	Salary
Abdul Ahmad	24000
Ravi Chander	32000

37. Write a program to implement a stack. Implement only push and display operations. The push function takes in stack and item to be pushed. Display takes in only stack. [3]

Ans.

```
def Push(stack, item):
    stack.append(item)

def Display(stack):
    if isEmpty(stack):
        print("Stack empty")
    else:
        top=len(stack)-1
        for a in range(top,-1,-1):
            print(stack[a])
```

OR

Convert the following infix expression to its equivalent postfix expression. Show stack contents for the conversion(A+B*(C-D) /E). [3]

Ans.

Let us rewrite like(A+B*(C-D) / E)

Scanned Elements	Operation	Stack Status
((
A	(A
+	(+	A
B	(+	AB
*	(+ *	AB
((+ * (AB
C	(+ * (ABC
-	(+ * (-	ABC
D	(+ * (-	ABCD
)	(+ *	ABCD -
/	(+ /	ABCD- *
E	(+ /	ABCD - * E
)		ABCD - * E/+

Output ABCD-*E/+

Section III

38. A new education campus is coming up in Pune. It is starting up the network between its different wings. There are four Buildings named as SCHOOL, COLLEGE, ADMIN and

HOSTEL and Total nos of computer in it as shown below:

[5]



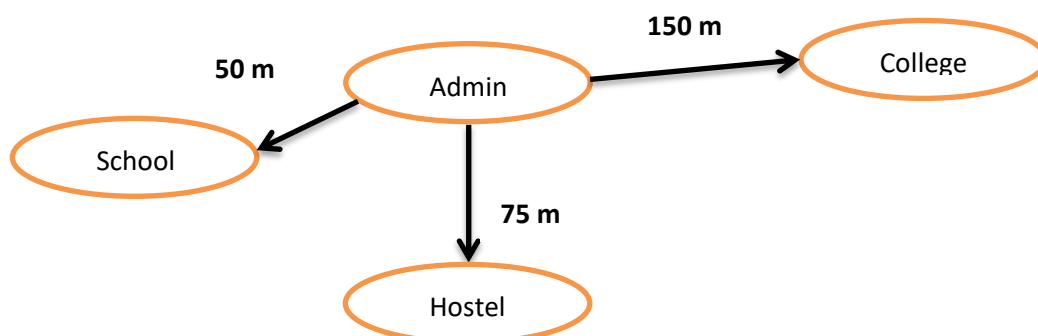
The distance between various buildings is as follows:

Admin to College	150m
Admin to School	50m
Admin to Hostel	75m
College to School	200m
College to Hostel	150m
School to Hostel	100m

1. Suggest the most suitable place (i.e., building) to house the server of this Campus, provide a suitable reason.
2. Suggest the placement of the following devices with justification.
 - Repeater
 - Hub/Switch
3. The campus also has inquiry office in Lonavala about 50-60 km away in hilly region. Suggest the suitable transmission media to interconnect to campus and inquiry office
4. Draw the cable layout (location to location) to efficiently connect various locations within the campus.
5. Which type of network out of the following is formed by connecting the computers of these three blocks?
 - LAN
 - MAN
 - WAN

Ans.

1. Server can be placed in the admin building as it has the maximum number of computers.
2. Repeater can be placed between admin and college building as the distance is more than 110 m.
3. Radio waves can be used in hilly regions as they can travel through obstacles.
- 4.



5. LAN

39. Consider the following tables RESORT and OWNEDBY and answer the following question:

Table : RESORT

RCODE	PLACE	RENT	TYPE	STARTDATE
R001	GOA	15000	5 STAR	12-JAN-02
R002	HIMACHAL	9000	4 STAR	20-DEC-07
R003	KERALA	12500	5 STAR	10-MAR-06
R004	HIMACHAL	10500	2 STAR	25-NOV-05
R005	GUJARAT	8000	4 STAR	01-JAN-03
R006	GOA	18000	7 STAR	30-MAR-08
R007	ORISSA	7500	2 STAR	12-APR-99
R008	KERALA	11000	5 STAR	03-MAR-03
R009	HIMACHAL	9000	2 STAR	15-OCT-08
R010	GOA	13000	5 STAR	12-APR-06

Table : OWNEDBY

Place	Owner
Goa	Raj Resorts
Kerala	KTDC
Himachal	HTDC
Gujarat	MAHINDRA RESORTS
Orissa	OTDC

Write SQL commands for the following statements:

[5]

1. To display the RCODE and PLACE of all '5 STAR' resorts in the alphabetical order of the place from table RESORT.
2. To display the maximum and minimum rent for each type of resort from table RESORT.
3. To display the details of all resorts which are started after 31-DEC-05 from table RESORT.
4. Display the OWNER of all '5 STAR' resorts from tables RESORT and OWNEDBY.
5. Display all Resort place whose rent I between 5000 and 15000.

Ans.

1. Select rcode, place from resort where type = "5 STAR" order by place;
2. Select type, max (rent), min (rent) from resort group by type;
3. Select * from resort where startdate > '2005-12-31';
4. Select owner from resort a, ownedby b where (a.type ='5 STAR' and a.place = b.place);
5. Select place from resort where rent between 5000 and 15000;

**40. A file sports.dat contains information in following format (event, participant)
Write a function that would read the contents from this file and create a new file cricket.dat
copying only those records from sports.dat where the event name is “cricket”.** [5]

Ans.

```
import pickle

infile = open('sport.dat', 'rb')
outfile= open("cricket.dat",'wb')
while True:
    try:
        row = pickle.load(infile)
        if(row[0] == "cricket") :
            pickle.dump(row, outfile)
    except EOFError:
        break
infile.close()
outfile.close()
```