

KENDRIYA VIDYALAYA SANGATHAN, DELHI REGION
2nd PREBOARD EXAMINATION 2020-21
Class XII
Subject: Computer Science (083)

Maximum Marks: 70

Time Allowed: 3 hours

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
 - a. Section – I is short answer questions, to be answered in one word or one line.
 - b. Section – II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
4. Part - B is Descriptive Paper.
5. Part- B has three sections
 - a. Section-I is short answer questions of 2 marks each in which two question have internal options.
 - b. Section-II is long answer questions of 3 marks each in which two questions have internal options.
 - c. Section-III is very long answer questions of 5 marks each in which one question has internal option.
6. All programming questions are to be answered using Python Language only

Q.No	Part A	Marks
Section-I		
Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.		
1	Which one of the following is a valid identifier: i. _name ii. Roll.no iii. while iv. No#1 (i) _name	1
2	Write any two immutable data type of python Tuple and String	1
3	Consider a list L=[1,2,[3,4],5] What will be the output of print(L[2]) [3,4]	1
4	Consider a dictionary: D={1: "JAN", 2: "FEB",3: "MAR",4: "APR"} Write python code to add one more key-value pair in the above dictionary with key 5 and value "MAY" D[5]="MAY"	1
5	Name the built-in function / method that is used to return the length of the given object. len()	1
6	Identify the valid declaration of Data: Data=(1,"Flower","Plant",2,3,"Tree") (a)List (b) Tuple (c) Dictionary (d) String (b) Tuple	1

7	Which one of the following is the valid relational operator in Python? i. and ii. += iii. != iv. =	1
	(iii)!=	
8	Consider a list List=[10,20,30,40], which of the following statement will result in an error: i) L[0]=L[0]+2 ii) L=L+2 iii) L=L*2 iv) L[1]=50	1
	ii)L=L+2	
9	Which Switching Technique establishes a dedicated path between sender and receiver?	1
	Circuit Switching	
10	Which software program helps website to store the information about visitors like user name, password and other details?	1
	Cookies	
11	If the following codes are executed, what will be the answer: <pre>>>> Str="StayHomeStaySafe" >>> print(Str[3:13:2])</pre>	1
	yoety	
12	In MYSQL this constraint does not allow NULL Values in a column.	1
	Not Null/Primary Key (Any one of them)	
13	In RDBMS a row is also known as: i. Attribute ii. Relation iii. Field iv. Tuple	1
	iv.Tuple	
14	Write the output of following code: <pre>def func(): global X X=10 X=5 func() print(X)</pre>	1
	10	
15	In MYSQL, this clause is used to display the data of table in ascending or descending order.	1
	Order by	
16	In MYSQL, this command is used to add rows in a table.	1
	insert	
17	With reference to the RDBMS, define Alternate Key.	1
	The candidate keys which are not the Primary key are known as Alternate keys	
18	Roshan wants to display the details of those students whose PHONE_NO are not mentioned in table STU_DATA. He wrote the following query but not getting the output: SELECT * FROM STU_DATA WHERE PHONE_NO = NULL; Help Roshan to remove the error in above query.	1
	SELECT * FROM STU_DATA WHERE PHONE_NO IS NULL;	
19	Rearrange the following terms in increasing order of their scope of network:	1

	WAN,PAN,MAN,LAN	
	PAN,LAN,MAN,WAN	
20	Harassing, Demeaning, Defaming, embarrassing or intimidating someone using computer or electronic devices comes under which type of the cyber-crime? Cyber Trolling and Bullying	1
21	Which one of the following is a malicious program that can self-replicate: (i)Virus (ii) Worm (iii)Trojan Horse (iv) Spam (ii)Worm	1

Section-II

	Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark.																																									
22	<p>A library uses database management system using SQL to store the details of its books. The database administrator has decided the following arrangements for this database: Name of database: Library Name of Table: BOOKS The attributes of the table Books are: BOOK_ID: numeric TITLE: varchar AUTHOR_NAME varchar QUANTITY numeric</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Table:BOOKS</th> </tr> <tr> <th>BOOK_ID</th> <th>TITLE</th> <th>AUTHOR_NAME</th> <th>QUANTITY</th> </tr> </thead> <tbody> <tr> <td>B1103</td> <td>Glimpses of World History</td> <td>Jawaharlal Nehru</td> <td>25</td> </tr> <tr> <td>B1104</td> <td>Hind Swaraj</td> <td>M K Gandhi</td> <td>22</td> </tr> <tr> <td>B1105</td> <td>Exam Warrior</td> <td>Narendra Modi</td> <td>22</td> </tr> <tr> <td>B1106</td> <td>Wings of Fire</td> <td>A P J Abdul Kalam</td> <td>29</td> </tr> <tr> <td>B1107</td> <td>Gitanjali</td> <td>Rabindranath Tagore</td> <td></td> </tr> <tr> <td>B1108</td> <td>Malgudi Days</td> <td>R K Narayan</td> <td>34</td> </tr> <tr> <td>B1109</td> <td>India of My Dreams</td> <td>M K Gandhi</td> <td>30</td> </tr> <tr> <td>B1110</td> <td>Gora</td> <td>Rabindranath Tagore</td> <td></td> </tr> </tbody> </table>	Table:BOOKS				BOOK_ID	TITLE	AUTHOR_NAME	QUANTITY	B1103	Glimpses of World History	Jawaharlal Nehru	25	B1104	Hind Swaraj	M K Gandhi	22	B1105	Exam Warrior	Narendra Modi	22	B1106	Wings of Fire	A P J Abdul Kalam	29	B1107	Gitanjali	Rabindranath Tagore		B1108	Malgudi Days	R K Narayan	34	B1109	India of My Dreams	M K Gandhi	30	B1110	Gora	Rabindranath Tagore		
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	a) Identify the attribute which best suitable to be declared the primary key of table BOOKS BOOK_ID	1																																								
	b) Write the degree and cardinality of the above table 'BOOKS' Degree-4 Cardinality-8	1																																								
	c) Which command out of the following will be used if Mr Amit wants to increase the quantity of BOOK_ID B1103 . i. Alter table ii. Update iii. Modify iv. Change (ii)Update	1																																								
	d) Write MYSQL query to display unique AUTHOR_NAME from table BOOKS. SELECT DISTINCT(AUTHOR_NAME) FROM BOOKS;	1																																								
	e) Write the output of the following query: SELECT AVG(QUANTITY) FROM BOOKS; 27	1																																								
23	Puneeta is storing the data of her gift store in a csv file named gift.csv which will store Gift_code and Gift_name of items of her gift store.She has written the following code .As a programmer help her to successfully execute her program in python:																																									

	<pre> import _____ # Line 1 def writeFile(Gift_code, Gift_name): F=open("gift.csv", '____') #Line 2 FW=csv.____(F) #Line 3 FW.writerow([Gift_code, Gift_name]) F.close() #CSV file for reading def readFile(): with _____('gift.csv', 'r') as newF #Line 4 FR=csv.reader(newF) for row in FR: if row[0]==101: print(row) newF.close() writeFile(101, "Photoframe") writeFile(102, "Soft Toys") writeFile(103, "Flower Pot") readFile() #Line 5 </pre>	
a)	Name the module she should import in line 1.	1
	csv	
b)	In which mode Puneeta should open the file to add data in it?	1
	'a'	
c)	Fill in the blanks in Line 3 to write data to csv file gift.csv	1
	writer()	
d)	Fill in the blank in Line 4 to open the csv file from the disk	1
	open	
e)	Write the output she would obtain after executing the code of line 5	1
	101, "Photoframe"	
Part B		
Section 1		
24	<p>Evaluate the following expression</p> <p>(a) $22\%4^{**2}/4+8$</p> <p>(b) $((4>5) \text{ and } (3!=3) \text{ or } (4>=3))$</p>	2
	<p>(a) 9</p> <p>(b) True</p> <p>1 mark for each correct answer</p>	
25	<p>Write two points of difference between HTML and XML</p> <p style="text-align: center;">OR</p> <p>Write any two activities which are punishable under cyber crime</p>	2
	<p>HTML</p> <ol style="list-style-type: none"> 1) Stands for Hypertext Markup Language and used to design webpages 2) Tags in HTML are not case sensitive <p>XML</p> <ol style="list-style-type: none"> 1) XML stands for Extensible Markup Language which is used to store and transport data. 2) Tags in XML are case sensitive <p>1 mark each for any correct differences(Max 2).</p> <p style="text-align: center;">OR</p> <p>(i) Phishing</p> <p>(ii) Identity Theft</p>	

	1 mark each for any correct answer	
26	Write the full forms of the following terms: (i)IPR (ii)VOIP (iii)HTTP (iv) GPRS	2
	(i) Intellectual Property Rights (ii) Voice Over Internet Protocol (iii) Hyper Text Transfer Protocol (iv) General Packet Radio Service .5 mark each for correct answer	
27	What do you mean by the default parameters in python? Describe with example. OR Differentiate between arguments and parameters in python with suitable example.	2
	Default parameters in Python functions are those parameters that take default values if no explicit values are passed to these parameters from the function call. Let's define a function with one default parameters: def func(X=1): return X*X func() 1 mark for definition and 1 mark for example OR Function parameters are the names listed in the function's definition. Function arguments are the real values passed to the function. Parameters are initialized to the values of the arguments supplied. e.g. def func(X,Y): return X+Y func(3,4) Here X and Y are parameters while 3 and 4 are arguments. 1 mark each for correct difference and example	
28	Rewrite the following codes in python after removing all the syntax errors. Underline each correction done in the code: def func(n) sum=0 for x in range(0: n): sum+=x Return sum	2
	def func(n): sum=0 for x in range(0, n): sum+=x return sum .5 mark for each correct error	
29	What possible output(s) are expected to be displayed on the at the time execution of the program from the following code. Also specify the minimum and maximum value of variable X. <pre>import random AR=["MON", "TUE", "WED", "THU", "FRI", "SAT"] X=random.randint(0,4) for I in range(1,X+1): print(AR[I]+"#",end="")</pre>	2

	(i) TUE#WED#THU#FRI# (ii) MON#TUE#WED#THU# (iii) TUE#WED#THU#FRI#SAT# (iv) TUE#WED#													
	Correct Options are (i) and (iv) Minimum Value of variable X is 0 Maximum value of variable X is 4 .5 mark for each correct answer upto max 2													
30	Mr Mehta is running two queries in mysql to obtain total number of values in column SALARY of EMP table using COUNT function, but he is getting variation in output: Table: EMP <table border="1" data-bbox="288 573 592 815"> <thead> <tr> <th>ENO</th> <th>SALARY</th> </tr> </thead> <tbody> <tr> <td>101</td> <td>50000</td> </tr> <tr> <td>102</td> <td>60000</td> </tr> <tr> <td>103</td> <td>51000</td> </tr> <tr> <td>104</td> <td></td> </tr> <tr> <td>105</td> <td>45000</td> </tr> </tbody> </table> (I) SELECT COUNT(*) FROM EMP; OUTPUT-5 (II) SELECT COUNT(SALARY) FROM EMP; OUTPUT-4 Explain the reason of variation in the output of above queries.	ENO	SALARY	101	50000	102	60000	103	51000	104		105	45000	2
ENO	SALARY													
101	50000													
102	60000													
103	51000													
104														
105	45000													
	Count(*) will count number of tuple in a table while count(salary) will count non null values in Salary column. 1 mark each for correct explanation.													
31	Explain the following functions: (i) fetchall() (ii) rowcount()	2												
	fetchall():The method fetches all (or all remaining) rows of a query result set and returns a list of tuples. If no more rows are available, it returns an empty list. rowcount(): This function returns number of fetched row. 1 mark for each correct answer													
32	Differentiate between the where and having clause in MYSQL with suitable example.	2												
	WHERE- WHERE Clause is used to filter the records from the table.Only those records will be extracted who are satisfying the specified condition in WHERE clause. It can be used with SELECT, UPDATE, DELETE statements. For e.g. SELECT * FROM EMP WHERE SALARY>20000 HAVING: HAVING Clause is used to filter the records from the groups based on the given condition in the HAVING Clause. Those groups who will satisfy the given condition will appear in the final result. HAVING Clause can only be used with SELECT statement in combination with group by clause. FOR e.g. SELECT COUNT(*) FROM EMP GROUP BY GENDER HAVING COUNT(*)>2 2 MARKS FOR CORRECT DEFINITION WITH EXAMPLE													
33	Find and write the output of following python code:	2												

	<pre>def convert(S): newS="" L=len(S) for i in range(L): if S[i].isupper(): newS=newS+S[i].lower() elif S[i].islower(): newS=newS+S[i+1] elif S[i].isdigit(): newS=newS+"*" else: newS=newS+"%" return newS mainS="Go#Covid@2019" print(convert(mainS))</pre>	
	<p>g#%cvid@%**** 2Marks for correct answer and 1 mark for partially correct answer</p>	
	<p>SECTION-II</p>	
<p>34</p>	<p>Write a function ChangeL(Arr) which accepts Arr, a list of numbers. Replace all the even element of Arr by the half of values of even elements and odd elements by the twice of values of odd elements. Display the elements of array. Sample input data of Arr: [5,8,7,10,12] Output should be: [10,4,14,5,6]</p>	<p>3</p>
	<pre>def CHANGE(Arr): L=len(Arr) for i in range(L): if Arr[i]%2==0: Arr[i]//=2 else: Arr[i]*=2 print(Arr)</pre> <p>.5 mark for correct function header .5 mark for correct loop statement .5 mark for correct condition .5 mark for each calculation half and calculating double of the number .5 mark for displaying output</p>	
<p>35</p>	<p>Write a function COUNT_is_am_are() that reads the content of the file story.txt and display the occurrence of is,am and are present in the file. If the contents of the story.txt are as follows: Children are studying while I am doing my work. What is Ravi doing? The output should be: Count of is/am/are in file are:3</p> <p style="text-align: center;">OR</p> <p>Write a function countlines5() that reads the content of file poem.txt and count those lines which are having 5 or less words. If the contents of the poem.txt are as follows:</p> <p>If only desire of it Makes you quite mad enough Never to tire of it,</p>	<p>3</p>

Makes you hold all other things tawdry
and cheap for it

The output should be:
Number of lines having words 5 or less are:3

```
def COUNT_is_am_are():
    c=0
    F=open("story.txt","r")
    data=F.read()
    data=data.split()
    for i in data:
        if i=='is' or i=='am' or i=='are':
            c=c+1
    print("Count of is/am/are in file are:",c)
    OR
def countlines5():
    c=0
    F=open("poem.txt","r")
    data=F.readlines()
    for line in data:
        line=line.split()
        if len(line)<5:
            c=c+1
    print("Number of lines having words 5 or less are:",c)
```

- .5 mark for function header
- .5 mark for opening file
- .5 mark for data reading
- 1 mark for correct logic
- .5 mark for displaying output

36 Write the outputs of the SQL queries (i) to (iii) based on the relations
TEACHER
And DEPT given below:

Table : TEACHER

T_ID	NAME	AGE	DEPT_ID	DOJ	SALARY	GENDER
101	AKSHYA	39	10	2018-08-01	55000	F
102	NANDINI	38	20	2016-03-22	40000	F
103	SAMAR	40	30	2017-12-12	30000	M
104	AAROHI	38	20	2015-11-07	45000	F
105	AKSHITA	42	30	2007-09-11	57000	F
106	BHANU	45	20	2007-09-19	38000	M
107	DIVANSH	41	10	2017-02-23	29000	M
108	YASH	36	30	2018-07-26	44000	M

Table: DEPT

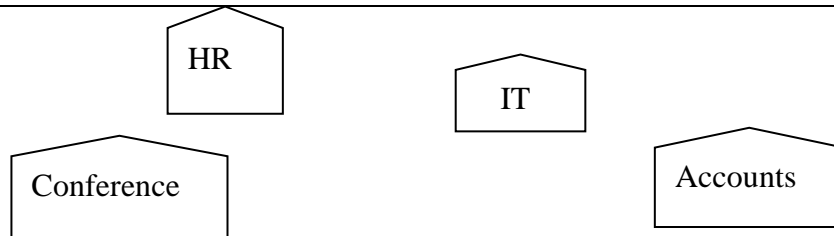
DEPT_ID	DNAME	LOC
10	COMPUTER	MUMBAI
20	PHYSICS	Raipur
30	MATHEMATICS	Delhi

(i) SELECT DEPT_ID, COUNT(*) FROM Teacher GROUP BY DEPT_ID;

1

```
DEPT_ID | COUNT(*) |
+-----+-----+
| 10 | 2 |
| 20 | 3 |
| 30 | 3 |
```


(ii)	SELECT MAX(DOJ),MIN(DOJ) FROM TEACHER;	1
	<pre> +-----+-----+ MAX(DOJ) MIN(DOJ) +-----+-----+ 2018-08-01 2007-09-11 +-----+-----+ </pre>	
(iii)	SELECT ,NAME,DNAME FROM TEACHER T, DEPT D WHERE T.DEPT_ID=D.DEPT_ID AND SALARY>50000;	1
	<pre> +-----+-----+ NAME DNAME +-----+-----+ AKSHYA COMPUTER AKSHITA MATHEMATIC +-----+-----+ </pre>	
37	<p>Write a function in python push(Arr), where Arr is a list of numbers. From this list push all those numbers which are multiples of 4 into a stack implemented by using a list. Display the stack if it has at least one element, otherwise display appropriate error message.</p> <p style="text-align: center;">OR</p> <p>Write a function in python pop(Arr), where Arr is a stack implemented by using a list of numbers. The function returns the value deleted from the stack.</p>	3
	<pre> def push(arr): stack=[] for i in arr: if i%4==0: stack.append(i) if stack==[]: print("underflow") else: print(stack[::-1]) L=[6,9,3,4,5,7,12] push(L) .5 mark for function header 1 mark for correct logic .5 mark for error message 1 mark for printing stack OR def pop(Arr): if Arr==[]: print("underflow") else: print(Arr.pop()) pop(L) .5 mark for correct header 1 mark for checking stack empty 1 mark for deleting element .5 for displaying deleted element </pre>	
38	<p>SuperTech Marketing Ltd. Is established in Jabalpur. It has four branches in its campus named HR, Conference, Accounts and IT .SuperTech Marketing Ltd. wants to establish the networking between all the four branches. A layout of the same is as follows:</p>	5



Approximate distances between these offices as per network survey team are as follows:

Place From	Place To	Distance
HR	IT	45 m
HR	Conference	95 m
HR	Accounts	72 m
IT	Conference	110 m
IT	Accounts	115 m
Accounts	Conference	60 m

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

HR	40
IT	200
Accounts	30
Conference	45

- Suggest the most suitable place (i.e., Block/a-) to install the server of this organization with a suitable reason.
- Suggest an ideal layout for connecting these blocks/Centers for a wired connectivity.
- Which device will you suggest to be placed/installed in each of these offices to efficiently connect all the computers within these offices?
- Suggest the placement of a Repeater in the network with justification.
- The organization is planning to connect its new office in Jabalpur itself, which is around 20 km away from the current location. Which type of network out of LAN, MAN, or WAN will be formed?

- IT Block because maximum number of computer
- Star/Bus Topology
- HUB/SWITCH
- IT to Conference and IT to Accounts
- MAN

39

Write the outputs of the SQL queries (i) to (v) based on the relations TEACHER and DEPT given below:

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DEPT_ID	DNAME	LOC																
10	COMPUTER	MUMBAI																
20	PHYSICS	Raipur																
30	MATHEMATICS	Delhi																
	<ul style="list-style-type: none"> i. To display all information from table TEACHER whose name starts with "S". ii. To display T_ID, NAME of all Female Teachers who belong to DEPT_ID 10. iii. To display T_ID,NAME and SALARY from table TEACHER and Corresponding DNAME from table DEPT for those teachers who are getting salary more than 45000. iv. To display all information of TEACHER table in descending order of column AGE. v. To display total salary of teachers in each Department(DEPT_ID) from table TEACHER. 																	
	<ul style="list-style-type: none"> i. SELECT * FROM TEACHER WHERE NAME LIKE "S%"; ii. SELECT T_ID,NAME FROM TEACHER WHERE GENDER='F' AND DEPT_ID=10; iii. SELECT T.T_ID,NAME SALARY,DNAME FROM TEACHER T AND DEPT D WHERE T.DEPT_ID=D.DEPT_ID AND SALARY>45000; iv. SELECT * FROM TEACHER ORDER BY AGE DESC; v. SELECT DEPT_ID,SUM(SALARY) FROM TEACHER GROUP BY DEPT_ID; 																	
40	<p>A Binary file TOYS.DAT has some records of structure [TOY_ID,TYPE,PRICE]</p> <ul style="list-style-type: none"> (i) Write a user defined function ADD_DATA() to input data for a new record and add to file TOYS.DAT (ii) Write a function DISPLAY(TYPE) in Python that would accept TYPE as parameter. The function will read contents of the file "TOYS.DAT" and calculate and display the sum of PRICE of all toys of that TYPE. <p style="text-align: center;">OR</p> <p>A Binary File BANK.DAT has some records of structure: [CUST_ID,NAME,ACCT_NO,BALANCE]</p> <p>Write a user defined function MAXDATA() that will read the content of file BANK.DAT. The function will display the total number of records in the file and also the details of that customer whose BALANCE is maximum.</p>		5															
40	<pre>import pickle def ADD_DATA(): L=[] F=open("TOYS.DAT","ab") TOY_ID=input("Enter toy ID") TYPE=input("Enter Toy Type") PRICE=int(input("enter Price")) L=[TOY_ID,TYPE,PRICE] pickle.dump(L,F) F.close() def DISPLAY(TYPE): F=open("TOYS.DAT","rb") try: sum=0 while True: data=pickle.load(F)</pre>																	

```
        if data[1]==TYPE:
            sum+=data[2]
    except EOFError:
        pass
    print("The total price is",sum)
    F.close()
```

(i)

.5 mark for function header
.5 mark for opening file in correct mode
.5 mark for input data
.5 mark for dumping data in file
.5 for closing file

(ii)

.5 mark for function header
.5 mark for opening file in correct mode
.5 mark for reading data
1 mark for logic and printing output

OR

```
def MAXDATA():
    F=open("BANK.DAT","rb")
    max1=0
    L=[]
    c=0
    try:
        while True:
            data=pickle.load(F)
            c=c+1
            if data[3]>max1:
                max1=data[3]
                L=data
    except EOFError:
        pass
    print("Total number of records in file are:",c)
    print("The Customer having maximum balance is",L)
    F.close()
```

.5 mark for function header
.5 mark for opening file in correct mode
.5 mark for reading data
2 marks for logic
1 mark for printing both outputs
.5 for closing file