Marking Scheme Sample papers -1

COMPUTER SCIENCE

Part-A (Section-I) Attempt any 15 Questions

1. (c) myWORK
   Explanation: myWORK, String2.upper() will convert all the characters of a string to Upper Case.

2. **None** object will be returned, (no return statement).

3. The rmdir() method deletes an empty directory, which is passed as an argument in the method. Before removing a directory, all the contents in it should be deleted, i.e. directory should be empty. OSError will be raised if the specified path is not an empty directory.

4. (a) 'wi'
   Explanation: windows[:2] = 'wi'
5. (d) b, c, f
   Explanation:
   - In file path, '\r' is a carriage return character, to normalise it we use another / before it or use 'r' prefix before the file path.
   - We do not need to mention the file keyword to input the file path in open function.

6. The names defined inside a current module can be found by using dir () function.

7. A Connection (represented through a connection object) is the session between the application program and the database. To do anything with the database, one must have a connection object. For connection Python module PyMySQL is installed properly on your machine.

8. Module namespace is organized in a hierarchical structure using dot notation.

9. 0 a 1 b 2 c

10. The variables that are defined outside every function(local scope) in the program have a global scope. They can be accessed in the whole program anywhere (including inside functions).

11. When the array is unsorted liner search is used Binary search is performed in a sorted array.

12. mysql > SELECT SUM (sal), AVG (sal), MAX (sal), MIN (sal) FROM empl;

13. These are data structures whose elements form a sequence e.g. Stack, queue and linked lists.

14. (b) ID
    Explanation: ID, A primary key is a key that is unique for each record.

15. Domain name: income.in
    URL: http://www.income.in/home.aboutus.htm

16. (c) Having
    Explanation: The HAVING clause is closely associated with the GROUP BY clause.

17. A Database connection is a facility that allows client software to talk to database server software, whether on the same machine or not.

18. The wildcard character is used to substitute one or more characters in a string. They are used with the LIKE operator to search a value similar to a specific pattern in a column. There are 2 wildcard operators.
    % - represents 0,1 or many characters
    — represents a single number or character.

19. A repeater is an electronic device that receives a signal, amplifies it and then retransmits it on the network so that the signal can cover longer distances.

20. MySQLdb is an interface for connecting to a MySQL database server from Python. It implements the Python Database API v2.0 and is built on top of the MySQL API.

21. (a) 0000
    Explanation: 0000, 1's complement arithmetic to get the sum.

Section-II (Case study based Questions)

22. i. MIN (AVERAGE)
    63
    ii. SUM(STIPEND)
    1000
    iii. AVG(STIPEND)
    450
    iv. COUNT (distinct SUBJECT)
    4
    v. EXEC sp_rename 'old_table_name', 'new_table_name'
23. i. my_file =open('poemBTH.txt', 'r') will open the given file in read mode and my_file.read() read the entire file in string form.
    ii. my_file = open('poemBTH.txt', 'r') will open the given file in read mode and my_file.read(100) read only the first 100 bytes from the file and store the read bytes in form of a string.
    iii. +
    iv. open(“data.txt”,”r”)
    v. open(“data.txt”,”w”)

Part – B (Section-I)

24.
```
lis = eval(input ("Enter list:"))
last = lis[-1]
for i in range(len(lis) -1, 0, -1):
    lis[i] = lis[i - 1]
lis[0] = last
print(lis)
```

25. Phishing is fraudulent attempts by cybercriminals to obtain private information. For e.g.a message prompt your personal information by pretending that the bank/mail service provider is updating its website. There are various phishing techniques used by attackers:

    - Embedding a link in an email to redirect to an unsecured website that requests sensitive information
    - Installing a Trojan via a malicious email attachment

- Spoofing the sender's address in an email to appear as a reputable source and request sensitive information
- Attempting to obtain information over the phone by impersonating a known company vendor.

OR

i. **FM:** Frequency Modulation
ii. **AM:** Amplitude Modulation
iii. **NFS:** Network File Server
iv. **FTP:** File Transfer Protocol

26. An Internet Protocol (IP) address is a numerical identification and logical address that is assigned to devices connected in a computer network. An IP address is used to uniquely identify devices on the internet and so one can quickly know the location of the system in the network.
In a network, every machine can be identified by a unique IP address associated with it and thus help in providing network security to every system connected in a network.

27. **Fruitful function** - The functions that return a value i.e., non-void functions are also known as fruitful functions.
Non - fruitful function - The functions that do not return a value, i.e., void functions are also known as non-fruitful functions.

OR

Output of the code is:
Name a not defined.

Since, a was declared after its use in myfunc() function a = 2 is declared, after the statement y = a, resulting in the not defined error.

28. N = int(input("Enter N: "))
step = N // abs(N)
sum = 0
for i in range(N, 2*N + step, step):

```
    sum += i
print(sum)
```

29. All variables in a program may not be accessible at all locations in that program. This depends on the location of the declaration of the variable. The scope of a variable determines the region of the program where you can access a particular identifier. If a variable is accessed outside the scope, Python gives an error of "variable_name is not defined".
    There are two basic scopes of variables in Python :

    i. Global variables that are accessible throughout the program anywhere inside all functions have global scope.
    ii. Local variables that are accessible only inside the function where they are declared, have local scope.

30. The given query is erroneous because it involves pattern matching.
    The correct operator to be used for pattern matching is **LIKE**. Also, there is NULL comparison and for it also incorrect operator is used. The correct operator for NULL comparison is IS. Thus, the correct SQL statement will be :
    SELECT Name, class FROM students WHERE Stream-name IS NULL OR Stream-name LIKE "%computers" ;

31. Data types are the classification of data items. Data types represent a kind of value which determines what operations can be performed on that data. Some common data types are Integer, Float, Varchar, Char, String, etc.
    Main objectives of datatypes are:

    i. Optimum usage of storage space
    ii. Represent all possible values
    iii. Improve data integrity

32. **Degree.** The number of columns or attributes or fields in a relation/table is called the table's degree.
    Cardinality. The number of rows/tuples/record in a relation/table is called the table's cardinality. For example, for a table shown below :

BookNo.	Name	Author	Price
B01	Good learning	Xion Z.	220
B02	Smile easy	T. Singh	350
B03	I to U	S. Sandeep	250

Its degree is 4 (4 columns)

Cardinality is 3 (3 rows)

33. v = 3 # v must be defined before being used

```
if v < 5:
    for j in range(v):
        print('ABC")   # () missing for print()
    else:  # wrong indentation; else clause can either be for if
# or for for loop
    print ( "XYZ" )   # () missing for print()
```

Section- II

34. 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()
```

35.
```
def stringCompare(str1, str2):
    if str1.length() != str2.length() :
        return False
    else:
      for i in range (str1.length()):
         if str1[i] != str2[i]:
            return False
        else:
            return True

first_string = raw_input("Enter First string:")
second_string = raw_input("Enter Second string:")
if stringCompare(first_string, second_string):
    print ("Given Strings are same.")
else:
    print ("Given Strings are different.")
```

OR

```
date = input ("Enter date in MMDDYYYY format: ")
def prettyPrint(date):
    months={1: 'January', 2: 'February', 3: 'March', 4: 'April', 5: 'May', 6: 'June', 7: 'July', 8: 'August', 9: 'September', 10: 'October', 11: 'November', 12: 'December'}
    month = months[int(date[:2])]
    day = date[2:4]
    year = date[4:]
    prettyDate = month + " " + day + ", " + year
    print(prettyDate)
print(prettyPrint(date))
```

36. A module in python is a .py file that defines one or more function/classes which you intend to reuse in different codes of your program. To reuse the functions of a given

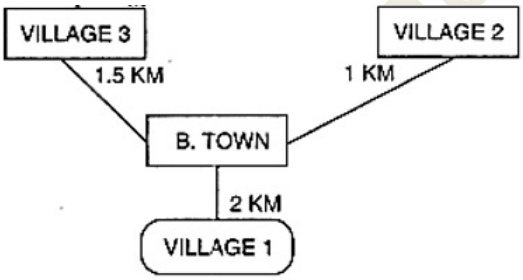
module, we simply need to import the module using the import command.
A Python package is a collection of python modules under a common namespace created by placing different modules on a directory along with some special files. This feature comes in handy for organizing modules of one type in one place.

37.

Function header	def processNumber(x) :	in line 1
Function call	processNumber (y)	in line 6
Arguments	y	in line 6
Parameters	x	in line 1
Function body	x = 72 return x + 3	in lines 2 and 3
Main program	y = 54 res = processNumber(y)	in lines 5 and 6

Section-III

38. i. B-TOWN can house the server as it has the maximum no. of computers.
ii. The optical fiber cable is the best for this star topology.



iii. Switch device - connecting all the computers within each location of B_HUB
iv. VoIP- Voice Over Internet Protocol

39. a. i. SELECT * FROM STORE ORDER BY LastBuy;
ii. SELECT ItemNo, Item FROM STORE WHERE Rate > 15;
iii. SELECT * FROM STORE WHERE (Scode = 22 OR Qty > 110);
iv. SELECT Sname, MIN(Rate) FROM STORE, SUPPLIERS WHERE STORE. Scode = SUPPLIERS.Scode GROUP BY Snam

b. i. 3
ii. 880
iii.

Item	Sname
Gel Pen Classic	Premium Stationers

iv. 24-Feb-10

40. **Insert, delete and display operation on queue:-**

```
queue: implemented as a list
front : integer having position of first element in queue
rear : integer having position of last element in queue
"""
def cls():
    print("\n" * 100)
def isEmpty( Qu ) :
    if Qu == [ ] :
        return True
    else :
        return False


def Enqueue(Qu, item) :
    Qu.append(item)
    if len(Qu) == 1 :
        front = rear =0
    else :
        rear = len(Qu) - 1


def Dequeue(Qu) :
    if isEmpty(Qu) :
        return "Underflow"
    else :
        item = Qu.pop(0)
        if len(Qu) == 0 : # if it was single-element queue
            front = rear = None
```

```
            return item


def Display(Qu) :
    if isEmpty(Qu) :
        print ("Queue Empty!")
    elif len(Qu) == 1:
        print(Qu[0], "<== front, rear")
    else :
        front = 0
        rear = len(Qu) - 1
        print(Qu[front], "<-front")
        for a in range(l, rear ) :
        print(Qu[a])
        print(Qu[rear], "<-rear")


# __main__
queue = [ ] # initially queue is empty
front = None
while True :
    cls()
    print("QUEUE OPERATIONS BY USING LIST")
    print("l. Insert")
    print("2. Delete")
    print("3. Display ")
    print("4. Exit")
    ch = int(input("Enter your choice (1-5) : ”))
    if ch == 1 :
        print ("For the new member, enter details below:")
        memberNo = int( input ("Enter member no :"))
        memberName = input ("Enter member name :")
        age = int(input("Enter memberJs age : “))
        item = [memberNo, memberName, age]
```

```
            Enqueue(queue, item)
            input("Press Enter to continue...")
    elif ch == 2 :
            item = Dequeue(queue)
              if item == "Underflow" :
                  print ("Underflow! Queue is empty!")
              else :
                  print("Deleted item is", item)
                  input("Press Enter to continue...")
    elif ch == 3 :
      Display(queue)
      input("Press Enter to continue...")
    elif ch == 4 :
       break
   else :
        print ("Invalid choice!")
        input("Press Enter to continue...")
```

OR

List1 = [40,40.5, "Ekta"]

i. list overheads = 26
   Reference pointer size = 4 bytes (on 32 bit implementation)
   Length of the list =3.
   Memory consumption for list = 3
   List overheads + Reference points size x
   length of the list.
   = 36 + 4 3 = 48 bytes.
ii. Memory consumption by data.
   There are 3 values
   1. integer i.e. 40
      memory consumption = 12 bytes
   2. float i.e. 40.5
      memory consumption = 16 bytes

3. string i.e. "Ekta"

iii. memory consumption = overloads + 1 * string length

= 21 bytes + 1 * 4

= 21 + 4 = 25 bytes

memory consumption by data = 12 + 16 + 25 = 53 bytes

memory consumption for list l including actual data = 48 + 53 = 101 bytes