CBSE Class 12 Computer Science 2020 - Set 91/C (Set-4) - Compartment

Question Paper

Conducted by the Central Board of Secondary Education (CBSE)

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

General Instructions

(i) All questions are compulsory.

(ii) The question paper is divided into four sections A, B, C and D.

(iii) Section A: Unit 1 - 30 marks. Section B: Unit 2 - 15 marks. Section C: Unit 3 - 15 marks. Section D: Unit 4 - 10 marks.

Section A

1(a). Which of the following is not a valid variable name in Python? Justify reason for it not being a valid name.

(A) 5Radius (B) Radius_

(C) _Radius (D) Radius

1(b). Which of the following are keywords in Python?

(A) break (B) check

(C) range (D) while

1(c). Name the Python Library modules which need to be imported to invoke the following functions:

```
(i) cos()  (ii) randint()
```

1(d). Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code.

```
input('Enter a word',W)
if W = 'Hello'
print('Ok')
else:
print('Not Ok')
```

1(e). Find and write the output of the following Python code:

```
def ChangeVal(M,N):
    for i in range(N):
        if M[i]%5 == 0:
            M[i] //= 5
        if M[i]%3 == 0:
            M[i] //= 3

L=[25,8,75,12]
ChangeVal(L,4)
for i in L :
    print(i, end='#')
```

1(f). Find and write the output of the following Python code:

```
def Call(P=40,Q=20):
    P=P+Q
    Q=P-Q
    print(P,'@',Q)
    return P

R=200
S=100
R=Call(R,S)
print (R,'@',S)
S=Call(S)
print(R,'@',S)
```

1(g). What possible output(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the minimum and maximum values that can be assigned to the variable End.

```
import random
Colours =
["VIOLET","INDIGO","BLUE","GREEN",
   "YELLOW","ORANGE","RED"]

End = randrange(2)+3
Begin = randrange(End)+1
for i in range(Begin,End):
    print(Colours[i],end="&")
```

(A) INDIGO&BLUE&GREEN&

(B) VIOLET&INDIGO&BLUE&

(C) BLUE&GREEN&YELLOW&

(D) GREEN&YELLOW&ORANGE&

2(a). Write the names of the immutable data objects from the following:

(A) List (B) Tuple

(C) String (D) Dictionary

2(b). Write a Python statement to declare a Dictionary named `ClassRoll` with Keys as 1, 2, 3 and corresponding values as 'Reena', 'Rakesh', 'Zareen' respectively.

2(c). Which of the options is the correct data type for the variable Vowels as defined in the following Python statement?

```
Vowels = ('A', 'E', 'I', 'O', 'U')
```

(A) List (B) Dictionary

(C) Tuple (D) Array

2(d). Write the output of the following Python code:

```
for i in range(2,7,2):
    print(i * '$')
```

2(e). Write the output of the following Python code:

```
def Update(X=10):
    X += 15
    print('X = ', X)

X=20
Update()
print('X = ', X)
```

2(f). Differentiate between "w" and "r" file modes used in Python. Illustrate the difference using suitable examples.

2(g). A pie chart is to be drawn (using pyplot) to represent Pollution Level of Cities. Write appropriate statements in Python to provide labels for the pie slices as the names of the Cities and the size of each pie slice representing the corresponding Pollution of the Cities as per the following table:

Cities	Pollution
Mumbai	350
Delhi	475
Chennai	315
Bangalore	390

OR

2(g). Write the output from the given Python code:

```
import matplotlib.pyplot as plt
Months = ['Dec','Jan','Feb','Mar']
Marks = [70, 90, 75, 95]
plt.bar(Months, Attendance)
plt.show()
```

2(h). Write a function `Show_words()` in Python to read the content of a text file 'NOTES.TXT' and display the entire content in capital letters. Example, if the file contains:

```
"This is a test file"
```

Then the function should display the output as:

```
THIS IS A TEST FILE
```

OR

2(h). Write a function `Show_words()` in Python to read the content of a text file 'NOTES.TXT' and display only such lines of the file which have exactly 5 words in them. Example, if the file contains:

```
This is a sample file.
The file contains many sentences.
But needs only sentences which have only 5
words.
```

Then the function should display the output as:

```
This is a sample file.
The file contains many sentences :
```

2(i). Write a Recursive function in Python `RecsumNat(N)`, to return the sum of the first N natural numbers. For example, if N is 10 then the function should return (1 + 2 + 3 + ... + 10 = 55).

OR

2(i). Write a Recursive function in Python `Power(X,N)`, to return the result of X raised to the power N where X and N are non-negative integers. For example, if X is 5 and N is 3 then the function should return the result of $(5)^3$ i.e. 125.

2(j). Write functions in Python for `PushS(List)` and for `PopS(List)` for performing Push and Pop operations with a stack of List containing integers.

OR

2(j). Write functions in Python for `InsertQ(Names)` and for `RemoveQ(Names)` for performing insertion and removal operations with a queue of List which contains names of students.

Section B

3(a). Fill in the blank: Computers connected by a network across different cities is an example of _____.

3(b). Fill in the blank: _____ is a network tool used to test the download and upload broadband speed.

3(c). Fill in the blank: A _____ is a networking device that connects computers in a network by using packet switching to receive, and forward data to the destination.

3(d). Fill in the blank: _____ is a network tool used to determine the path packets taken from one IP address to another.

3(e). Write the full form of the following abbreviations:

`(i) POP  (ii) VoIP  (iii) NFC  (iv) FTP`

3(f). Match the ServiceNames listed in the first column of the following table with their corresponding features listed in the second column of the table:

Technology	Feature
1G	IP based Protocols (LTE) True Mobile Broadband
2G	Improved Data Services with Multimedia Mobile Broadband
3G	Basic Voice Services Analog-based Protocol
4G	Better Voice Services Basic Data Services First Digital Standards (GSM, CDMA)

3(g). What is a secure communication? Differentiate between HTTP and HTTPS.

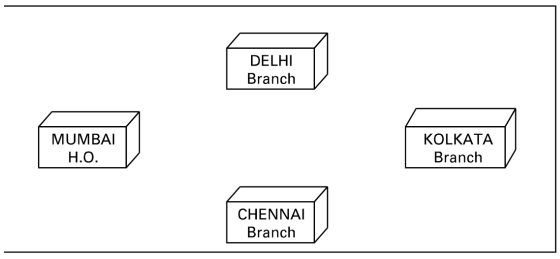
3(h). Helping Hands is an NGO with its head office at Mumbai and branches located at Delhi, Kolkata and Chennai. Their Head Office located at Delhi needs a communication network to be established between the head office and all the branch offices. The NGO has received a grant from the national government for setting up the network. The physical distances between the branch offices and the head office and the number of computers to be installed in each of these branch offices and the head office are given below. You, as a network expert, have to suggest the best possible solutions for the queries as raised by the NGO.

Distances between various locations in Kilometres:

From	To	Distance
Mumbai H.O.	Delhi	1420
Mumbai H.O.	Kolkata	1640
Mumbai H.O.	Chennai	2710
Delhi	Kolkata	1430
Delhi	Chennai	1870
Chennai	Kolkata	1750

Number of computers installed at various locations:

Location	Computers
Mumbai H.O.	2500
Delhi branch	1200
Kolkata branch	1300
Chennai branch	1100



3(h)(i). Suggest by drawing the best cable layout for effective network connectivity of all the Branches and the Head Office for communicating data.

3(h)(ii). Suggest the most suitable location to install the main server of this NGO to communicate data with all the offices.

3(h)(iii). Write the name of the type of network out of the following, which will be formed by connecting all the computer systems across the network:

(A) WAN (B) MAN
(C) LAN (D) PAN

3(h)(iv). Suggest the most suitable medium for connecting the computers installed across the network out of the following:

(A) Optical fibre (B) Telephone wires
(C) Radio waves (D) Ethernet cable

Section C

4(a). Which SQL command is used to add a new attribute in a table?

4(b). Which SQL aggregate function is used to count all records of a table?

4(c). Which clause is used with a SELECT command in SQL to display the records in ascending order of an attribute?

4(d). Write the full form of the following abbreviations:

`(i) DDL  (ii) DML`

4(e). Observe the following tables, EMPLOYEES and DEPARTMENT, carefully and answer the questions that follow:

Table: EMPLOYEES

ENO	ENAME	DOJ	DNO
E1	NUSRAT	2001-11-21	D3
E2	KABIR	2005-10-25	D1

Table: DEPARTMENT

DNO	DNAME
D1	ACCOUNTS
D2	HR
D3	ADMIN

(i) What is the Degree of the table EMPLOYEES? What is the cardinality of the table DEPARTMENT?

(ii) What is a Primary Key? Explain.

OR

4(e). Differentiate between Selection and Projection operations in context of a Relational Database. Also, illustrate the difference with one supporting example of each.

4(f). Write whether the following statements are True or False for the GET and POST methods in Django:

`(i) POST requests are never cached.`

`(ii) GET requests do not remain in the browser history.`

4(g). Write outputs for SQL queries (i) to (iii), which are based on the following tables, CUSTOMERS and PURCHASES:

Table: CUSTOMERS

CNO	CNAME	CITIES
C1	SANYAM	DELHI
C2	SHRUTI	DELHI
C3	MEHER	MUMBAI
C4	SAKSHI	CHENNAI
C5	RITESH	INDORE
C6	RAHUL	DELHI
C7	AMEER	CHENNAI
C8	MINAKSHI	BANGALORE
C9	ANSHUL	MUMBAI

Table: PURCHASES

SNO	QTY	PUR_DATE	CNO
S1	15	2018-12-25	C2
S2	10	2018-11-10	C1
S3	12	2018-11-10	C4
S4	7	2019-01-12	C7
S5	11	2019-02-12	C2
S6	10	2018-10-12	C6
S7	5	2019-05-09	C8
S8	20	2019-05-09	C3
S9	8	2018-05-09	C9
S10	15	2018-11-12	C5
S11	6	2018-08-04	C7

```
(i) SELECT COUNT(DISTINCT CITIES) FROM
CUSTOMERS;

(ii) SELECT MAX(PUR_DATE) FROM PURCHASES;

(iii) SELECT CNAME, QTY, PUR_DATE FROM
CUSTOMERS,
PURCHASES WHERE CUSTOMERS.CNO =
PURCHASES.CNO
AND QTY IN (10,20);
```

4(h). Write SQL queries for (i) to (iv), which are based on the tables: CUSTOMERS and PURCHASES given in the question 4(g):

(i) To display details of all CUSTOMERS whose CITIES are neither Delhi nor Mumbai.

(ii) To display the CNAME and CITIES of all CUSTOMERS in ascending order of their CNAME.

(iii) To display the number of CUSTOMERS along with their respective CITIES in each of the CITIES.

(iv) To display details of all PURCHASES whose Quantity is more than 15.

Section D

5(a). An organisation purchases new computers every year and dumps the old ones into the local dumping yard. Write the name of the most appropriate category of waste that the organisation is creating every year.

(A) Solid Waste (B) Commercial Waste
(C) E-Waste (D) Business Waste

5(b). Data which has no restriction of usage and is freely available to everyone under Intellectual Property Rights is categorised as

(A) Open Source (B) Open Data
(C) Open Content (D) Open Education

5(c). What is a Unique Id? Write the name of the Unique Identification provided by Government of India for Indian Citizens.

5(d). Consider the following scenario and answer the questions which follow:

"A student is expected to write a research paper on a topic. The student had a friend who took a similar class five years ago. The student asks his older friend for a copy of his paper and then takes the paper and submits the entire paper as his own research work."

(i) Which of the following activities appropriately categorises the act of the writer?

(A) Plagiarism (B) Spamming (C) Virus (D) Phishing

(ii) Which kind of offense out of the following is made by the student?

(A) Cyber Crime (B) Civil Crime (C) Violation of Intellectual Property Rights

5(e). What are Digital Rights? Write examples for two digital rights applicable to usage of digital technology.

5(f). Suggest techniques which can be adopted to impart Computer Education for

(i) Visually impaired students (someone who cannot write).

(ii) Speech impaired students (someone who cannot speak).

- End of Question Paper -