Class: XII Session: 2020-21

Computer Science (083)

Sample Question Paper (Theory)

Maximum Marks: 70 **Time Allowed: 3 hours**

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 sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
4. Part - B is Descriptive Paper.
5. Part- B has three sections
   a. Section-I is short answer questions of 2 marks each in which two question have internal options.
   b. Section-II is long answer questions of 3 marks each in which two questions have internal options.
   c. 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

Question No.	**Part-A**	**Marks allocated**
	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	Find the invalid identifier from the following a) MyName b) True c) 2ndName d) My_Name	1
2	Given the lists L=[1,3,6,82,5,7,11,92] , write the output of print(L[2:5])	1
3	Write the full form of CSV.	1
4	Identify the valid arithmetic operator in Python from the following. a) ? b) < c) ** d) and	1

5	Suppose a tuple T is declared as T = (10, 12, 43, 39), which of the following is incorrect? a) print(T[1]) b) T[2] = -29 c) print(max(T)) d) print(len(T))	1
6	Write a statement in Python to declare a dictionary whose keys are 1, 2, 3 and values are Monday, Tuesday and Wednesday respectively.	1
7	A tuple is declared as T = (2,5,6,9,8) What will be the value of sum(T)?	1
8	Name the built-in mathematical function / method that is used to return an absolute value of a number.	1
9	Name the protocol that is used to send emails.	1
10	Your friend Ranjana complaints that somebody has created a fake profile on Facebook and defaming her character with abusive comments and pictures. Identify the type of cybercrime for these situations.	1
11	In SQL, name the clause that is used to display the tuples in ascending order of an attribute.	1
12	In SQL, what is the use of IS NULL operator?	1
13	Write any one aggregate function used in SQL.	1
14	Which of the following is a DDL command? a) SELECT b) ALTER c) INSERT d) UPDATE	1
15	Name The transmission media best suitable for connecting to hilly areas.	1
16	Identify the valid declaration of L: L = [‘Mon’, ‘23’, ‘hello’, ’60.5’]	1

	a. dictionary b. string c.tuple d. list	
17	If the following code is executed, what will be the output of the following code? name="ComputerSciencewithPython" print(name[3:10])	1
18	In SQL, write the query to display the list of tables stored in a database.	1
19	Write the expanded form of Wi-Fi.	1
20	Which of the following types of table constraints will prevent the entry of duplicate rows? a) Unique b) Distinct c) Primary Key d) NULL	1
21	Rearrange the following terms in increasing order of data transfer rates. Gbps, Mbps, Tbps, Kbps, bps	1
	Section-II **Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark**	
22	A departmental store MyStore is considering to maintain their inventory using SQL to store the data. As a database administer, Abhay has decided that : • Name of the database - mystore • Name of the table - STORE • The attributes of STORE are as follows: ItemNo - numeric ItemName – character of size 20 Scode - numeric Quantity – numeric	

Table : STORE

ItemNo	ItemName	Scode	Quantity
2005	Sharpener Classic	23	60
2003	Ball Pen 0.25	22	50
2002	Get Pen Premium	21	150
2006	Get Pen Classic	21	250
2001	Eraser Small	22	220
2004	Eraser Big	22	110
2009	Ball Pen 0.5	21	180

(a) Identify the attribute best suitable to be declared as a primary key, — 1

(b) Write the degree and cardinality of the table STORE. — 1

(c) Insert the following data into the attributes ItemNo, ItemName and SCode respectively in the given table STORE.
ItemNo = 2010, ItemName = “Note Book” and Scode = 25 — 1

(d) Abhay want to remove the table STORE from the database MyStore. Which command will he use from the following: — 1

a) DELETE FROM store;
b) DROP TABLE store;
c) DROP DATABASE mystore;
d) DELETE store FROM mystore;

(e) Now Abhay wants to display the structure of the table STORE, i.e, name of the attributes and their respective data types that he has used in the table. Write the query to display the same. — 1

23 Ranjan Kumar of class 12 is writing a program to create a CSV file “user.csv” which will contain user name and password for some entries. He has written the following code. As a programmer, help him to successfully execute the given task.

```
import _____                                    # Line 1

def addCsvFile(UserName,PassWord):      # to write / add data into the CSV file
    f=open(' user.csv','_____')                 # Line 2
```

	newFileWriter = csv.writer(f) newFileWriter.writerow([UserName,PassWord]) f.close() #csv file reading code def readCsvFile(): # to read data from CSV file with open(' user.csv','r') as newFile: newFileReader = csv._____(newFile) # Line 3 for row in newFileReader: print (row[0],row[1]) newFile._____ # Line 4 addCsvFile("Arjun","123@456") addCsvFile("Arunima","aru@nima") addCsvFile("Frieda","myname@FRD") readCsvFile() #Line 5	
	(a) Name the module he should import in Line 1.	1
	(b) In which mode, Ranjan should open the file to add data into the file	1
	(c) Fill in the blank in Line 3 to read the data from a csv file.	1
	(d) Fill in the blank in Line 4 to close the file.	1
	(e) Write the output he will obtain while executing Line 5.	1
	Part – B	
	Section-I	
24	Evaluate the following expressions: a) 6 * 3 + 4**2 // 5 – 8 b) 10 > 5 and 7 > 12 or not 18 > 3	2
25	Differentiate between Viruses and Worms in context of networking and data communication threats. **OR** Differentiate between Web server and web browser. Write any two popular web browsers.	2
26	Expand the following terms: a. SMTP b. XML c. LAN d. IPR	2

27	Differentiate between actual parameter(s) and a formal parameter(s) with a suitable example for each. **OR** Explain the use of global key word used in a function with the help of a suitable example.	2
28	Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code. Value=30 for VAL in range(0,Value) If val%4==0: print (VAL*4) Elseif val%5==0: print (VAL+3) else print(VAL+10)	2
29	What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum values that can be assigned to each of the variables Lower and Upper. import random AR=[20,30,40,50,60,70]; Lower =random.randint(1,3) Upper =random.randint(2,4) for K in range(Lower, Upper +1): print (AR[K],end="#") (i) 10#40#70# (ii) 30#40#50# (iii) 50#60#70# (iv) 40#50#70#	2
30	What do you understand by Candidate Keys in a table? Give a suitable example of Candidate Keys from a table containing some meaningful data.	2

31	Differentiate between *fetchone()* and *fetchall()* methods with suitable examples for each.	2
32	Write the full forms of DDL and DML. Write any two commands of DML in SQL.	2

33	Find and write the output of the following Python code:
	
	def Display(str):
	m=""
	for i in range(0,len(str)):
	if(str[i].isupper()):
	m=m+str[i].lower()
	elif str[i].islower():
	m=m+str[i].upper()
	else:
	if i%2==0:
	m=m+str[i-1]
	else:
	m=m+"#"
	print(m)
	
	Display('Fun@Python3.0')
		2

	Section- II	
34	Write a function LShift(Arr,n) in Python, which accepts a list Arr of numbers and n is a numeric value by which all elements of the list are shifted to left. Sample Input Data of the list Arr= [10,20,30,40,12,11], n=2 Output Arr = [30,40,12,11,10,20]	3
35	Write a function in Python that counts the number of “Me” or “My” words present in a text file “STORY.TXT”. If the “STORY.TXT” contents are as follows: My first book was Me and	3

My Family. It
gave me
chance to be
Known to the
world.

The output of the function should be:

Count of Me/My in file: 4

OR

Write a function AMCount() in Python, which should read each character of a text file STORY.TXT, should count and display the occurance of alphabets A and M (including small cases a and m too).

Example:

If the file content is as follows:

Updated information
As simplified by official websites.

The EUCount() function should display the output as:

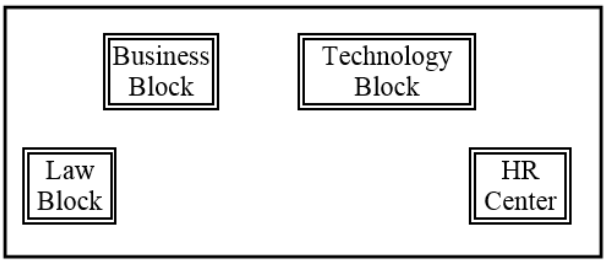
A or a:4
M or m :2

36 Write the outputs of the SQL queries (i) to (iii) based on the relations Teacher and Posting given below: 3

Table : Teacher

T_ID	Name	Age	Department	Date_of_join	Salary	Gender
1	Jugal	34	Computer Sc	10/01/2017	12000	M
2	Sharmila	31	History	24/03/2008	20000	F
3	Sandeep	32	Mathematics	12/12/2016	30000	M
4	Sangeeta	35	History	01/07/2015	40000	F
5	Rakesh	42	Mathematics	05/09/2007	25000	M
6	Shyam	50	History	27/06/2008	30000	M
7	Shiv Om	44	Computer Sc	25/02/2017	21000	M
8	Shalakha	33	Mathematics	31/07/2018	20000	F

	Table : Posting
	P_ID | Department | Place
	1 | History | Agra
	2 | Mathematics | Raipur
	3 | Computer Science | Delhi
	
	i. SELECT Department, count(*) FROM Teacher GROUP BY Department;
	ii. SELECT Max(Date_of_Join),Min(Date_of_Join) FROM Teacher;
	iii. SELECT Teacher.name,Teacher.Department, Posting.Place FROM Teachr, Posting WHERE Teacher.Department = Posting.Department AND Posting.Place=”Delhi”;	

37	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. **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.	3
	Section-III	
38	MyPace University is setting up its academic blocks at Naya Raipur and is planning to set up a network. The University has 3 academic blocks and one Human Resource Center as shown in the diagram below:  Center to Center distances between various blocks/center is as follows:	5

Law Block to business Block	40m
Law block to Technology Block	80m
Law Block to HR center	105m
Business Block to technology Block	30m
Business Block to HR Center	35m
Technology block to HR center	15m

Number of computers in each of the blocks/Center is as follows:

Law Block	15
Technology Block	40
HR center	115
Business Block	25

a) Suggest the most suitable place (i.e., Block/Center) to install the server of this University with a suitable reason.

b) Suggest an ideal layout for connecting these blocks/centers for a wired connectivity.

c) Which device will you suggest to be placed/installed in each of these blocks/centers to efficiently connect all the computers within these blocks/centers.

d) Suggest the placement of a Repeater in the network with justification.

e) The university is planning to connect its admission office in Delhi, which is more than 1250km from university. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer.

39 — 5

Write SQL commands for the following queries (i) to (v) based on the relations Teacher and Posting given below:

Table : Teacher

T_ID	Name	Age	Department	Date_of_join	Salary	Gender
1	Jugal	34	Computer Sc	10/01/2017	12000	M
2	Sharmila	31	History	24/03/2008	20000	F

3	Sandeep	32	Mathematics	12/12/2016	30000	M	
4	Sangeeta	35	History	01/07/2015	40000	F	
5	Rakesh	42	Mathematics	05/09/2007	25000	M	
6	Shyam	50	History	27/06/2008	30000	M	
7	Shiv Om	44	Computer Sc	25/02/2017	21000	M	
8	Shalakha	33	Mathematics	31/07/2018	20000	F	

Table : Posting

P_ID	Department	Place
1	History	Agra
2	Mathematics	Raipur
3	Computer Science	Delhi

i. To show all information about the teacher of History department.

ii. To list the names of female teachers who are in Mathematics department.

iii. To list the names of all teachers with their date of joining in ascending order.

iv. To display teacher's name, salary, age for male teachers only.

v. To display name, bonus for each teacher where bonus is 10% of salary.

40

A binary file "Book.dat" has structure [BookNo, Book_Name, Author, Price].

i. Write a user defined function *CreateFile()* to input data for a record and add to Book.dat .

ii. Write a function *CountRec(Author)* in Python which accepts the Author name as parameter and count and return number of books by the given Author are stored in the binary file "Book.dat"

OR

A binary file "STUDENT.DAT" has structure (admission_number, Name, Percentage). Write a function *countrec()* in Python that would read contents of the file "STUDENT.DAT" and display the details of those students whose percentage is above 75. Also display number of students scoring above 75%

5

Sample Question Paper - 2021

Computer Science – 083

MARKING SCHEME

Maximum Marks: 70 **Time Allowed: 3 hours**

	Part – A **Section - I**	
1	b) True	1
2	[6,82,5]	1
3	Comma Separated Value	1
4	c) **	1
5	b) T[2]= -29 (as tuple is immutable)	1
6	Day={1:'monday',2:'tuesday',3:'wednesday'}	1
7	30	
8	abs()	1
9	SMTP	1
10	Cyber Stalking	1
11	ORDER BY	1
12	To check if the column has null value / no value	1
13	SUM / AVG / COUNT / MAX / MIN	1
14	b) ALTER	1
15	Microwave / Radio wave	1
16	d. List	1
17	puterSc	1
18	SHOW TABLES	1
19	Wireless Fidelity	1
20	(c) Primary Key	1
21	Bps, Kbps, Mbps, Gbps, Tbps	1
	Part – A **Section - II**	
22	(a) ItemNo (b) Degree = 4 Cardinality = 7 (c) INSERT INTO store (ItemNo,ItemName,Scode) VALUES(2010, “Note Book”,25); (d) DROP TABLE store; (e) Describe Store;	1 1 1 1 1
23	(a) Line 1 : csv (b) Line 2 : a (c) Line 3 : reader (d) Line 4 : close()	1 1 1 1

	(e) Line 5 : Arjun 123@456 Arunima aru@nima Frieda myname@FRD	1
	Part – B	
24	a) 13 b) False	2
25	Viruses require an active host program or an already-infected and active operating system in order for viruses to run, cause damage and infect other executable files or documents Worms are stand-alone malicious programs that can self-replicate. **OR** **Web Browser** : A web browser is a software application for accessing information on the World Wide Web. When a user requests a web page from a particular website, the web browser retrieves the necessary content from a web server and then displays the page on the user's device. **Web Server** : A web server is a computer that runs websites. The basic objective of the web server is to store, process and deliver web pages to the users. This intercommunication is done using Hypertext Transfer Protocol (HTTP). Popular web browsers : Google Chrome, Mozilla Firefox, Internet Explorer etc	2
26	a. SMTP - Simple Mail Transfer Protocol b. XML - eXtensible Markup Language c. LAN – Local Area Network d. IPR – Intellectual Property Rights	2
27	The list of identifiers used in a function call is called actual parameter(s) whereas the list of parameters used in the function definition is called formal parameter(s). Actual parameter may be value / variable or expression. Formal parameter is an identifier. Example: def area(side): # line 1 return side*side; print(area(5)) # line 2 In line 1, side is the formal parameter and in line 2, while invoking area() function, the value 5 is the actual parameter.	2

	A formal parameter, i.e. a parameter, is in the *function definition*. An actual parameter, i.e. an argument, is in a *function call*.
	OR
	Use of global key word:
	In Python, global keyword allows the programmer to modify the variable outside the current scope. It is used to create a global variable and make changes to the variable in local context. A variable declared inside a function is by default local and a variable declared outside the function is global by default. The keyword global is written inside the function to use its global value. Outside the function, global keyword has no effect.
	Example
	c = 10 # global variable
	def add():
	global c
	c = c + 2 # global value of c is incremented by 2
	print("Inside add():", c)
	
	add()
	c=15
	print("In main:", c)
	
	output:
	Inside add() : 12
	In main: 15	

28	**CORRECTED CODE:**
	Value=30
	for VAL in range(0,Value) : # Error 1
	if val%4==0: # Error 2
	print (VAL*4)
	elif val%5==0: # Error 3
	print (VAL+3)
	else: # Error 4
	print(VAL+10)
		2

29	OUTPUT: (ii) Maximum value of Lower: 3 Maximum value of Upper: 4	2
30	A table may have more than one such attribute/group of attributes that identifies a tuple uniquely, all such attribute(s) are known as Candidate Keys.	2

<table>
<tr><td></td><td>Table:Item
<table><tr><td>Ino</td><td>Item</td><td>Qty</td></tr><tr><td>I01</td><td>Pen</td><td>500</td></tr><tr><td>I02</td><td>Pencil</td><td>700</td></tr><tr><td>I04</td><td>CD</td><td>500</td></tr><tr><td>I09</td><td></td><td>700</td></tr><tr><td>I05</td><td>Eraser</td><td>300</td></tr><tr><td>I03</td><td>Duster</td><td>200</td></tr></table>In the above table Item, ItemNo can be a candidate key</td><td></td></tr>
<tr><td>31</td><td>fetchall() fetches all the rows of a query result. An empty list is returned if there is no record to fetch the cursor.
fetchone() method returns one row or a single record at a time. It will return None if no more rows / records are available.
Any example.</td><td>2</td></tr>
<tr><td>32</td><td>DDL – Data Definition Language
DML – Data Manipulation Language
Any two out of INSERT, DELETE, UPDATE</td><td>2</td></tr>
<tr><td>33</td><td>OUTPUT : fUNnpYTHON</td><td>2</td></tr>
<tr><td>34</td><td>def LShift(Arr,n):
L=len(Arr)
for x in range(0,n):
y=Arr[0]
for i in range(0,L-1):
Arr[i]=Arr[i+1]
Arr[L-1]=y
print(Arr)
Note : Using of any correct code giving the same result is also accepted.</td><td>3</td></tr>
<tr><td>35</td><td>def displayMeMy():
num=0
f=open("story.txt","rt")
N=f.read()
M=N.split()
for x in M:
if x=="Me" or x== "My":
print(x)
num=num+1
f.close()
print("Count of Me/My in file:",num)</td><td>3</td></tr>
</table>

OR

```
def count_A_M():
    f=open("story.txt","r")
    A,M=0,0
    r=f.read()
    for x in r:
        if x[0]=="A" or x[0]=="a" :
            A=A+1
        elif x[0]=="M" or x[0]=="m":
            M=M+1
    f.close()
    print("A or a: ",A)
    print("M or m: ",M)
```

Note : Using of any correct code giving the same result is also accepted.

36 **OUTPUT:** 3

i.

Department	Count(*)
History	3
Computer Sc	2
Mathematics	3

ii. Max - 31/07/2018 or 2018-07-31 Min- 05/09/2007 or 2007-09-05

iii.

name	Department	Place
Jugal	Computer Sc	Delhi
Shiv Om	Computer Sc	Delhi

37 **ANSWER: (Using of any correct code giving the same result is also accepted.)** 3

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

```
        print("Empty Stack")
    else:
        print(s)
```

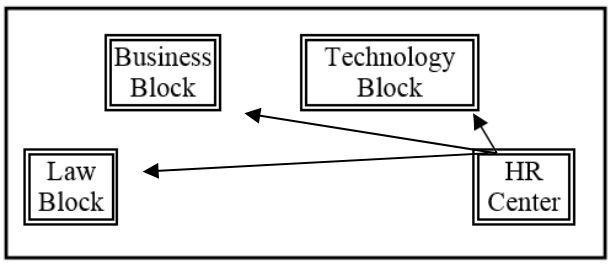
OR

```
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)
```

38 | 5

a. Most suitable place to install the server is HR center, as this center has maximum number of computers.

b.



c. Switch

d. Repeater may be placed when the distance between 2 buildings is more than 70 meter.

e. WAN, as the given distance is more than the range of LAN and MAN.

39 | 5

i. SELECT * FROM teacher WHERE department= “History”;

ii. SELECT name FROM teacher WHERE department= “Mathematics” AND gender= “F”;

iii. SELECT name FROM teacher ORDER BY date_of_join;

iv. SELECT name, salary, age FROM teacher WHERE gender=’M’;

v. SELECT name, salary*0.1 AS Bonus FROM teacher;

40	**ANSWER: (Using of any correct code giving the same result is also accepted.)**	5

```
import pickle
def createFile():
   fobj=open("Book.dat","ab")
   BookNo=int(input("Book Number : "))
   Book_name=input("Name :")
   Author = input("Author: ")
   Price = int(input("Price  : "))
   rec=[BookNo,Book_Name,Author,Price]
   pickle.dump(rec,fobj)
   fobj.close()

def CountRec(Author):
    fobj=open("Book.dat","rb")
    num = 0
    try:
       while True:
          rec=pickle.load(fobj)
          if Author==rec[2]:
             num = num + 1
    except:
       fobj.close()
    return num
```

OR

```
import pickle
def CountRec():
    fobj=open("STUDENT.DAT","rb")
    num = 0
    try:
       while True:
          rec=pickle.load(fobj)
          if rec[2] > 75:
             print(rec[0],rec[1],rec[2],sep="\t")
             num = num + 1
    except:
       fobj.close()
    return num
```