KENDRIYA VIDYALAYA SANGATHAN REGIONAL OFFICE LUCKNOW
1ST PRE-BOARD EXAMINATION 2024-25

CLASS: XII
TIME: 3 HOURS

SUBJECT: COMPUTER SCIENCE
M. MARKS: 70

General Instructions:
- This question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- The paper is divided into 5 Sections - A, B, C, D and E.
- Section A consists of 21 questions (1 to 21). Each question carries 1 mark.
- Section B consists of 7 questions (22 to 28). Each question carries 2 marks.
- Section C consists of 3 questions (29 to 31). Each question carries 3 marks.
- Section D consists of 4 questions (32 to 35). Each question carries 4 marks.
- Section E consists of 2 questions (36 to 37). Each question carries 5 marks.
- All programming questions are to be answered using Python language only.
- In case of MCQ, text of the correct answer should also be written.

Q No	Section-A (21x1 = 21 marks)	Marks
1	State True or False "Variable declaration is implicit in Python"	1
2	What will be the output of the following python expression? print(2**3**2) a. 64 b. 256 c. 512 d. 32	1
3	Which one of the following is False regarding data types in Python? A. In python, explicit data type conversion is possible B. Mutable data types are those that can be changed. C. Immutable data types are those that cannot be changed. D. None of the above	1
4	The return type of string.split() is a A. string B. List C. Tuple D. Dictionary	1
5	Given the following dictionary Emp1={"salary":10000,"dept":"sales","age":24,"name":"john"} Emp1.keys() can give the output as	1

	A. ("salary","dept","age","name") B. (['salary', 'dept', 'age', 'name']) C. [10000,"sales",24,"john"] D. {,salary","dept","age","name"}	

6	What will be the output of the following python statement?
	L=[3,6,9,12]
	L=L+15
	print(L)
	
	  A. [3,6,9,12,15]
	  B. [18,21,24,27]
	  C. [5,3,6,9,12,15]
	  D. error
		1

7	Select the correct output of the code:
	`S="computer Students are very smart"`
	`l=S.split()`
	`s_new="-".join([l[0].upper(),l[1].lower(),l[2].upper(),l[3],l[4].upper()])`
	`print(s_new)`
	  (a)COMPUTER-students-ARE-very-SMART (b) COMPUTER-STUDENTS-
	                                               ARE-very-SMART
	  (c) computer-students-are-very-SMART (d) COMPUTER-STUDENTS-ARE-
	                                               VERY-SMART
		1

8	Select the correct output of the code: a = "Year 2024 at all the best"
	        a = a.split('a')
	        b = a[0] + "-" + a[1] + "-" + a[3]
	        print (b)
	
	    a. Year – 0- at All the best
	    b. Ye-r 2024 -ll the best
	    c. Year – 024- at All the best
	    d. Year – 0- at all the best
		1

9	Which SQL command is used to change some values in existing rows? a) update b) insert c) alter d) order	1

10	Which method is used to move the file pointer to a specified position.
	  a. tell()
	  b. seek()
	  c. seekg()
	  d. tellg()
		1

11	State True or False A try block may have more than except blocks to handle exception.	1

Q.12 and 20 is ASSERTION AND REASONING based questions. Mark the correct choice as A) Both A and R are true and R is the correct explanation for A B) Both A and R are true and R is not the correct explanation for C) A is True but R is False D) A is false but R is True		
12	Assertion (A):- The number of actual parameters in a function call may not be equal to the number of formal parameters of the function. Reasoning (R):- During a function call, it is optional to pass the values to default parameters.	1

13	The correct definition of column 'alias' is
	  a. A permanent new name of column
	  b. A new column of a table
	  c. A view of existing column with different name
	  d. A column which is recently deleted
		1

14	Select the correct statement, with reference to SQL:
	  a. Aggregate functions ignore NULL
	  b. Aggregate functions consider NULL as zero or False
	  c. Aggregate functions treat NULL as a blank string
	  d. NULL can be written as 'NULL' also.
		1

15	In MYSQL database, if a table, Alpha has degree 5 and cardinality 3, and another table, Beta has degree 3 and cardinality 5, what will be the degree and cardinality of the Cartesian product of Alpha and Beta? a) 5,3 b) 8,15 c) 3,5 d) 15,8	1
16	A _____ is a query that retrieves rows from more than one table or view: a. Start b. End c. Join d. All of these	1
17	_____ is a communication protocol responsible to control the transmission of data over a network. a. TCP (b) SMTP (c) PPP (d)HTTP	1
18	Fill in the blank: The modem at the sender's computer end acts as a _____. a. Model b) Modulators c) Demodulator d) Convertor	1
19	Identify the device on the network which is responsible for forwarding data from one device to another. a. NIC b. Router c. RJ45 d. Repeater	1
20	Assertion (A): A function is a block of organized and reusable code that is used to perform a single related action.	1

	Reason (R): Function provides better modularity for your application and a high degree of code reusability.	

21	Which function is used to display the unique values of a column of a table?
	   a. sum()
	   b. unique() .
	   c. distinct()
	   d. return()
		1

Section - B (7x2 = 14 marks)

22	Predict the output of the Python code given below:
	
	``python
	def Swap (a,b):
	    if a>b:
	        print('changed ',end=' ')
	        return b,a
	    else:
	        print('unchanged ',end=' ')
	        return a,b
	data=[11,22,16,50,30]
	for i in range (4,0,-1):
	    print(Swap(data[i],data[i-1]))
	``
		2

23.	a) Rishaan has written a code to input a number and check whether it is even or odd number. His code is having errors. Observe the following code carefully and rewrite it after removing all syntax and logical errors. Underline all the corrections made.
	
	``
	Def checkNumber(N):
	status = N%2
	return
	#main-code
	num=int (input ("Enter a number to check :))
	k=checkNumber(num)
	if k = 0:
	    print ("This is EVEN number")
	else:
	    print ("This is ODD number")
	``
		2

24	Choose the best option for the possible output of the following code
	``python
	import random
	L1=[random.randint(0,10) for x in range(3)]
	``
		2

print(L1)
  (a) [9,9,9]   (b) [5,5,5]   (c) [6,6,6]   (d) All are possible

<div align="center">

OR

</div>

import random
num1=int(random.random()+0.5)
What will be the minimum and maximum possible values of variable num1

2

---

25 Predict the output of the following code:

```
TXT = ["10","20","30","5"]
CNT = 3
TOTAL = 0
for C in [7,5,4,6]:
    T = TXT[CNT]
    TOTAL = float (T) + C
    print (TOTAL)
    CNT-=1
```

2

---

26 The code given below accepts a number as an argument and checks whether the given number is perfect number or not. Observe the following code carefully and rewrite it after **removing all syntax and logical errors**. Underline all the corrections made.

```
define perfectNum(num):
    sum = 0
    For i in range(1, num)
        IF n % i = 0:
            sum = sum + i
    If sum == n:
        print("The number is a Perfect number")
    else:
        print("The number is not a Perfect number")
num =input("Enter the number")
perfectNum(num)
```

2

---

27 An organization SoftSolutions is considering to maintain their employees records using SQL to store the data. As a database administrator, Murthy has decided that :

• Name of the table - HRDATA

• The attributes of HRDATA are as follows:

ECode – Numeric

EName – character of size 30

Desig – Character of size 5

Remn - numeric

Now help Murthy to create table and insert one record (80008,Arjun,Admin, 55000) into the table.

OR

City Hospital is considering to maintain their inventory using SQL to store the data.

As a database administer, Ritika has decided that :

• Name of the database - CH

• Name of the table - CHStore

• The attributes of CHStore are as follows:

ItemNo - numeric

ItemName – character of size 20

Scode - numeric

Quantity – numeric

Now Ritika wants to remove the column Quantity from the table CHStore . And she also wants to display the structure of the table CHStore, i.e, name of the attributes and their respective data types that she has used in the table. Help her to write the correct commands.

28	i) Expand the following terms IMAP, DNS ii) Write two points of difference between Switch and Router. **OR** (i) Define the term bandwidth with respect to networks (ii) Write two points of difference between Web Server and Web Browser	2

<div align="center">

Section - C (3x3 = 9 marks)

</div>

29	Write a function in Python to read lines from a text file "visitors.txt", and display only those lines, which are starting with an alphabet 'P'. **If the contents of file is :** Visitors from various cities are coming here. Particularly, they want to visit the museum. Looking to learn more history about countries with their cultures. The output should be: Particularly, they want to visit the museum. **OR** Write a method in Python to read lines from a text file "book.txt", to find and display the occurrence of the word 'are'. For example, if the content of the file is:	3

Books are referred to as a man's best friend. They are very beneficial for mankind and have helped it evolve. Books leave a deep impact on us and are responsible for uplifting our mood.
The output should be 3.

30	Two list Lname and Lage contains names of persons and age of persons respectively. A list named Lnameage is empty. Write functions as details given below (i) Push_na() :- it will push the tuple containing pair of name and age from Lname and Lage whose age is above 50 (ii) Pop_na() :- it will remove the last pair of name and age and also print name and age of removed person. It should also print "underflow" if there is nothing to remove For example, the two lists have following data Lname=['narender', 'jaya', 'raju', 'ramesh', 'amit', 'Piyush'] Lage=[45,23,59,34,51,43] After Push_na() Lnameage stack should contain: [('raju',59),('amit',51)] The output of first execution of pop_na() should be: The name removed is amit The age of person is 51	3

<div align="center">OR</div>

A list, NList contains following record as list elements:
[City, Country, distance from Delhi]
Each of these records are nested together to form a nested list. Write the following user defined functions in Python to perform the specified operations on the stack named travel.

(i) Push_element(NList): It takes the nested list as an argument and pushes a list object containing name of the city and country, which are not in India and distance is less than 3500 km from Delhi.

(ii) Pop_element(): It pops the objects from the stack and displays them. Also, the function should display "Stack Empty" when there are no elements in the stack.

For example: If the nested list contains the following data:
NList=[["New York", "U.S.A.", 11734],
["Naypyidaw", "Myanmar", 3219],
["Dubai", "UAE", 2194],
["London", "England", 6693],

["Gangtok", "India", 1580],
["Columbo", "Sri Lanka", 3405]]
The stack should contain:
['Naypyidaw', 'Myanmar'],
['Dubai', 'UAE'],
['Columbo', 'Sri Lanka']

The output should be: ['Columbo', 'Sri Lanka']
['Dubai', 'UAE']
['Naypyidaw', 'Myanmar']
Stack Empty

3

31 Predict the output of the code given below:

```python
def convert(Old):
    l=len(Old)
    New=" "
    for i in range(0,l):
        if Old[i].isupper():
            New=New+Old[i].lower()
        elif Old[i].islower():
            New=New+Old[i].upper()
        elif Old[i].isdigit():
            New=New+"*"
        else:
            New=New+"%"
    return New
Older='InDIa@2022'
Newer=convert(Older)
print('New String is: ', Newer)
```

OR

Predict the output of the Python code given below:

```python
Text1="IND-23"
Text2=""
I=0
while I<len(Text1):
    if Text1[I]>="0" and Text1[I]<="9":
        Val = int(Text1[I])
        Val = Val + 1
        Text2=Text2 + str(Val)
    elif Text1[I]>="A" and Text1[I]<="Z":
        Text2=Text2 + (Text1[I+1])
    else:
        Text2=Text2 + "*"
    I+=1
print(Text2)
```

Section - D (4x4 = 16 marks)

32

Consider the tables **STORE** and **SUPPLIERS** given below:

TABLE: STORE

ITEM NO	ITEM	SCODE	QTY	RATE	LASTBUY
2005	Sharpner Classic	23	60	8	2009-01-31
2003	Ball Pen 0.25	22	50	25	2010-02-01
2002	Gel Pen Premium	21	150	12	201-02-24
2006	Gel Pen Classic	21	250	20	2009-03-11
2001	Eraser Small	22	220	6	2009-01-19
2004	Eraser Big	22	110	8	2009-12-02
2009	Ball Pen 0.5	21	180	18	2009-11-03

Table :Suppliers

Scode	Sname
21	Premium Stationary
23	Soft plastics
22	Tetra Supply

Write SQL commands for the following queries (i) to (iv):

i) To display ItemNo, Item Name and Sname from the tables with their corresponding matching Scode.

ii) Display the structure of the table store.

iii) Display the average rate of Premium Stationary and Tetra Supply.

iv) Display the item, qty, and rate of products in descending order of rates

OR

Write SQL commands for the following queries (i) to (iv) on the basis of relation Mobile Master and Mobile Stock.

MOBILE STOCK

S_Id	M_Id	M_Qty	M_Supplier
S001	MB004	450	NEW VISION
S002	MB003	250	PRAVEEN GALLERY
S003	MB001	300	CLASSIC MOBILE
S004	MB006	150	A-ONE MOBILE
S005	MB003	150	THE MOBILE
S006	MB006	50	MOBILE CENTRE

4

MOBILE MASTER

M_Id	M_Company	M_Name	M_Price	M_Mf_Date
MB001	SAMSUNG	GALAXY	4500	2013=02-12
MB003	NOKIA	N1100	2250	2012-04-15
MB004	MICROMAX	UNITE3	4500	2016-10-17
MB005	SONY	XPERIA M	7500	2017-11-20
MB006	OPPO	SELFIEE X	8500	2010-08-21

(i) Display the Mobile Company, Name and Price in descending order of their manufacturing date

ii) List the details of mobile whose name starts with "S" or ends with "a"

iii) Display M_Id and sum of Mobile quantity in each M_Id.

iv) List the details of Mobile company name whose mobile price is greater than 5000.

33	(a)Write a Program in Python that defines and calls the following user defined functions:
	(i) InsertRow() – To accept and insert data of a student to a CSV file 'class.csv'. Each record consists of a list with field elements as rollno, name and marks to store roll number, student's name and marks respectively.
	(ii) COUNTD () – To count and return the number of students who scored marks greater than 75 stored in the CSV file named 'class.csv'.

Table: Stationery

S_ID	Stationary Name	Company	Price
BP01	Ball Pen	Reynolds	10
PL02	Pencil	Natraj	5
ER05	Eraser	Natraj	3
PL01	Pencil	Apsara	6
GP02	Gel Pen	Reynolds	15

Table: Consumer

C_ID	Consumer Name	City	S_ID
01	Pen House	Delhi	PL01
06	Writer well	Mumbai	GP02
12	Topper	Delhi	BP01
15	Good learner	Delhi	PL02
16	Motivation	Bangalore	PL01

Write SQL statements for (i) to (iv)

(i) To display the consumer detail in descending order of their name.

(ii) To display the Name and Price of Stationaries whose Price is in the range 10 to 15.

(iii) To display the ConsumerName, City and StationaryName for stationaries of "Reynolds" Company

iv) To increase the Price of all stationary by 2 Rupees

| 35 | | 4 |

(i) Kabir wants to write a program in Python to insert the following record in the table named **Student** in MYSQL database, SCHOOL:

    rno(Roll number)- integer
    name(Name) - string
    DOB (Date of birth) – Date
    Fee – float

Note the following to establish connectivity between Python and MySQL:

    Username - root
    Password - tiger
    Host - localhost

The values of fields rno, name, DOB and fee has to be accepted from the user. Help Kabir to write the program in Python.
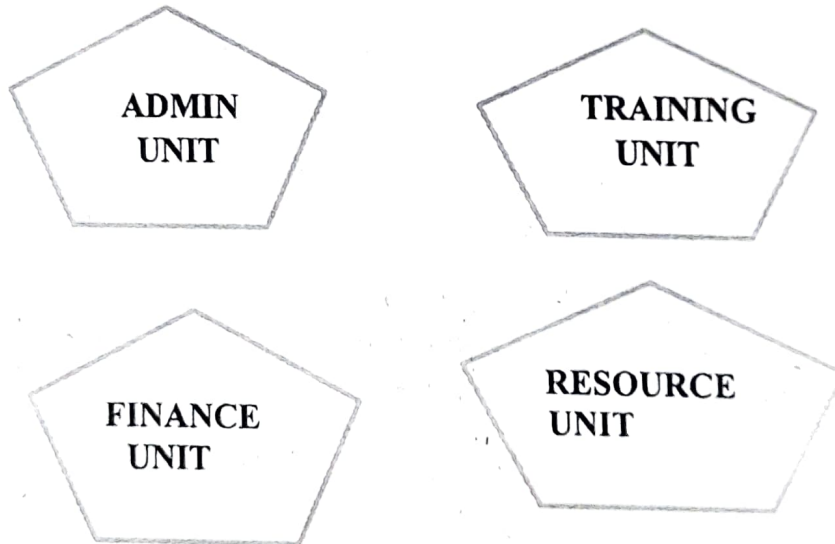
		Section - E (2x5 = 10 marks)	

36	(i) Differentiate between Binary File and CSV File.	5

(ii) Write a python code to perform the following binary file operations with the help of two user defined functions/modules:

a. AddStudents() to create a binary file called STUDENT.DAT containing student information – roll number, name and marks (out of 100) of each student.

b. GetStudents() to display the name and percentage of those students who have a percentage greater than 75. In case there is no student having percentage > 75 the function displays an appropriate message. The function should also display the percent.

37	"Vidyadhara" an NGO is planning to setup its new campus at Lucknow its web-based activities. The campus has four (04) UNITS as shown below:	5

Distance Between above Units are given here's under

UNIT-1	UNIT-2	DISTANCE(In mtrs)
ADMIN	TRAINING	65
ADMIN	RESOURCE	120
ADMIN	FINANCE	100
FINANCE	TRAINING	60
FINANCE	RESOURCE	40

TRAINING	RESOURCE	50

No Of Computers in various UNITs are:

UNIT	NO OF COMPUTERS
ADMIN	150
FINANCE	25
TRAINING	90
RESOURCE	75

a) Suggest topology and draw the cable layout to efficiently connect various blocks of buildings within the Lucknow campus for connecting the digital devices.

b) Which network device will be used to connect computers in each block to form a local area network?

c) Which block, in Lucknow Campus should be made the server? Justify your answer.

d) Is there a requirement of a repeater in the given cable layout? Why/Why not?

e) NGO is planning to connect its Regional Office at Delhi, Rajasthan. Which out of the following wired communication, will you suggest for a very high-speed connectivity?

(a) Twisted Pair cable (b) Ethernet cable (c) Optical Fiber