KENDRIYA VIDYALAYA SANGATHAN, KOLKATA REGION

FIRST PRE BOARD EXAMINATION [2019-20]

COMPUTER SCIENCE (083)

CLASS-XII

Time: 3 hrs   **Max. Marks: 70**
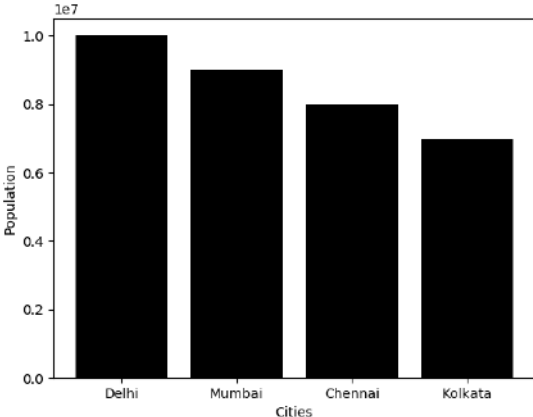
MARKING SCHEME

General Instructions:

• The answers given in the marking scheme are SUGGESTIVE, Examiners are requested to award marks for all alternative correct Solutions/Answers conveying the similar meaning

• All programming questions have to be answered with respect to Python only

• In Python, ignore case sensitivity for identifiers (Variable / Functions Names)

• In Python indentation is mandatory, however, number of spaces used for indenting may vary.

• Single inverted comma ' ' and double inverted comma " " – both are allowed in python.

• In data visualization related problems, heights of bar may vary and colours may be ignored.

• In SQL related questions - both ways of text/character entries should be acceptable for

Example: "AMAR" and 'amar' both are acceptable.

• In SQL related questions - all date entries should be acceptable.

• In SQL related questions - semicolon should be ignored for terminating the SQL statements.

•In SQL related questions, ignore case sensitivity.

|		**SECTION-A**	
1	(a)	Write the valid identifier in the following: (i) My.File (ii) My-File (iii) 2um (iv) pie	1
	Ans	(iv) pie **(1 mark for correct answer)**	
	(b)	Write the type of tokens from the following: (i) 12.6 (ii) False	1
	Ans	(i)literal(float) (ii) keyword(bool) **(1/2 mark for each correct type)**	
	(c)	Name the Python Library modules which need to be imported to invoke the following functions: (i) ceil( ) (ii) randint( )	1
	Ans	(i)math (ii)random **(1/2 mark for each module)**	
	(d)	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code. 250 = Number	2

		WHILE Number<=1000:
		if Number=>750:
		print Number
		Number=Number+100
		else
		print Number*2
		Number=Number+50
			2

	Ans	<u>Number=250</u>
		<u>while</u> Number<=1000:
		if Number<u>>=</u>750:
		   prin<u>t(</u>Numbe<u>r)</u>
		   <u>N</u>umber=Number+100
		els<u>e:</u>
		   prin<u>t(</u>Numbe<u>r*2)</u>
		   Number=Number+50
		(1/2 mark for each correction(any 4 corrections))	

(e)		Find and write the output of the following python code:
		
		for Name in ['Jayes', 'Ramya', 'Taruna', 'Suraj'] :
		                 print(Name)
		                 if Name[0]=='T':
		                         break
		                 else :
		                     print('Finished!')
		print('Got it!')
			2

	Ans	Jayes Finished! Ramya Finished! Taruna Got it! **(2 marks for correct output)**Note: Partial marking can also be given	

(f)		Find and write the output of the following python code:
		Numbers=[9, 18, 27, 36]
		for Num in Numbers:
		      for N in range(1, Num%8) :
		            print(N, "#", end = "\n")
			3

	Ans	1 # 1 # 2 # 1 # 2 # 3 # **(1/2 mark each for correct line)**Note: Partial marking can also be given	
(g)		What possible output(s) are expected to be displayed on the screen at the time of	2

2

		execution of the program from the following code? import random print(100+random.randint(5,10), end = " ") print(100+random.randint(5,10), end = " ") print(100+random.randint(5,10), end = " ") print(100+random.randint(5,10)) (i)102 105 104 105(ii)110 103 104 105(iii)108 107 110 105 (iv) 110 110 110 110	
	Ans	(iii)108 107 110 105 (iv) 110 110 110 110 **(1 mark for each correct option)**	
2	(a)	What are the process of giving comments in a python program?	1
	Ans	# for single line comment ''' for multiline comment **(1 mark for correct answer)**Note: Partial marking can also be given	
	(b)	Which is the correct form of declaration of tuple? (i) Month=['January', 'February', 'March'] (ii) Month=('January', 'February', 'March') (iii) Month={1:'January', 2:'Feburary', 3:'March'} (iv) Month=('January','February','March']	1
	Ans	(ii) Month=('January', 'February', 'March') **(1 mark for correct answer)**	

	(c)	Identify the valid declaration of d1:
		d1 = { 5:'number',\
		      'a':'string',\
		       (1,2):'tuple'}
		       (i)List (ii) array (iii) tuple (iv) dictionary
			1

	Ans	(iv) dictionary **(1 mark for correct answer)**	
	(d)	Find and write the output of the following python code: x = 45 while x<50: print(x)	1
	Ans	45 will be printed infinite time **(1 mark for correct answer)**	

	(e)	Find and write the output of the following python code:
		def state1():
		   global tigers
		   tigers =15
		   print(tigers)
		tigers =95
		print(tigers)
		state1()
		print(tigers)
			1

	Ans	95	

		15 15 **(1 mark for correct answer)**	
	(f)	What is the difference between a local variable and global variable? Also, give a suitable python code to illustrate both.	**2**
	Ans	Local Variable: A variable defined within a function has local scope. Global Variable: A variable defined in the main program has global scope. **(1 mark for correct difference)** **(1 marks for correct example)**	
	(g)	Write codes to plot following bar chart showing black bars: **OR** Give the output from the given python code: import matplotlib.pyplot as plt import numpy as np label = ['Anil', 'Vikas', 'Dharma','Mahen', 'Manish', 'Rajesh'] per = [94,85,45,25,50,54] index = np.arange(len(label)) plt.bar(index, per, color='Black') plt.xlabel('Student Name', fontsize=15) plt.ylabel('Percentage', fontsize=15) plt.xticks(index, label, fontsize=10,rotation=20) plt.title('Percentage of Marks achieved by student of Class XII') plt.show()	**2**
	Ans	import matplotlib.pyplot as plt cities=['Delhi','Mumbai','Chennai','Kolkata'] population=[10000000,9000000,8000000,7000000] plt.bar(cities,population,color='black') plt.xlabel('Cities') plt.ylabel('Population') plt.show( ) **(1/2 mark for correct list)** **(1/2 mark for correct plt.bar)** **(1/2 mark for each correct xlabel and ylabel)**	

(1/2 mark for plt.show)

OR
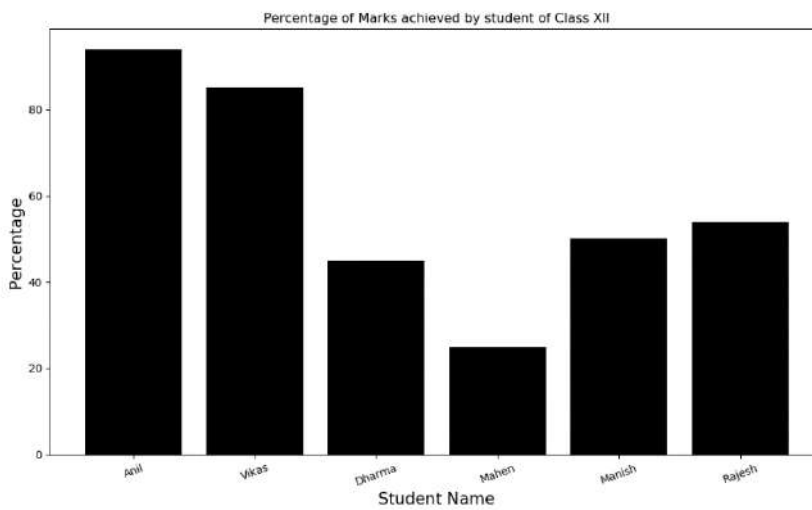
(2 marks for correct output)

	(h)	A text file contains alphanumeric text (say an.txt). Write a program that reads this text file and prints only the numbers or digits from the file. **OR** Write a function remove_lowercase( ) that accepts two filenames, and copies all lines that do not start with a lowercase letter from the first file into the second.	**2**
| | **Ans** | ```
F= open("an.txt","r")
for line in F:
    words=line.split( )
    for i in words:
        for letter in i:
            if(letter.isdigit( )):
                print(letter)
```<br>**(½ Mark for opening the file)**<br>**(½ Mark for reading all lines, and using loop)**<br>**(½ Mark for checking condition)**<br>**(½ Mark for printing lines)**<br><br>**OR**<br><br>```
defremove_lowercase(infile, outfile):
    output=file(outfile,"w")
    for line in file(infile):
        if not line[0] in "abcdefghijklmnopqrstuvwxyz":
output.write(line)
output.close()
```<br><br>**(½ Mark for function definition)**<br>**(½ Mark for loop)**<br>**(½ Mark for checking condition)** | |

		(½ **Mark for writing in file and closing file)**	
	(i)	Write a recursive function in python to implement binary search algorithm. **OR** Write a recursive code to compute and print sum of squares of n numbers. Value of n is passed as parameter.	**3**
	Ans	(see code below)	

```
#binary recursive search
defbinsearch(ar, key, low, high):
    if low>high:      #search unsuccessful
        return -999
    mid=int((low+high)/2)

    if key == ar[mid]:  #if key matches the middle element
        return mid     #then send its index in array
elifkey<ar[mid]:
        high=mid-1
        return binsearch(ar, key, low, high)
    else:
        low=mid+1      #now the segment should be first half
        return binsearch(ar, key, low, high)

#__main__
ary=[12,15,21,25,28,32,33,36,43,45]    #sorted array
    item=int(input("Enter search item:"))
    res=binsearch(ary, item, 0, len(ary)-1)
    if res>=0:        #if res holds a 0..n value,
print(item, "FOUND at index", res)
    else:
        print("Sorry!", item, "NOT FOUND in array")
```

(**1/2 mark for mid)**
(**1/2 mark for return mid)**
(**1 mark each for returning function)**
(**1 mark for invoking function)**

OR

```
defsqsum(n):
    if n==1:
        return 1
    return n*n+sqsum(n-1)
#__main__
n=int(input("Enter value of n:"))
print(sqsum(n))
```
(**2 marks for correct recursive function)**
(**1 mark for invoking)**

	(j)	Write a function in Python, to delete an element from a sorted list. **OR** Write the functions in Python push (stk, item) and pop(stk) to check whether the stack	**4**

		is empty, to add a new item, to delete an item and display the stack respectively.	
	Ans	(see below)	

```
def Bsearch(AR, ITEM):
    beg = 0
    last = len(AR)-1
    while(beg<=last):
        mid=(beg+last)/2
        if(ITEM == AR[mid]):
            return mid
elif(ITEM>AR[mid]):
            beg=mid+1
        else:
            last = mid-1
    else:
        return False
#-main_
myList=[10,20,30,40,50,60,70]
print("The list in sorted order is")
print(myList)
ITEM=int(input("Enter element to be deleted:"))
position = Bsearch(myList, ITEM)
if position:
  del myList[position]
  print("The list after deleting", ITEM, "is")
  print(myList)
else:
  print("SORRY! No such element in the list")
```

(½ mark function)
(½ mark for variables)
(½ mark for correct formula)
(½ mark for list)
(1 mark for position)
(1 mark for deletion)

OR

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


def Pop(stk):
  if stk==[]:
      return "Underflow"
  else:
      item=stk.pop( )
```

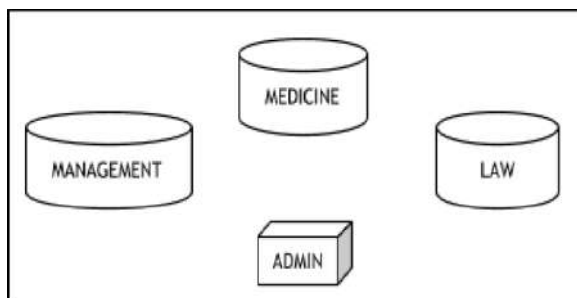|			
		(2 mark for def push) **(2 mark for def pop)**	
		SECTION-B	
3		Questions 3(a) to 3(d): Fill in the blanks	
	(a)	FM is the acronym for ……………………………………..	1
	Ans	Frequency Modulation **(1 mark for correct answer)**	
	(b)	……………… is a technology that connects the thing to the Internet over wired or wireless connections.	1
	Ans	IoT (Internet of Things) (**1 mark for correct answer**)	
	(c)	…………………………. Is a network device that connects dissimilar networks.	1
	Ans	(Gateway) **(1 mark for correct answer)**	
	(d)	………………………… is a specific condition in a network when more data packets are coming to network devices than they can handle and process at a time.	1
	Ans	Network Congestion **(1 mark for correct answer)**	
	(e)	Give the full forms of the following: (i) POP (ii) IMAP (iii) CSMA/CA (iv) TCP/IP	2
	Ans	(i) Post-Office-Protocol (ii) Internet Message Access Protocol (iii) Carrier Sense Multiple Access/Collision Avoidance) (iv) Transmission Control Protocol/Internet Protocol **(1/2 mark for each correct expansion)**	
	(f)	How many wires are there in twisted pair cable(Ethernet)? What is the name of connector which is used to connect it with Ethernet port?	2
	Ans	2 pairs RJ45 (**1 mark for each correct Answer**)	
	(g)	Identify the type of cyber crime for the following situations: (i) Stalking by means of calls, messages, etc. (ii) A criminal installed confidentially a small device on the debit card insertion section of ATM machine, to steal the information during a legitimate ATM transaction. As the card is swiped at the machine, the device captures the information stored on the card's magnetic strip. (iii) Continuously sending bulk requests to a website so that it is not available to any other user.	3
	Ans	(i) Cyber Bullying (ii) ATM skiming (iii) DoS (Denial of Service) **(1 mark for each correct answer)**	
	(h)	Jonathan and Jonathan Training Institute is planning to set up its centre in Amritsar with four specialised blocks for Medicine, Management, Law courses along with an Admission block in separate buildings. The physical distances between these blocks and	4

the number of computers to be installed in these blocks are given below. You as a network expert have to answer the queries raised by their board of directors as given in (i) to (iv).

Shortest distances between various locations in metres:

Admin Block to Management Block	60
Admin Block to Medicine Block	40
Admin Block to Law Block	60
Management Block to Medicine Block	50
Management Block to Law Block	110
Law Block to Medicine Block	40

Number of Computers installed at various locations are as follows:

Admin Block	150
Management Block	70
Medicine Block	20
Law Block	50

(i). Suggest the most suitable location to install the main server of this institution to get efficient connectivity.

(ii). Suggest by drawing the best cable layout for effective network connectivity of the blocks having server with all the other blocks.

(iii). Suggest the devices to be installed in each of these buildings for connecting computers installed within the building out of the following:

- Modem
- Switch
- Gateway
- Router

(iv) Suggest the most suitable wired medium for efficiently connecting each computer installed in every building out of the following network cables:

- Coaxial Cable
- Ethernet Cable

		• Single Pair	
		• Telephone Cable.	
	Ans	(i) Admin Block **(1 mark for correct answer)** (ii) MEDICINE MANAGEMENT LAW ADMIN **(1 mark for correct answer)** (iii) Modem or Switch or Router **(1 mark for correct answer)** (iv)Ethernet Cable **(1 mark for correct answer)**	

		SECTION-C	
4	**(a)**	Which keyword is used to select rows containing columns that match a wildcard pattern?	1
	Ans	LIKE **(1 mark for correct answer)**	
	(b)	Which clause is used to select specific rows in a table?	1
	Ans	WHERE **(1 mark for correct answer)**	
	(c)	Which command is used to change the number of columns in a table?	1
	Ans	ALTER **(1 mark for correct answer)**	
	(d)	Which function is used to check whether mysql python connection is successfully established?	1
	Ans	is_connected()	
	(e)	Differentiate between CHAR and VARCHAR datatypes? **OR** Differentiate between UNIQUE and DEFAULT constraints.	2
	Ans	CHAR is a fixed length datatype. VARCHAR is a variable length datatype. **(2 marks for correct difference)** **OR** UNIQUE:- Ensure that all values in a column are different. DEFAULT:- Provides a default value for a column when none is specified. **(2 marks for correct difference)**	
	(f)	What are two types of HTTP requests in Django Web Framework?	2
	Ans	GET and POST **(2 Marks for correct explanation)**	
	(g)	Write a output for SQL queries (i) to (iii), which are based on the table given below:	3

Table: SPORTS

Rno	Class	Name	Game1	Grade1	Game2	Grade2
10	7	Sammer	Cricket	B	Swimming	A

11	8	Sujit	Tennis	A	Skating	C		
12	7	Kamal	Swimming	B	Football	B		
13	7	Venna	Tennis	C	Tennis	A		
14	9	Archana	Basketball	A	Cricket	A		
15	10	Arpit	Cricket	A	Athletics	C		

(i)SELECT COUNT(*) FROM SPORTS WHERE NAME LIKE '%a%';

(ii)SELECT MAX(Class) FROM SPORTS WHERE Grade1=Grade2;

(iii) SELECT COUNT(*) FROM SPORTS GROUP BY Game1;

Ans	(i) 5 **(1 mark for correct output)** (ii)9 **(1 mark for correct output)** (iii) 2 2 1 1 **(1 mark for correct output)**	
(h)	Write SQL queries for (i) to (iv), which are based on the table: SPORTS given in the question 4(g): (i) Display the names of the students who have grade 'A' in either Game1 or Game2 or both. (ii) Display the number of students having game 'Cricket' (iii) Display the names of students who have same game for both Game1 and Game2. (iv) Display the games taken by the students whose name starts with 'A'	4
Ans	(i)SELECT Name from SPORTS WHERE Grade1='A' OR Grade2='A'; **(1 mark for correct statement)** (ii) SELECT Count(*) from SPORTS WHERE Game1='Cricket' or Game2='Cricket'; **(1 mark for correct statement)** (iii) SELECT Name from SPORTS WHERE Game1=Game2; **(1 mark for correct statement)** (iv) SELECT Game1, Game2 from SPORTS WHERE Name LIKE ('A%'); **(1 mark for correct statement)**	

SECTION-D

5	(a)	It is stealing someone else's intellectual work and representing it as your own work without citing the source of information. Write the name of ethical issue.	1
	Ans	Plagiarism **(1 mark for correct answer)**	
	(b)	What is dismantling operation in recycle and recovery of e-waste?	1
	Ans	Removal of parts containing dangerous substances, removal of easily accessible parts containing valuable substances. **(1 mark for correct answer)**	
	(c)	Posing as someone else online and using his/her personal/financial information	2

		shopping online or posting something is a common type of cyber crime these days: (i) What are such types of cyber crimes collectively called? (ii) What measures can you take to stop these?	
	Ans	(i) Online fraud (ii) A monitoring official body that ensures the sanctity, Strong security mechanism by the ecommerce site **(1 mark for each point)**	
(d)		Define this terms: (i) Phishing (ii) Computer Forensics	2
	Ans	(i) Phishing:- attempting to acquire sensitive information from individuals over the internet, by means of deception. **(1 mark for identification)** (ii) Computer Forensics:- Methods used for Interpretation of computer media for digital evidence. **(1 mark for explanation)**	
(e)		Mr. Jayanto Das is confused between Shareware and Open source software. Mention at least two point of differences to help him understand the same.	2
	Ans	Shareware:- It is made available with the right to re distribute copies, but it is available for limited time. The source code is not available and modifications not allowed. Open source software:- Source code is available to the customer and it can be modified and re distributed. **(2 Marks for correct difference)**	
(f)		What are gender and disability issues faced while teaching/using computer in classrooms?	2
	Ans	Under representation of girls, Not girl friendly work culture. Un availability of teaching materials, lack of special need teachers, lack of supporting curriculum etc. **(1 mark for each point)**	