KENDRIYA VIDYALAYA SANGATHAN
BENGALURU REGION
FIRST PRE-BOARD EXAM (SESSION 2022-23)

CLASS: XII MAX MARKS:70
SUBJECT: COMPUTER SCIENCE TIME: 3 HOURS

MARKING SCHEME

SECTION A		
1.	State True or False "Python has a set of keywords that can also be used to declare variables"	1
A	False	
2.	Which of the following is not a valid python operator? a) % b) in c) # d) **	1
A	#	
3.	What will be the output of the following python dictionary operation? data = {'A':2000, 'B':2500, 'C':3000, 'A':4000} print(data) a) {'A':2000, 'B':2500, 'C':3000, 'A':4000} b) {'A':2000, 'B':2500, 'C':3000} c) {'A':4000, 'B':2500, 'C':3000} d) It will generate an error.	1
A	{'A':4000, 'B':2500, 'C':3000}	
4.	print(True or not True and False) Choose one option from the following that will be the correct output after executing the above python expression. a) False b) True c) or d) not	1
A	True	
5.	Select the correct output of the following python code: str="My program is program for you" t = str.partition("program") print(t) a) ('My ', 'program', ' is ', 'program', ' for you') b) ('My ', 'program', ' is program for you') c) ('My ', ' is program for you') d) ('My ', ' is ', ' for you')	1
A	a) ('My ', 'program', ' is program for you')	

6.	Which of the file opening mode will open the file for reading and writing in binary mode. a) rb b) rb+ c) wb d) a+	1
A	rb+	
7.	Which of the following statements is True? a) There can be only one Foreign Key in a table. b) There can be only one Unique key is a table c) There can be only one Primary Key in a Table d) A table must have a Primary Key.	1
A	There can be only one Primary Key in a Table	
8.	Which of the following is not part of a DDL query? a) DROP b) MODIFY c) DISTINCT d) ADD	1
A	DISTINCT	
9.	Which of the following operations on a string will generate an error? a) "PYTHON"*2 b) "PYTHON" + "10" c) "PYTHON" + 10 d) "PYTHON" + "PYTHON"	1
A	"PYTHON" + 10	
10.	_____ Keyword is used to obtain unique values in a SELECT query a) UNIQUE b) DISTINCT c) SET d) HAVING	1
A	DISTINCT	
11.	Which of the following python statement will bring the read pointer to 10^{th} character from the end of a file containing 100 characters, opened for reading in binary mode. a) File.seek(10,0) b) File.seek(-10,2) c) File.seek(-10,1) d) File.seek(10,2)	1
A	File.seek(-10,2)	

12.	Which statement in MySql will display all the tables in a database? a) SELECT * FROM TABLES; b) USE TABLES; c) DESCRIBE TABLES; d) SHOW TABLES;	1
A	SHOW TABLES;	
13.	Which of the following is used to receive emails over Internet? a) SMTP b) POP3 c) PPP d) VoIP	1
A	POP3	
14	What will be the output of the following python expression? print(2**3**2) a) 64 b) 256 c) 512 d) 32	1
A	512	

15.	Which of the following is a valid sql statement?
	a) ALTER TABLE student SET rollno INT(5);
	b) UPDATE TABLE student MODIFY age = age + 10;
	c) DROP FROM TABLE student;
	d) DELETE FROM student;
		1

A	DELETE FROM student;	
16.	Which of the following is not valid cursor function while performing database operations using python. Here Mycur is the cursor object? a) Mycur.fetch() b) Mycur.fetchone() c) Mycur.fetchmany(n) d) Mycur.fetchall()	1
A	Mycur.fetch()	
Q17 and 18 are 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 A (c) A is True but R is False (d) A is false but R is True		
17.	Assertion (A): A variable declared as global inside a function is visible with changes made to it outside the function. Reasoning (A): All variables declared outside are not visible inside a function till they are redeclared with global keyword.	1
A	Both A and R are true and R is the correct explanation for A	

<table>
<tr><td>18.</td><td>Assertion (A): A binary file in python is used to store collection objects like lists and dictionaries that can be later retrieved in their original form using pickle module.
Reasoning (A): A binary files are just like normal text files and can be read using a text editor like notepad.</td><td>1</td></tr>
<tr><td>A</td><td>A is True and R is False</td><td></td></tr>
<tr><td colspan="3">SECTION B</td></tr>
<tr><td>19.</td><td>Sameer has written a python function to compute the reverse of a number. He has however committed a few errors in his code. Rewrite the code after removing errors also underline the corrections made.
define reverse(num):
rev = 0
While num > 0:
rem == num %10
rev = rev*10 + rem
num = num//10
return rev
print(reverse(1234))</td><td>2</td></tr>
<tr><td>A</td><td><u>def</u> reverse(num):
rev = 0
<u>while</u> num > 0:
<u>rem =</u> num %10
rev = rev*10 + rem
num = num//10
<u>return rev</u>
print(reverse(1234))</td><td></td></tr>
<tr><td>20.</td><td>Mention two differences between a Hub and a switch in networking.

OR

Mention one advantage and one disadvantage of Star Topology.</td><td>2</td></tr>
<tr><td>A</td><td><table><tr><th>Hub</th><th>Switch</th></tr><tr><td>Hub is a passive Device</td><td>Switch is an active device</td></tr><tr><td>Hub broadcasts messages to all nodes</td><td>Switch sends the messages to intended node.</td></tr></table>Or any other valid difference between the two. Each difference carries 1 mark.

OR

Advantage: The network remains operational even if one of the nodes stops working.
Disadvantage: The network stops working if the central hub stops working.
Or any other valid advantage or disadvantage. Each carries 1 mark</td><td></td></tr>
</table>

<table>
<tr><td>21.</td><td>a) What will be the output of the following string operation.
str="PYTHON@LANGUAGE"
print(str[2:12:2])

b) Write the output of the following code.
data = [1,2,4,5]
for x in data:
x = x + 10
print(data)</td><td>1

1</td></tr>
<tr><td>A</td><td>TO@AG - No partial marking
[1,2,4,5] - No partial marking</td><td></td></tr>
<tr><td>22</td><td>Mention two differences between a PRIMARY KEY and a UNIQUE KEY</td><td>2</td></tr>
<tr><td>A</td><td><table><tr><td>PRIMARY KEY</td><td>UNIQUE KEY</td></tr><tr><td>There can be only one primary key in a table</td><td>There can be more than one unique keys in a table</td></tr><tr><td>The primary key cannot have null values</td><td>Unique can have null values</td></tr></table>Each difference carries 1 mark.</td><td></td></tr>
<tr><td>23.</td><td>a) Expand the following abbreviations:
i) URL ii) TCP

b) What is the use of VoIP?</td><td>1

1</td></tr>
<tr><td>A</td><td>i) Uniform Resource Locator - 1/2
ii) Transmission Control Protocol - ½

VoIP is used to transfer audio and video over internet - 1</td><td></td></tr>
<tr><td>24.</td><td>Predict the output of the following python code:
def foo(s1,s2):
l1=[]
l2=[]
for x in s1:
l1.append(x)
for x in s2:
l2.append(x)
return l1,l2
a,b=foo("FUN",'DAY')
print(a,b)

OR
Predict the output of the following python code:
data = [2,4,2,1,2,1,3,3,4,4]
d = {}
for x in data:</td><td>2</td></tr>
</table>

<table>
<tr><td></td><td>

```
   if x in d:
      d[x]=d[x]+1
   else:
      d[x]=1
print(d)
```

</td><td></td></tr>
<tr><td>A</td><td>['F', 'U', 'N'] ['D', 'A', 'Y'] Each list correctly written will fetch 1 mark. ½ mark can be given if the list is figured out in the answer.
OR
{2: 3, 4: 3, 1: 2, 3: 2}
The dictionary elements can be written in any order.</td><td></td></tr>
<tr><td>25.</td><td>A MySQL table, sales have 10 rows. The following queries were executed on the sales table.
SELECT COUNT(*) FROM sales;
<table><tr><td>COUNT(*)</td></tr><tr><td>10</td></tr></table>
SELECT COUNT(discount) FROM sales;
<table><tr><td>COUNT(discount)</td></tr><tr><td>6</td></tr></table>
Write a statement to explain as to why there is a difference in both the counts.

OR

What is the difference between a Candidate Key and an Alternate Key</td><td>2</td></tr>
<tr><td>A</td><td>The values are different because discount column is having 4 rows with NULL values.

OR

<table><tr><td>CANDIDATE KEY</td><td>ALTERNATE KEY</td></tr><tr><td>All the attributes in a relation that have the potential to become a Primary key</td><td>All the leftover candidate keys after selecting the primary key</td></tr></table></td><td></td></tr>
<tr><td colspan="3">SECTION C</td></tr>
<tr><td>26.</td><td>a) Consider the following tables Emp and Dept:</td><td>1+2</td></tr>
</table>

Relation: Emp

empcode	ename	deptid	Salary
1001	TOM	10	10000
1002	BOB	11	8000
1003	SID	10	9000
1004	JAY	12	9000

Relation: Dept

deptid	dname
10	Physics
11	Chemistry
12	Biology

What will be the output of the
following statement?
SELECT * FROM Emp NATURAL JOIN Dept WHERE dname='Physics';

b) Write output of the queries (i) to (iv) based on the table Sportsclub

Table Name: Sportsclub

playerid	pname	sports	country	rating	salary
10001	PELE	SOCCER	BRAZIL	A	50000
10002	FEDERER	TENNIS	SWEDEN	A	20000
10003	VIRAT	CRICKET	INDIA	A	15000
10004	SANIA	TENNIS	INDIA	B	5000
10005	NEERAJ	ATHLETICS	INDIA	A	12000
10006	BOLT	ATHLETICS	JAMAICA	A	8000
10007	PAUL	SNOOKER	USA	B	10000

(i) SELECT DISTINCT sports FROM Sportsclub;

(ii) SELECT sports, MAX(salary) FROM Sportsclub GROUP BY sports HAVING sports<>'SNOOKER';

(iii) SELECT pname, sports, salary FROM Sportsclub WHERE country='INDIA' ORDER BY salary DESC;

(iv) SELECT SUM(salary) FROM Sportsclub WHERE rating='B';

A

a)

deptid	empcode	ename	Salary	dname
10	1001	TOM	10000	Physics
10	1003	SID	9000	Physics

i)

DISTINCT sports
SOCCER
TENNIS
CRICKET
ATHLETICS
SNOOKER

ii)

Sports	MAX(salary)
SOCCER	50000
TENNIS	20000
CRICKET	15000
ATHLETICS	12000

iii)

pname	sports	salary
VIRAT	CRICKET	15000
NEERAJ	ATHLETICS	12000
SANIA	TENNIS	5000

iv)

SUM(salary)
15000

27. A pre-existing text file data.txt has some words written in it. Write a python function displaywords() that will print all the words that are having length greater than 3. (3)

Example:
For the fie content:
A man always wants to strive higher in his life
He wants to be perfect.

The output after executing displayword() will be:
Always wants strive higher life wants perfect

OR

A pre-existing text file info.txt has some text written in it. Write a python function countvowel() that reads the contents of the file and counts the occurrence of vowels(A,E,I,O,U) in the file.

A

```
def displaywords():
    f = open('data.txt','r')
    s = f.read()
    lst = s.split()
    for x in lst:
        if len(x)>3:
            print(x, end=" ")
    f.close()
```

OR

```
def countvowels():
    f - open('info.txt', 'r')
    s = f.read()
    count = 0
    for x in s:
        if x in 'AEIOU':
            count+=1
    print(count)
    f.close()
```

Correct definition of function will fetch 3 marks. For each syntax error ½ mark may be deducted. No marks to be deducted for using a different logic.

28. Based on the given set of tables write answers to the following questions. 3

Table: flights

flightid	model	company
10	747	Boeing
12	320	Airbus
15	767	Boeing

Table: Booking

ticketno	passenger	source	destination	quantity	price	Flightid
10001	ARUN	BAN	DEL	2	7000	10
10002	ORAM	BAN	KOL	3	7500	12
10003	SUMITA	DEL	MUM	1	6000	15
10004	ALI	MUM	KOL	2	5600	12
10005	GAGAN	MUM	DEL	4	5000	10

a) Write a query to display the passenger, source, model and price for all bookings whose destination is KOL.

b) Identify the column acting as foreign key and the table name where it is present in the given example.

A	a) SELECT passenger, source, model, price FROM booking, flights WHERE bookings.flightid = flights.flightid AND destination='KOL'; 2 marks for correct answer. ½ mark to be deducted for each error. b) Flighted in the bookings table is the foreign key. (1 mark)	
29.	Write a function modilst(L) that accepts a list of numbers as argument and increases the value of the elements by 10 if the elements are divisible by 5. Also write a proper call statement for the function. For example: If list L contains [3,5,10,12,15] Then the modilist() should make the list L as [3,15,20,12,25]	3

A	def modilst(L):
	  for i in range(len(L)):
	  if L[i] % 5 == 0:
	  L[i]+=10
	
	L = [12,10,15,20,25]
	modilst(L)
	print(L)
	
	½ mark to deducted for each syntax error. Marks to be awarded for a different logic. 1 mark to be deducted if the function call is not written	

30.	A dictionary contains the names of some cities and their population in crore. Write a python function push(stack, data), that accepts an empty list, which is the stack and data, which is the dictionary and pushes the names of those countries onto the stack whose population is greater than 25 crores. For example : The data is having the contents {'India':140, 'USA':50, 'Russia':25, 'Japan':10} then the execution of the function push() should push India and USA on the stack. OR A list of numbers is used to populate the contents of a stack using a function push(stack, data) where stack is an empty list and data is the list of numbers. The function should push all the numbers that are even to the stack. Also write the function pop(stack) that removes the top element of the stack on its each call. Also write the function calls.	3

A	data={'India':140, 'USA':50, 'Russia':25, 'Japan':10}
	stack=[]
	def push(stack, data):
	  for x in data:
	  if data[x]>25:
	  stack.append(x)
	push(stack, data)
	print(stack)
	
	½ mark should be deducted for all incorrect syntax. Full marks to be awarded for any other logic that produces the correct result.
	
	OR
	
	data = [1,2,3,4,5,6,7,8]
	stack = []
	def push(stack, data):
	  for x in data:
	  if x % 2 == 0:
	  stack.append(x)
	def pop(stack):
	  if len(stack)==0:
	  return "stack empty"
	  else:
	  return stack.pop()
	
	push(stack, data)
	print(pop(stack))
	
	½ mark should be deducted for all incorrect syntax. Full marks to be awarded for any other logic that produces the correct result.	

SECTION D		
31.	Magnolia Infotech wants to set up their computer network in the Bangalore based campus having four buildings. Each block has a number of computers that are required to be connected for ease of communication, resource sharing and data security. You are required to suggest the best answers to the questions i) to v) keeping in mind the building layout on the campus.	5

Number of Computers.

Block	Number of computers
Development	100
HR	120
Admin	200
Logistics	110

Distance Between the various blocks

Block	Distance
Development to HR	50m
Development to Admin	75m
Development to Logistics	120m
HR to Admin	110m
HR to Logistics	50m
Admin to Logistics	140m

i) Suggest the most appropriate block to host the Server. Also justify your choice.

ii) Suggest the device that should should be placed in the Server building so that they can connect to Internet Service Provider to avail Internet Services.

iii) Suggest the wired medium and draw the cable block to block layout to economically connect the various blocks.

iv) Suggest the placement of Switches and Repeaters in the network with justification.

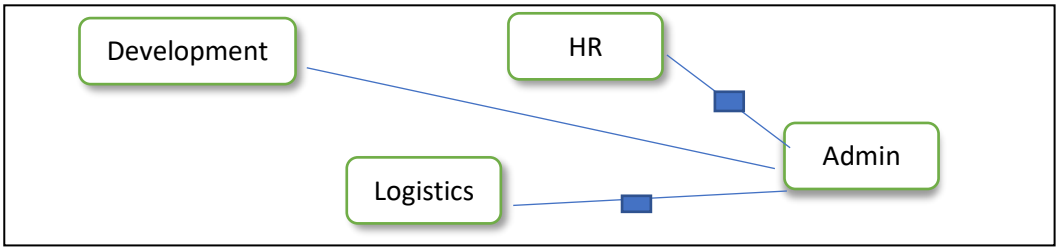
v) Suggest the high-speed wired communication medium between Bangalore Campus and Mysore campus to establish a data network.

A

i) Admin Block since it has maximum number of computers.

ii) Modem should be placed in the Server building

iii) The wired medium is UTP/STP cables.



	iv) Switches in all the blocks since the computers need to be connected to the network. Repeaters between Admin and HR block & Admin and Logistics block. The reason being the distance is more than 100m. v) Optical Fiber cable connection.	

32.	a) Write the output of the following code:
	
	def change(m, n=10):
	  global x
	  x+=m
	  n+=x
	  m=n+x
	  print(m,n,x)
	x=20
	change(10)
	change(20)
	
	OR (only in a part)
	
	What will be the output of the following python program?
	str = ""
	name = "9@Days"
	for x in name:
	  if x in "aeiou":
	  str+=x.upper()
	  elif not x.isalnum():
	  str+="**"
	  elif x.isdigit():
	  pass
	  else:
	  str+=x.lower()
	print(str)
	
	b) Sumitra wants to write a program to connect to MySQL database using python and increase the age of all the students who are studying in class 11 by 2 years.
	Since she had little understanding of the coding, she left a few blank spaces in her code. Now help her to complete the code by suggesting correct coding for statements 1, 2 and 3.
		2+3

<table>
<tr><td></td><td>
import _____ as myc # Statement 1

con = myc.connect(host="locahost", user="root", passwd="",
database="mydb")
mycursor = _____ #Statement 2
sql = "UPDATE student SET age=age+2 WHERE class='XI'"
mycursor.execute(sql)
sql = "SELECT * FROM student"
mycursor=con.execute(sql)
result = _____ #Statement 3
for row in result:
  print(row)

Statement 1 : The required module to be imported
Statement 2: To initialize the cursor object.
Statement 3: To read all the rows from the cursor object
</td><td></td></tr>
<tr><td>A</td><td>
a) 70 40 30
110 60 50
1 mark for each correct row of answer. Partial marks to be given if partial correct answers are there.

OR

**dAys
2 marks for correct answer. Partial marks may be given for partially correct answer.
b) mysql.connector
c) con.cursor()
d) mycursor.fetchall()

1 mark for each correct answer
</td><td></td></tr>
<tr><td>33.</td><td>
A binary file data.dat needs to be created with following data written it in the form of Dictionaries.
<table>
<tr><th>Rollno</th><th>Name</th><th>Age</th></tr>
<tr><td>1001</td><td>TOM</td><td>17</td></tr>
<tr><td>1002</td><td>BOB</td><td>16</td></tr>
<tr><td>1003</td><td>KAY</td><td>16</td></tr>
</table>
Write the following functions in python accommodate the data and manipulate it.
a) A function insert() that creates the data.dat file in your system and writes the three dictionaries.
</td><td>2+3</td></tr>
</table>

b) A function read() that reads the data from the binary file and displays the dictionaries whose age is 16.

A

```
import pickle
def insert():
   d1 = {'Rollno':1001, 'Name':'TOM', 'Age':17}
   d2 = {'Rollno':1002, 'Name':'BOB', 'Age':16}
   d3 = {'Rollno':1003, 'Name':'KAY', 'Age':16}
   f = open("data.dat","wb")
   pickle.dump(d1,f)
   pickle.dump(d2,f)
   pickle.dump(d3,f)
   f.close()

def read():
   f = open("data.dat", "rb")
   while True:
      try:
         d = pickle.load(f)
         if d['Age']==16:
            print(d)
      except EOFError:
         break
   f.close()
```

The insert() function has 2 marks. Deduct ½ mark for each syntax error
The read() function carries 3 marks. Deduct ½ marks for each syntax error

34. Tarun created the following table in MySQL to maintain stock for the items he has. 1+1+2

Table : Inventory

Productid	pname	company	stock	price	rating
10001	Biscuit	Parley	1000	15	C
10002	Toffee	Parley	500	5	B
10003	Eclairs	Cadbury	800	10	A
10004	Cold Drink	Coca Cola	500	25	NULL
10005	Biscuit	Britania	500	30	NULL
10006	Chocolate	Cadbury	700	50	C

Based on the above table answer the following questions.

	a) Identify the primary key in the table with valid justification. b) What is the degree and cardinality of the given table. c) Write a query to increase the stock for all products by 20 whose company is Parley. OR (only for part c) Write a query to delete all the rows from the table which are not having any rating.	
A	a) The Primary Key should be Productid since it uniquely identifies each row. (1) b) Degree – 6 Cardinality – 6 (½ + ½) c) UPDATE inventory SET stock=stock+10 WHERE company = 'Parley'; OR DELETE FROM inventory WHERE RATING IS NULL; (2)	

35.	Sudheer has written a program to read and write using a csv file. He has written the following code but failed to write completely, leaving some blanks. Help him to complete the program by writing the missing lines by following the questions a) to d)
	
	_____ #Statement 1
	headings = ['Country','Capital','Population']
	data = [['India', 'Delhi',130],['USA','Washington DC',50],[Japan,Tokyo,2]]
	f = open('country.csv','w', newline="")
	csvwriter = csv.writer(f)
	csvwriter.writerow(headings)
	_____ #Statement 2
	f.close()
	f = open('country.csv','r')
	csvreader = csv.reader(f)
	head = _____ #Statement 3
	print(head)
	for x in _____: #Statement 4
	if int(x[2])>50:
	print(x)
	
	a) Statement 1 – Write the python statement that will allow Sudheer work with csv files.
	b) Statement 2 – Write a python statement that will write the list containing the data available as a nested list in the csv file
	c) Statement 3 – Write a python statement to read the header row in to the head object.
	d) Statement 4 – Write the object that contains the data that has been read from the file.	

A	a) import csv b) csvwriter.writerows(data) c) next(csvreader) d) csvreader 1 mark for each correct answer.	

****End****