COMMON PRE-BOARD EXAMINATION 2023-24

COMPUTER SCIENCE (083)

Date:14/03/2024   Time Allowed:3 hours

Class: XII   Maximum Marks: 70

General Instructions:
1. Please check this question paper contains 35 questions.
2. The paper is divided into 4 Sections- A, B, C, D and E.
3. Section A, consists of 18 questions (1 to 18). Each question carries 1 Mark.
4. Section B, consists of 7 questions (19 to 25). Each question carries 2 Marks.
5. Section C, consists of 5 questions (26 to 30). Each question carries 3 Marks.
6. Section D, consists of 2 questions (31 to 32). Each question carries 4 Marks.
7. Section E, consists of 3 questions (33 to 35). Each question carries 5 Marks.
8. All programming questions are to be answered using Python Language only.

Q.	SECTION A	Marks
1.	State True or False "Python language is a Cross platform language."	1
2.	Which of the following is an identity operator in Python? a. is b. on c. in d. of	1
3.	What will be the output of the following statement? print(2**3 + (5 + 6)**(1 + 1)) a. 129 b. 8 c. 121 d. None	1
4.	For a function header as follows, def Calc (X, Y=20) : Which of the following function calls will give an error? a. Calc(15, 25) b. Calc(x=15, y=25) c. Calc(y=25) d. Calc(x=25)	1
5	Which type of join is the following SQL statement ? SELECT customer.cust_id, order.cust_id, name, order_id FROM	1

	customer, order; a. Equi-join b. Natural join c. Outer join d. Cartesian product	
6	Which of the following statements is True about joins in SQL? a. In natural join query the join condition has to be mention. b. In cartesian product, the degree of the resultant table is equal to the sum of the degree of table1 and the degree of table2. c. In equi-join, the resultant table will not have duplicate columns. d. In cartesian product, the cardinality of the resultant table is equal to the sum of the cardinality of table1 and the cardinality of table2.	1
7.	Consider the statements given below and then choose the correct output from the given options: L=["Every", "day", "is", "a" ,"second" ,"chance"] print(L[:-3:]) a. ['a', 'second', 'chance'] b. ['chance', 'second', 'a'] c. ['Every', 'day', 'is'] d. ['is', 'day', 'Every']	1
8.	Consider the statements given below and then choose the correct output from the given options: S="Technology Fest@2023" print(S[3:-3:3]) a. cogFt b. 0tFgo c. hlye@ d. hlye@0	1
9.	Which of the following statement(s) would give an error after executing the following code? S='Happy' # Statement 1 print(S*3) # Statement 2 S+=" Republic" # Statement 3 S.append(" Day") # Statement 4 print(S) # Statement 5 a. Statement 2 b. Statement 3 c. Statement 4 d. Statement 3 and 4	1
10.	seek() is a method of _____ .	1

	a. File object b. csv module c. pickle module d. math module	
11.	The modem at the receiver's computer end acts as a _____. a. Translator b. Modulator c. Demodulator d. Converter	1
12.	Which of the following file mode will make the file zero length while opening? a. ab b. wb c. rb d. None of these	1
13.	What possible outputs(s) are expected to be displayed on screen at the time of execution of the following code? import random AR = [20,30,40,50,60,70] Lower =random.randint(1,3) Upper =random.randint(2,4) for K in range(Lower, Upper +1): print (AR[K], end="#") a. 20#40#70# b. 30#40#50# c. 50#60#70# d. 40#50#60#	1
14.	Which of the following commands will change row(s) of the table from MySQL database? a. REPLACE TABLE b. CHANGE TABLE c. UPDATE d. ALTER TABLE	1
15	A _____ is a networking device that connects computers in a network by using packet switching to receive, and forward data to the destination. a. Switch b. Hub c. Router d. Repeater	1
16	Ms. Suman is working on a binary file and wants to write data from a list to a binary file. Consider list object as L, binary file sum_list.dat, and file object as f. Which of the following can be the correct statement for her? a. f = open('sum_list.dat','wb'); pickle.dump(L,f) b. f = open('sum_list.dat','rb'); L=pickle.dump(f) c. f = open('sum_list.dat','wb'); pickle.load(L,f) d. f = open('sum_list.dat','rb'); L=pickle.load(f)	1

	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):- print(f1( )) is a valid statement even if the function f1( ) has no return statement. Reasoning (R):- A function always returns a value even if it has no return statement.	1
18	Assertion (A): If L is a list, then L+=range(5) is an invalid statement. Reason (R): Only a list can be concatenated to a list.	1
	SECTION B	
19	Expand HTML and XML. Write differences between HTML and XML. OR Expand SMTP and POP. Write differences between SMTP and POP	2

20	Mohit has written a code to input a positive integer and display its factorial. His code is having syntax and logical errors. Rewrite the correct code and underline the corrections made. (factorial of a number n is the product 1x2x3. . .n)
	n=(input("Enter a positive integer: ")
	f=0
	for i in range(n)
	      f*=i
	      print(f)
		2

21	Write a function, Words(S), that takes a string as an argument and returns a list containing words of the string that has vowels. OR Write a function SQUARE_LIST(L), where L is the list of elements passed as argument to the function. The function returns another list named 'SList' that stores the Squares of all Non-Zero Elements of L. For example: If L contains [9,4,0,11,0,6,0] The SList will have - [81,16,121,36]	2

22	What will be the output of the following code ?
	
	``python
	t1= ['CS','IP','IT']
	list1=t1
	new_list = []
	for i in list1:
	    if t1.index(i) %2 !=0:
	        new_list.append(t1.pop())
	    elif t1.index(i) //2 ==0:
	        new_list.append(t1.insert(len(t1)-1,t1.pop()))
	print(new_list,list1,t1,sep='#')
	``
		2

23	(a) Write a Python statement to display alternate characters of a string, named my_exam. For example,
	
	    if my_exam="Russia Ukraine"
	    The statement should display "Rsi kan"
	
	(b) Write the output of the code given below:
	
	``python
	d1 = {"name": "Aman", "age": 26}
	d2 = d1.pop('name')
	print(d1, d2)
	``
		2

24	Write the SQL statement to add a field Country_Code (of type Integer) to the table Countries with the following fields. Country_id, Country_name, Continent, Region_id. Thereafter write a command to insert the following record to the table. C001, China , Asia, R123, 423 OR A table, SPORTSTARS has been created in a database with the following fields: Admn_No, Name, DOB, Sport, Medals, Class. Give the SQL command to delete the column Class from this table. Also write a command to make the Admn_No the Primary key.	2

25	Find the output of the following Python code:
	
	``python
	a=5
	def update(x):
	    global a
	    a+=5
	    if x%2 != 0:
	        a*=x*2
	    else:
	        a//=x
	``
		2

```
a=a+4
print(a,end='$')
update(3)
print(a,end='#')
update(a)
print(a)
```

SECTION C

26	The contents of a text file named 'quote.txt' is as shown below: All the kings horses and all the kings men cannot fix what isn't broken. What will be the output of the following code? fin = open('quote.txt') data = fin.read(10) print(data[0:3], end= '') data = fin.readline() print(data[0:3] , end= '') fin.seek(0) data = fin.read(6) print(data[0:3] , end= '')	3
27	Based on table STUDENT given here, write the output of the SQL queries that follow:	3

RollNo	Name	Class	Gender	City	Mark
1	Abhishek	XI	M	Agra	430
2	Prateek	XII	M	Mumbai	440
3	Sneha	XI	F	Agra	470
4	Nancy	XII	F	Mumbai	492
5	Hema	XII	F	Delhi	360
6	Anchal	NULL	F	Dubai	256
7	Mehar	X	F	Moscow	324
8	Nishant	X	M	Moscow	429

1. SELECT NAME, CLASS, MARK FROM STUDENT WHERE NAME LIKE "%E%" AND CLASS ='XII';
2. SELECT NAME, CITY FROM STUDENT WHERE GENDER = 'M' AND MARK BETWEEN 360 AND 440;

	3. SELECT DISTINCT CLASS FROM STUDENT;	
28	Write a method count_words_e() in Python to read the content of a text file and count the number of words ending with 'e' in the file. Example: If the file content is as follows: An apple a day keeps the doctor away. We all pray for everyone's safety. A marked difference will come in our country. The count_words_e() function should display the output as: No. of such words: 4 OR Assume that a text file named TEXT1.TXT already contains some text written into it, write a user defined function named vowelwords(),that reads the file TEXT1.TXT and create a new file named TEXT2.TXT ,which shall contain only those words from the file TEXT1.TXT which does not start with an uppercase vowel(i.e. with 'A','E','I','O','U') for example if the file TEXT1.TXT contains Carry Umbrella and Overcoat When it Rains then the file TEXT2.TXT shall contain Carry and when it Rains.	3
29	Consider the table Purchase given below: Table : PURCHASE table below Based on the given table, write SQL queries for the following: 1. Increase the quantity by 3 % for all purchase in CHANDIGARH. 2. Display name, city and date of purchase of all purchases of names that contain the letter 'H'. 3. Delete the records of all purchase in NEW DELHI.	3
30	A nested list contains the data of visitors in a museum. Each of the inner lists contains the following data of a visitor: [V_no (int), Date (string), Name (string), Gender (String M/F), Age (int)]	3

Table : PURCHASE

CNO	CNAME	CITY	QUANTITY	DOP
C01	GURPREET	NEW DELHI	150	2023-06-11
C02	MALIKA	HYDERABAD	10	2023-02-19
C03	NADAR	DALHOUSIE	100	2022-12-04
C04	SAHIB	CHANDIGARH	50	2022-10-10
C05	MEHAK	CHANDIGARH	15	2022-10-20

Write the following user defined functions to perform given operations on the stack named "status":

 (i) Push_element(Visitors) - To Push Gender of visitors who are in the age range of 15 to 20.

 (ii) Pop_element( ) - To Pop the objects from the stack and count the display the number of Male and Female entries in the stack. Also, display "Done" when there are no elements in the stack.

For example: If the list Visitors contains:
[['305', "10/11/2022", "Geeta", "F", 35],
['306', "10/11/2022", "Arham", "M", 15],
['307', "11/11/2022", "David", "M", 18],
['308', "11/11/2022", "Madhuri", "F", 17]]

The stack should contain
M
M
F
The output should be:
Done
Female: 1
Male: 2

SECTION D

| 31 | Write SQL commands for the queries (i) - (iv) based on the two tables TAXITYPE and TRAVEL | 4 |

TABLE: TAXITYPE

TCODE	TTYPE	PER KM
T01	TEMPO TRAVELLER	40
T02	AC INNOVA	20
T03	AC ERTIGA	15
T04	AC HATCHBACK	10
T05	AC SEDAN	10

TABLE: TRAVEL

CNO	CNAME	TRAVELDATE	KM	TCODE	NOP
101	Randeep	2018-11-07	200	T01	12
102	Sharad Bali	2018-12-21	120	T04	4
105	Sangeeta M	2019-04-25	450	T01	15
103	Manish Nagpal	2019-01-29	280	T02	5
107	Veronica	2019-03-12	365	T04	2
104	Dinesh Hoon	2019-10-28	290	T05	4

    i.   Display cname and ttype from the tables taxitype and travel.

    ii.   Display the average Km and greatest PERKM of AC SEDAN and AC ERTIGA types.

    iii.   Display the cname, KM and NOP of all travel in the descending order of KM.

   iv.   Display the details of all travels with traveldate after 2019-05-10

32	A csv file product.csv contains records of the following structure:
	 prodno, prodname and price to store the product no , product name and price of the product .
	Write a Program in Python that defines and calls the following user defined functions:
	  (i) ADD_PROD() – To accept and add information about a product into a csv file named 'product.csv'.
	  (ii) DISPLAY_PROD() – To display details of products having price more than 100 and productname starting with 'P', present in the CSV file named 'product.csv'.
		4

<div align="center">SECTION E</div>

33	"Knowledge Share" an NGO is planning to setup its new campus at Nagpur for its web-based activities. The campus has four (04) UNITS as shown below:	1*5=5
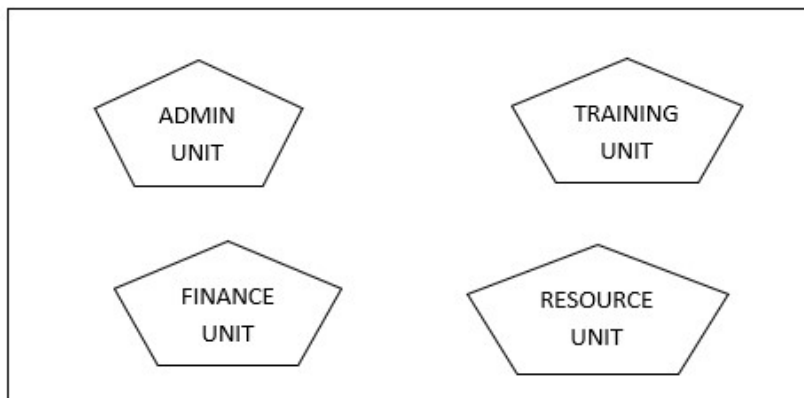
Distance between above UNITs are given here as under:

UNIT - 1	UNIT – 2	DISTANCE (In meters)
ADMIN	TRAINING	60
ADMIN	RESOURCE	120
ADMIN	FINANCE	100
FINANCE	TRAINING	65
FINANCE	RESOURCE	40
TRAINING	RESOURCE	50

Number of Computers in various units are:

UNIT	NO. OF COMPUTERS
ADMIN	150
FINANCE	25
TRAINING	90
RESOURCE	50

a) Suggest an ideal cable layout for connecting the above UNITs and which topology it is?

b) Suggest the most suitable place (i.e., UNIT) to install the server for the above NGO. Also, provide a suitable reason.

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

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

 (a) radiowave   (b) infrared wave   (c) Satellite.

e) Which network device is used to connect the computers in all UNITs?

| 34 | i. Write the difference between append (a) and write (w) mode in a text file.

ii. A binary file named "EMP.DAT" has some records of the structure [EmpNo, EmpName, Post, Salary].
Write a user-defined function named SumSalary(Post) that will accept the post of employee an argument & read the contents of EMP.DAT and calculate the total salary of all employees of that Post.

OR
i. Give one difference between seek() and tell() functions in file handling.
ii. A binary file "TEST.DAT" has some records of the [TestId, Subject, MaxMarks, ScoredMarks]. Write a function in python named DisplayAvgMarks(Sub) that will accept a subject as an argument and read the contents of TEST.DAT. The function will calculate & display the Average of the ScoredMarks of the subject accepted as an argument. | 2+3=5 |

| 35 | i. Define primary key and alternate key with examples.
ii. Reena wants to write a program in Python that reads and fetches all the records from Mysql table EMP having salary more than 25000.
empno - integer,
ename- string and salary- integer.
Note the following to establish connectivity between Python and MYSQL:
▪ Username is root
▪ Password is tiger
▪ The table exists in a MYSQL database named company.

OR

i. Differentiate between DDL and DML commands in SQL
ii. Write a Python code that inserts the following record in the MySQL table Emp:
EmpNo – integer
EName – string
Desig – string
Salary – integer
Note the following to establish connectivity between Python and MySQL:
• Username is admin
• Password is 22admin66
• The table exists in a MySQL database named company.
• The details (EmpNo, EName, Desig and Salary) are to be accepted from the user. | 1+4=5 |