CLASS-XII (2022-23)

SAMPLE QUESTION PAPER - 3

Computer Science (083)

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

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q35 against part c only.
8. All programming questions are to be answered using Python Language only.

Section A

1. Which method returns the next row from the result set as tuple? **[1]**

   a) fetchone() b) rowcount

   c) fetchall() d) fetchmany()

2. State true or false: **[1]**

   A list may contain any type of objects except another list.

3. State true or false: **[1]**

   In Python, a variable is a placeholder for data.

4. In computer, process of superimposing the amplitude of message signal over amplitude of carrier signal is called **[1]**

   a) modulation b) demodulation

   c) amplitude modulation d) frequency modulation

5. What will be the output of the following code? **[1]**

```
value = 50
def display(N):
    global value
    value = 25
    if N%7==0:
        value = value + N
    else:
        value = value - N
print(value, end="#")
```

```
display(20)
print(value)
```

a) 5#50# b) 50#50

c) 50#5 d) 50#30

6. To fetch multiple records from the resultset, you may use <cursor>. _____ method(). [1]

a) fetch() b) fetchmany()

c) fetchmultiple() d) fetchmore()

7. If a file is opened for writing, which of the following statements are true? [1]

a. The file must exist on the disk on the specified path.

b. If the file exists at the specified path, the file is successfully opened.

c. The file even if at a different location on disk other than the specified path, will get opened.

d. Python gives error if the file does not exist at the specified path.

e. Python will create a new empty file at the specified path if the file does not exist at the specified path.

f. The existing contents of the file get erased as soon as you open the file.

a) b, e, f b) b, c, f

c) a, b, c d) d, e, f

8. Which operator performs pattern matching? [1]

a) LIKE operator b) BETWEEN operator

c) None of these d) EXISTS operator

9. Non-void functions are also known as [1]

a) Invalid functions b) Valid functions

c) Fruitful functions d) Non functions

10. Which of the following mode will refer to binary data? [1]

a) b b) w

c) + d) r

11. When a stack, implemented as an array/list of fixed size, is full and no new element can be accommodated, it is called an _____. [1]

a) OVERFLOW b) NOFLOW

c) EXTRAFLOW d) UNDERFLOW

12. What is the mean of L in LEGB rule for scope resolution? [1]

a) Local b) Library

c) Least d) Last

13. The return type of the input() function is [1]

a) string b) integer

c) list d) tuple

14. Find EVEN parity bit for 10010110 [1]

a) none of these b) 0

c) 2 d) 1

15. Which multiple access technique is used by IEEE standard for wireless LAN? [1]

a) none of these b) CDMA

c) CSMA/CA d) ALOHA

16. What are two advantages of using UTP cable in a networking environment? [1]

i. is stiffer than STP

ii. is less expensive than fiber

iii. is easier to install than coaxial

iv. provides longer distances than coaxial provides

v. is less susceptible to outside noise sources than fiber is

a) (ii) and (iv) b) (i) and (v)

c) (iv) and (v) d) (ii) and (iii)

17. **Assertion (A):** Pd.Series([4, 6, 9], range(1, 5)) will lead to value error. [1]
Reason (R): The length of data and index must be same on series.

a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false. d) A is false but R is true.

18. **Assertion (A):** The chdir() method is used to change the current working directory to a specified directory. [1]
Reason (R): The mkdir() method is used to create the directories in the current working directory.

a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false. d) A is false but R is true.

Section B

19. How many times will the given loop iterate? **[2]**

```
i = 0
while (i < 25):
    print("Python")
    i = i + 1
```

OR

Write a program that prints a table on two columns - table that helps converting miles into kilometres.

20. Explain any two switching techniques used in networking. **[2]**

21. Write Python code to create a table location with the following fields **[2]**

id	id of the location
bidycode	code of the building
room	type of rooms
capacity	capacity of the room

22. Answer: **[2]**

(i) Which method is used to execute an SQL command through a cursor object?

(ii) What conditions or terms are included by DB-API?

23. Predict the output. **[2]**

i. 'wonders'.center (12, '*')

ii. 'wonders25'.isalnum()

iii. 'Hello1235 '.isdigit()

iv. 'Hi Hello'.istitle()

v. 'This is nice.' endswith("nice")

vi. "wonder".zfill(10)

OR

Can non-graphic characters be used and processed in Python? How? Give examples to support your answer.

24. Write a function that takes a parameter of dictionary type and returns a dictionary with keys and values swapped. **[2]**

25. Write statements to place the file points fp1: **[2]**

i. to the beginning of the file

ii. to 25th byte from the beginning

iii. to 10 bytes behind the current position of file pointer.

iv. to 25 bytes behind the EOF position.

OR

Write a method in Python to write multiple line of text contents into a text file diary.txt.

Section C

26. Differentiate between DDL and DML commands. **[3]**

OR

Write a query on the Salespeople table, whose output will exclude all salespeople with a rating >= 100, unless they are located in Delhi.

27. Answer: **[3]**

(i) What will be the output?

```
dic = {'One':1,'Two':2,'Three':3}
print(list(dic.values()))
```

(ii) Write a program to multiply all the items in a dictionary.
dic = { 'A' : 50, 'B' : 30, 'C' : 20, 'D' : 53}

28. What is the difference between a local variable and a global variable? Also, give a suitable Python code to illustrate both. **[3]**

29. Define a function overlapping () that takes two lists and returns true if they have at least one member in common, False otherwise. **[3]**

OR

Find the errors in code given below:

i.
```
def minus(total, decrement)
output = total - decrement
print(output)
return (output)
```

ii.
```
define check()
N = input ('Enter N:')
i = 3
answer = 1 + i * * 4/N
Return answer
```

iii.
```
def alpha(n, string = 'xyz', k = 10) :
return beta(string)
return n
def beta (string)
return string == str(n)
print(alpha("Valentine's Day"):)
print(beta (string = 'true'))
print(alpha(n=5, "Good-bye") :)
```

30. Write code to print just the last line of a text file "data.txt". **[3]**

Section D

31. Answer (i) & (ii) OR (iii) & (iv) **[5]**

(i) Write a program to accept a filename from the user and display all the lines from the file which contain Python comment character '# '.

(ii) Create file phonebook.dat that stores the details in following format:
Name Phone
Jivin 86666000
Kriti 1010101
Obtain the details from the user.

(iii) Write a function to count the number of lines starting with uppercase character text file "Help.doc".

(iv) Consider the file poemBTH.txt given below.
God made the Earth;
Man made confining countries
And their fancy-frozen boundaries.
But with unfound boundLess Love
I behold the border Land of my India
Expanding into the World.
HaiLj mother of religions, Lotus scenic beauty and sages!
What output will be produced by following code fragment?

```
obj1 = open("poemBTH.txt", "r")
s1 = obj1.readline()
s2.readline(10)
s3 = obj1.read(15)
print(s3)
print(obj1.readline())
obj1.close()
```

If in this question, object s2 is replaced with obj1, then predict the output of the code

33. Consider the following table GAMES. Write SQL commands for the following statements. **[5]**

Table: GAMES

GCode	GameName	Type	Number	PrizeMoney	ScheduleDate
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
105	Chess	Indoor	2	9000	01-Jan-2004
108	Lawn Tennis	Outdoor	4	25000	19-Mar-2004

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 Type of GAMES.

OR

Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables:

TABLE: BOOK

Code	**BNAME**	**TYPE**
F101	The Priest	Fiction
L102	German easy	Literature
C101	Tarzan in the lost world	Comic
F102	Untold story	Fiction
C102	War heroes	Comic

TABLE: MEMBER

MNO	MNAME	CODE	ISSUEDATE
M101	RAGHAV SINHA	LI 02	2016-10-13
M103	S ARTHAKJ OHN	FI 02	2017-02-23
M102	ANISHA KHAN	C101	2016-06-12

i. To display all details from table MEMBER in descending order of ISSUEDATE.

ii. To display the BNO and BNAME of all Fiction Type books from the table Book.

iii. To display the TYPE and number of books in each TYPE from the table BOOK.

iv. To display all MNAME and ISSUEDATE of those members from table MEMBER who have books issued (i.e., ISSUEDATE) in the year 2017.

v. SELECT MAX (ISSUEDATE) FROM MEMBER

vi. SELECT DISTINCT TYPE FROM BOOK

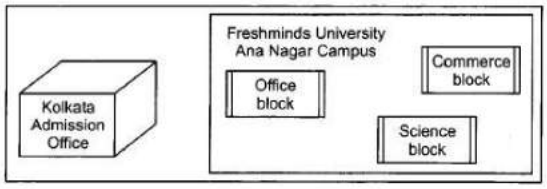
vii. SELECT A.CODE, BNAME, MNO. MNAME FROM BOOK A. MEMBER B WHERE A.CODE= B.CODE

viii. SELECT BNAME FROM BOOK WHERE TYPE NOT IN ("FICTION", "COMIC")

Section E

34. **Read the text carefully and answer the questions:** **[4]**

The Freshminds University of India is starting its first campus in Ana Nagar of South India with its center admission office in Kolkata. The university has 3 major blocks comprising of Office Block, Science Block and Commerce Block in the 5 km area Campus.



As a network expert, you need to suggest the network plan as per (i) to (iv) to the authorities keeping in mind the distance and other given parameters.
Expected Wire distances between various locations:

Office Block to Science Block	90 m
Office Block to Commerce Block	80 m
Science Block to Commerce Block	15 m
Kolkata Admission office to Ana Nagar Campus	2450 km

Expected number of Computers to be installed at various locations in the University are as follows:

Office Block	10
Science Block	140
Commerce Block	30
Kolkata Admission office	8

(i) What type of server should be installed in university?

i. Dedicated

ii. Non-dedicated

(ii) Suggest the most suitable place (i.e., block) to house the server of this university with a suitable reason.

(iii) Suggest the most suitable (very high speed) service to provide data connectivity between Admission Office located in Kolkata and the campus located in Ana Nagar from the following options:

i. Telephone line

ii. Fixed-Line Dial-up connection

iii. Co-axial Cable Network

iv. GSM

v. Leased line

vi. Satellite Connection

OR

Suggest an efficient device to be installed in each of the blocks to connect all the computers.

35. **Read the text carefully and answer the questions:** **[4]**

Consider the following table Persons and answer the questions that follows

PID	LastName	FirstName	Address	City
101	Hansen	Ola	Timoteivn 10	Sandnes
102	Svendson	Tove	Borgvn 23	Sandnes
103	Petterson	Kari	Storgt 2	Stavanger
104	Nilsen	Johan	Bakken 2	Stavanger
105	Tjessem	Jakob	NULL	NULL

(i) Write the degree and cardinality of table Persons.

(ii) Which command is used to show the content of table Persons?

(iii) To display the detail of persons whose city is Sandnes.

SOLUTION

Section A

1. **(a)** fetchone()
   Explanation: fetchone()

2. **(b)** False
   Explanation: False
   A list may contain any type of objects

3. **(b)** False
   Explanation: False
4. **(c)** amplitude modulation
   Explanation: amplitude modulation is process of superimposing the amplitude of message signal over amplitude of carrier signal.
5. **(c)** 50#5
   Explanation: 50#5
6. **(b)** fetchmany()
   Explanation: fetchmany()
7. **(a)** b, e, f
   Explanation: If the given file exists at the specified path, the file will be successfully opened. When opening the file in write mode, Python will create a new empty file at the specified path if the file does not exist at the specified path. If the file already exists, the contents of the files will be erased.

8. **(a)** LIKE operator
   Explanation: LIKE operator is used in the WHERE clause allows us a search based operation on a pattern.
9. **(c)** Fruitful functions
   Explanation: Fruitful functions
10. **(a)** b
    Explanation: b, binary mode is referred for binary data.
11. **(a)** OVERFLOW
    Explanation: When a stack, implemented as an array/list of fixed size, is full and no new element can be accommodated, it is called an OVERFLOW.
12. **(a)** Local
    Explanation: Local
13. **(a)** string
    Explanation: string
14. **(b)** 0
    Explanation: Parity of a number is based on the number of 1's present in the binary equivalent of that number. When the count of present 1s is odd, it returns odd parity, for an even number of 1s it returns even parity.
15. **(c)** CSMA/CA
    Explanation: CSMA/CA stands for Carrier-sense multiple access/collision avoidance. It is a multiple-access protocol used by IEEE 802.11 standard for wireless LAN.
16. **(d)** (ii) and (iii)
    Explanation: (ii) and (iii)
17. **(c)** A is true but R is false.
    Explanation: Series is a one-dimensional labeled array capable of holding any data type (integers, strings, floating-point numbers, Python objects, etc.). The axis labels are collectively referred to as the index. if data is an array, an index must be the same length as the data.
18. **(b)** Both A and R are true but R is not the correct explanation of A.
    Explanation: The mkdir() method is used to create a directory in the current working directory and the chdir() method is used to change the current working directory to a specified directory.

Section B

19. 25 times

    OR

    ```
    for i in range(1, 10):
    print(i, i * 1.6)
    ```
20. In large networks, there may be more than one paths for transmitting data from sender to receiver. Selecting a path that data must take out of the available options is called switching.
    Message Switching: It is similar to the Post-office mailing system. A temporary link is established for one message transfer. In this technique, no physical path is established between source and destination in advance.
    Packet Switching: It is a form of store and forward switch system which stores the message as small packets at the switch nodes and then transmits it to the destination.

21. import MySQLdb
```
db = MySQLdb.connect("localhost", "Admin", "Ad123", "HMD")
cursor= db.cursor()
cursor.execute("DROP TABLE IF EXISTS Location")
sql=" " "Create Table location (id Numeric(5) PRIMARY KEY, bidycode varchar(10)
Not Null ,
room varchar(6) Not Null , Capacity Numeric(5) Not Null)" " "
cursor.execute(sql)
db.close()
```
22. Answer:
    (i) cursor.execute( ) method is used to execute an SQL command through a cursor object.
    (ii)
    - Importing the API module
    - Acquiring a connection with database
    - Stored procedures and issuing SQL statements
    - Closing the connection

23. i. '**wonders***'
    ii. True
    iii. False
    iv. True
    v. False
    vi. 0000wonder

OR

yes, non-graphic characters can be used and processed in Python. In Python strings, we can include non-graphic characters through escape sequences.
Escape sequences are predefined codes that begin with a backslash(\) following by a special character or a group of characters. Each escape sequence is treated as a single character. Some commonly used escape sequences are:
\n - newline character
\t - tab character
\' - single quote
\" - double quotes
\\ - slash character

24.
```
def swap(D):
    N = {}
    values = D.values()
    keys = list(D.keys())
    k = 0
    for i in values:
        N[i] = keys[k]
        k += 1
    return N
result = swap({'a' :1, 'b':2, 'c':3})
print(result)
```

25. i. fp1.seek(1)
seek(1) sets the file pointer at the beginning of file.

ii. fp1.seek(25, 0)
seek(25, 0) takes 25 bytes as value of offset and 0 as file pointer from_what value i.e, beginning of file. Therefore, sets the file pointer 25 bytes ahead of beginning of file.

iii. fp1.seek(-10,1)
seek(-10, 1) takes -10 bytes as value of offset and 1 as file pointer from_what value i.e, current position of file pointer. Therefore, sets file pointer at 10 bytes behind current position of pointer.

iv. fp1.seek(-25, 2)
seek(-25, 1) takes -25 bytes as value of offset and 2 as file pointer from_what value i.e, end of file.
Therefore, sets file pointer at 25 bytes behind end of file.

OR

```
def writediary():
file_obj = open ("diary.txt", 'w')
file_obj.write("My Day Routine")
file_obj.write("My Office Time")
file_obj.write("My free Time")
file_obj.write("End of Diary")
#writediary() function enters the four line of text into the diary.txt file.
```

Section C

26. DDL stands for Data Definition Language., as the name suggests, allow you to perform tasks related to data definition. That is, through these commands, you can perform tasks like, create, alter, and drop schema objects, grant and revoke privileges, etc.
DML stands for Data Manipulation Language as the name suggests, are used to manipulate data. That is, DML commands query and manipulate data in existing schema objects.

OR

```
SELECT * FROM Salespeople
WHERE rating <100 OR city = 'Delhi';
Or SELECT * FROM Salespeople WHERE NOT rating > = 100 OR city = 'Delhi';
Or SELECT * FROM Salespeople WHERE NOT(rating > = 100 AND city <> 'Delhi');
```

27. Answer:
(i) [1, 2, 3]

(ii)
```
dic = { 'A' : 50, 'B' : 30, 'C' : 20, 'D' : 53}
res = 1
for key in dic:
    res = res*dic[key]
    print(res)
```

Output
1590000

28. The differences between a local variable and a global variable are as given below :

Local Variable	**Global Variable**
1. It is a variable which is declared within a function or within a block	1. It is a variable which is declared outside all the functions
2. It is accessible only within a function/block in which it is declared	2. It is accessible throughout the program
3.Local variables are created when the function has started execution and are lost when the function terminates.	3.Global variable is created as execution starts and is lost when the program ends.

For example, in the following code, x, xCubed are global variables and n and cn are local variables.

```
def cube(n):
cn = n * n * n
return cn
x = 10
xCubed = cube(x)
print(x, "cubed is", xCubed)
```

29.
```
def overlapping (list1, list2):
len_1 = len(list1)
len_2 = len(list2)
for i in range (0, len_1):
for j in range (0, len_2):
if list1[i]==list2[j]:
return True
else:
return False
```

OR

i. Syntax error. Colon (:) missing in the end of function header. Colon should be added to end of function header.

ii. Syntax error. Keyword to define a function is def (not define).
Also, colon (:) missing in the end of function header.
Return is not a valid statement. It should be return.

iii. No error in function alpha's definition.
Multiple return statements are syntactically legal. But in the above code, the second return statement is unreachable. You can return multiple values by using return value1, value2.
In function beta()'s definition, Colon (:) missing in the end of function header.
In __main__part, the colons at the end of first and third print( ) statements is invalid (not enclosed in quotes)
In third print( ) statement, in the function call of alpha( ), positional argument follows keyword argument, which is a syntax error.

30. file_obj = open("data.txt", "r")
lines = file_obj.readlines()
lastline = len(lines) - 1
print ("Last line :", lines[lastline]])

Section D

31. Answer (i) & (ii) OR (iii) & (iv)

(i)
```
file_name = raw_input("Enter file name or path:")
try:
for line in open(file_name):
line = line.strip() #remove extra spaces
if line[0]=='#':
print line
except:
print "File Not Found"
```

(ii) This program is used to create a file and store the data in that file:
```
fp1 = open("phonebook.dat", 'w')
fp1.write ("Name")
fp1.write (" ")
fp1.wite ("Phone")
fp1.write ("\n")
while True:
name = raw_input ("Enter name:")
phno = raw_input ("Enter phone no:")
fp1.write (name)
fp1.write (" ")
fp1.write ("phno")
fp1.write ("\n")
ch = raw_Input ("Want to enter more=y/n")
if ch == 'N' OR ch == 'n':
break
fp1.close()
```

(iii)
```
def CountUpper():
count = 0
with open('Help.doc','r') as file_obj:
while True:
line = file_obj.readline()
if not line: break
if line[0].isupper():
count = count+1
if count==0:
print("No line starts with a uppercase character")
else:
print("Number of lines starting with uppercase character =", count)
```
Fucntion CountUpper() returns the number of lines starting with uppercase character in Help.doc file.

(iv)Confining countries

Note. Even though four different lines of code read a different number of bytes from the file, only two read results are printed through two print statements.

32. **(c)** Acts like a WHERE clause but is used for groups rather than rows.
Explanation: Acts like a WHERE clause but is used for groups rather than rows.HAVING is used to filter values after they have been groups.

33. i. SELECT GCode, GameName FROM GAMES ;
ii. SELECT * FROM GAMES WHERE PrizeMoney > 7000 ;
iii. SELECT * FROM GAMES ORDER BY ScheduleDate ;
iv. SELECT SUM(PrizeMoney), Type FROM GAMES GROUP BY Type ;

OR

i. SELECT * FROM MEMBER ORDER BY ISSUEDATE DESC
ii. SELECT Code, BNAME FROM BOOK WHERE TYPE 'Fiction'
iii. SELECT COUNT(*), TYPE FROM BOOK GROUP BY TYPE
iv. SELECT MNAME, ISSUEDATE FROM MEMBER WHERE ISSUEDATE Like '2017 %'
v. MAX (ISSUE DATE) 2017-02-23
vi. DISTINCT (TYPE)
Fiction
Literature
Comic

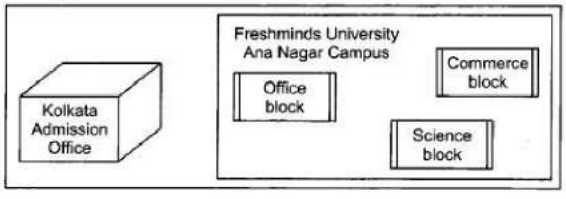
vii.

CODE	BNAME	MNO	MNAME
L102	German easy	M101	RAGHAV SINHA
F102	Untold Story	M103	SARTHAK JOHN
C101	Tarzan in the lost world	M102	ANISHA KHAN

viii. BNAME
German easy

Section E

34. **Read the text carefully and answer the questions:**
The Freshminds University of India is starting its first campus in Ana Nagar of South India with its center admission office in Kolkata. The university has 3 major blocks comprising of Office Block, Science Block and Commerce Block in the 5 km area Campus.



As a network expert, you need to suggest the network plan as per (i) to (iv) to the authorities keeping in mind the distance and other given parameters.
Expected Wire distances between various locations:

Office Block to Science Block	90 m
Office Block to Commerce Block	80 m

Science Block to Commerce Block	15 m
Kolkata Admission office to Ana Nagar Campus	2450 km

Expected number of Computers to be installed at various locations in the University are as follows:

Office Block	10
Science Block	140
Commerce Block	30
Kolkata Admission office	8

(i) The server should be Dedicated server.

(ii) The most suitable place to house the server is Science Block as it has the maximum number of computers. Thus, reducing the cabling cost and increase the efficiency of the network.

(iii) Satellite Connection Or Leased line

OR

SWITCH

35. **Read the text carefully and answer the questions:**

Consider the following table Persons and answer the questions that follows

PID	LastName	FirstName	Address	City
101	Hansen	Ola	Timoteivn 10	Sandnes
102	Svendson	Tove	Borgvn 23	Sandnes
103	Petterson	Kari	Storgt 2	Stavanger
104	Nilsen	Johan	Bakken 2	Stavanger
105	Tjessem	Jakob	NULL	NULL

(i) Degree = 5
cardinality = 5

(ii) DESC Persons;

(iii) SELECT*FROM Persons
WEHRE City="Sandnes";