

QP SUBMITTED BY

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Half Yearly Exam (2023-24)

CLASS XII SC

SUB: COMPUTERSCIENCE(083)

Time allowed -3 hours

Max Marks- 70

General Instructions:

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

| Q No | Section A | 18 Marks |
|------|---|----------|
| 1 | State True/False Both itemno and itemcode simultaneously can be the primary key in the table items. | 1 |
| 2 | In MySQL how the size of char vs varchar differs? a) Both are of fixed size b) Both are of variable size c) char is fixed but varchar is not d) varchar is fixed size but char is not | 1 |
| 3 | Find the output of the following $6 - 3 * 2 ** 3 ** 2 / - 8$ a) 198.0 b) -198.0 c) 198 d) 192 | 1 |
| 4 | str="R and Data Science" z=str.split() newstr="".join([z[2].upper(),z[3],z[2]+z[3],z[1].capitalize()]), newstr is equal to a) 'DATA=Science=DataScience=And' b) 'DATA=DataScience=And' c) 'DATA=Science=And' d) 'DATA=Science==DataScience=And' | 1 |
| 5 | If a table AA in MySQL database is having 2 rows and 4 columns and the table BB is having 4 rows and 2 columns, the cartesian product of AA and BB will have number of columns and rows as a) 6, 8 b) 8, 8 c) 8, 6 d) 6, 6 | 1 |
| 6 | Yiyo is transferring some pictures from her mobile phone to her laptop by uploading in her cloud storage from mobile and downloading the same in her laptop from the cloud, she has just used a) PAN b) WAN c) LAN d) MAN | 1 |
| 7 | D={1:2,3:4,5:6} for i,j in D.items(): print(i,j) Find the correct output a) b) c) d) 1 2 1 1 1 2 2 1 3 4 2 2 1 2 2 1 5 6 3 3 1 2 2 1 | 1 |
| 8 | Consider the string, spstr="Next is #Rio in 24" Find the output of, spstr[-5:3:-2] from the options below | 1 |

| | | |
|----|--|---|
| | a) 'ioR it' b) 'no#i' c) 'n i#s ' d) 'ioR i' | |
| 9 | <p>Consider the Python statement, t=(10,20,30,40,50,60) Identify from the options below that will result in an error</p> <p>a) t[4]+44 b) t[4]-44 c) t=t-(70,) d) t=t+(70,)</p> | 1 |
| 10 | <p>What possible outputs are expected to be displayed on screen at the time of execution of the program from the following code? Select correct options from below.</p> <pre>import random arr=['10','30','40','50','70','90','100'] L=random.randrange(1,3) U=random.randrange(3,6) for i in range(L,U+1): print(arr[i],"\$",end="@")</pre> <p>a) 30 \$@40 \$@50 \$@70 \$@90 b) 30 \$@40 \$@50 \$@70 \$@90 \$@</p> <p>c) 30 \$@40 \$@70 \$@90 \$@ d) 40 \$@50 \$@</p> <p>b,d</p> | 1 |
| 11 | <p>In which layer of ISO model, a switch is connected?</p> <p>a) Data Link b) Network c) Physical d) Transport</p> | 1 |
| 12 | <p>What is stored in s?</p> <pre>X=20 def tweet(): global X X+=180 return X s=tweet()</pre> <p>a) 180 b) 0 c) 20 d) 200</p> | 1 |
| 13 | <p>Look at the code below and identify the type of exception that will be thrown from the options</p> <pre>arr=[10,20,30,40,50,60,70,80,90,100] for i in range(20): print(arr[i])</pre> <p>a) RuntimeError b) IndexError c) OverflowError d) ValueError</p> | 1 |
| 14 | <p>Identify the FALSE relational database statement from the options below.</p> <p>a) Alternate key(s) are the Candidate key(s) not selected as Primary key. b) Foreign key of a table is a Primary key of the table it points to. c) There can be many Candidate keys in a table d) Referential Integrity is enforced by the Alternate keys.</p> | 1 |
| 15 | <p>Fill in the blanks</p> <p>In <u>packet</u> switching the file is broken down into smaller units before transmission.</p> | 1 |
| 16 | <p>The byte position returned by tell() method in data file indicates position from</p> <p>a) Middle b) Start c) End d) Random</p> | 1 |
| | <p>Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as</p> <p>(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</p> | |

| | | |
|------------------|---|----------------------|
| 17 | <p>Assertion(A): Python overwrites an existing file or creates a non-existing file when we open a file with 'w' mode.</p> <p>Reason(R): a+ mode is used only for write operations c</p> | 1 |
| 18 | <pre>def testme(a,b,c=100): return a+b+c testme(30,40) #returns 170 testme(30,40,100) # returns 170</pre> <p>Assertion(A): In the function calls above following the function definition both return 170</p> <p>Reason(R): If only 2 parameter is used the default parameter 100 is used. When 3 parameters are used the default parameter 100 is overridden by the third parameter 100 in the function call statement. a</p> | 1 |
| Section B | | 14 Marks |
| 19 | <p>(i) Expand the following terms: IMAP, UDP Internet Message Access Protocol User Datagram Protocol</p> <p>(ii) Give one difference between XML and HTML. The key difference between HTML and XML is that HTML displays data and describes the structure of a webpage, whereas XML stores and transfers data. HTML tags are used for displaying the data and are uniform type. XML tags are used for describing the data not for displaying and are not uniform or as fixed like the HTML tags.</p> <p style="text-align: center;">OR</p> <p>(i) Where the destination address is stored in a data packet? Header</p> <p>(ii) How is http different from https? Secure http is https</p> | <p>1+1=</p> <p>2</p> |
| 20 | <p>The following code that consists of a function and user input part is supposed to return the factors of a number supplied as a parameter. Since there are errors both syntax and logical errors it's not showing correct result. Your task is to identify and underline the errors. Don't write the entire code but only the lines where error is found.</p> <pre>def find_factors(number): factors = () for i in range(1, number + 1): if number // i == 0: factors.append(i) return factor # Get the number from the user try: num = int(input("Enter a number: ")) if num < 1: print("Please enter a positive integer.") else: result = find_factors(num) print(f"The factors of {num} are: {result}") except IndexError: print("Invalid input. Please enter a valid integer.")</pre> | 2 |

| | | |
|----|--|---|
| | <pre> def find_factors(number): factors=[] for i in range(1, number + 1): if number % i == 0: factors.append(i) return factors # Get the number from the user try: num = int(input("Enter a number: ")) if num < 1: print("Please enter a positive integer.") else: result = find_factors(num) print(f"The factors of {num} are: {result}") except ValueError: print("Invalid input. Please enter a valid integer.") </pre> | |
| 21 | <p>CBG is a dictionary that is storing the name of the country and their respective Central Banks Governor's name as shown below.</p> <p>CBG={"Germany":"JoachimNagel","France":"FrançoisVilleroy de Galhau","India":"ShaktikantaDas","UnitedKingdom":"AndrewBailey","UnitedStates":"Jerome Powell"}</p> <p>Write a function getNames(CBG) that will take the dictionary as its parameter and will display only those Governor's names which is more than 20 character long including the spaces in between.</p> <pre> >>> CBG={"Germany":"JoachimNagel","France":"FrançoisVilleroy de Galhau","India":"ShaktikantaDas","UnitedKingdom":"AndrewBailey","UnitedStates":"Jerome Powell"} >>> def getNames(CBG): for i in CBG: if len(CBG[i])>20: print(CBG[i]) </pre> <p>OR</p> <p>Consider the string G20 below</p> <p>G20="African Union has been included as a member of the G20"</p> <p>Write a function lenWords(G20) that takes the string as its parameter and return the length of each word of the string as a tuple.</p> <pre> >>> G20="African Union has been included as a member of the G20" >>> def lenWords(G20): L=G20.split() LL=[] for i in L: n=len(i) LL.append(n) return tuple(LL) </pre> <pre> >>> lenWords(G20) (7, 5, 3, 4, 8, 2, 1, 6, 2, 3, 3) </pre> | 2 |
| 22 | <p>Find the output of the code</p> <pre> S="eComPhyMat" L=["C","a","r","e","e","r","F","a","i","r"] for i in range(len(S)): if i%2==0: D[L.pop()]=S[i] </pre> | 2 |

| | | |
|------------------|--|----------|
| | <pre> else: D[L.pop()]=i+5 for x,y in D.items(): print(x,y,sep="#") r#12 i#6 a#a F#8 e#y C#14 </pre> | |
| 23 | <p>Using built in functions</p> <p>i. add another alphabet 'e' after the alphabet 'e' in the list</p> <pre> L=["C","a","r","e","r","F","a","i","r"] >>> L.insert(4,'e') >>> L ['C', 'a', 'r', 'e', 'e', 'r', 'F', 'a', 'i', 'r'] </pre> <p>ii. Check if the string S="eComPhyMat" starts with the alphabet 'e'</p> <pre> >>> S.startswith('e') True </pre> <p style="text-align: center;">OR</p> <p>By importing appropriate module in Python determine the most frequent alphabet in the list</p> <pre> L=["C","a","r","e","e","r","F","a","i","r"] >>> L=["C","a","r","e","e","r","F","a","i","r"] >>> import statistics >>> statistics.mode(L) 'r' </pre> | 2 |
| 24 | <p>In the existing MySQL table admin with the fields code, gender, designation add the primary key icode of integer type in the beginning.</p> <pre> mysql> alter table admin add column icode int primary key first; </pre> <p style="text-align: center;">OR</p> <p>From the MySQL table admin with the fields icode, code, gender, designation</p> <p>i. drop the field designation</p> <pre> mysql> alter table admin drop column designation; </pre> <p>ii. add a new column department of varchar any suitable size. Make sure it cannot remain a blank entry.</p> <pre> mysql> alter table admin add column department varchar(15) not null; </pre> | 2 |
| 25 | <p>Find the output of the following</p> <pre> def anher(x,y=10): x=x/y y=x%y return x m=200 n=20 m=anher(m,n) print(m,n,sep="#") n=anher(n) print(m,n,sep="#",end="\$\$\$") </pre> <pre> 10.0#20 10.0#2.0\$\$\$ </pre> | 2 |
| Section C | | 15 Marks |

| 26 | <p>Find the output of the Python code below</p> <pre>texta="DATA-23" textb="" i=0 while i<len(texta): if texta[i]>="0" and texta[i]<="9": n=int(texta[i]) n+=1 textb=textb+str(n) elif texta[i]>="A" and texta[i]<="Z": textb=textb+(texta[i+1]) else: textb=textb+"*" i+=1 print(textb)</pre> <p>ATA-*34</p> | 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---|--------|-----------|------------|-----------|----------|-----|--------------------|----|-----|------------|-----|--------------------|----|----|------------|-----|-------------------|----|----|------------|-----|-------------|----|----|------------|---|
| 27 | <p>Consider the table itemmast below, write the output of the MySQL queries</p> <pre>MySQL localhost:33060+ ssl spcdb SQL > select * from itemmast;</pre> <table><tr><th>itemno</th><th>itemname</th><th>stock</th><th>itemprice</th><th>suppdate</th></tr><tr><td>100</td><td>amul butter 500 gm</td><td>40</td><td>250</td><td>2023-09-17</td></tr><tr><td>101</td><td>amul butter 100 gm</td><td>60</td><td>50</td><td>2023-09-17</td></tr><tr><td>102</td><td>amul gold 1 litre</td><td>90</td><td>75</td><td>2023-09-16</td></tr><tr><td>103</td><td>amul paneer</td><td>50</td><td>85</td><td>2023-09-15</td></tr></table> <p>i. select count(distinct suppdate) from itemmast; count(distinct suppdate) 3</p> <p>ii. select itemname, stock from itemmast where itemprice>100 and itemname like '%gm'; itemname stock amul butter 500 gm 40</p> <p>iii. select itemname, stock from itemmast where suppdate<'2023-09-17' and stock between 40 and 100; itemname stock amul gold 1 litre 90 amul paneer 50</p> | itemno | itemname | stock | itemprice | suppdate | 100 | amul butter 500 gm | 40 | 250 | 2023-09-17 | 101 | amul butter 100 gm | 60 | 50 | 2023-09-17 | 102 | amul gold 1 litre | 90 | 75 | 2023-09-16 | 103 | amul paneer | 50 | 85 | 2023-09-15 | 3 |
| itemno | itemname | stock | itemprice | suppdate | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | amul butter 500 gm | 40 | 250 | 2023-09-17 | | | | | | | | | | | | | | | | | | | | | | | |
| 101 | amul butter 100 gm | 60 | 50 | 2023-09-17 | | | | | | | | | | | | | | | | | | | | | | | |
| 102 | amul gold 1 litre | 90 | 75 | 2023-09-16 | | | | | | | | | | | | | | | | | | | | | | | |
| 103 | amul paneer | 50 | 85 | 2023-09-15 | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | <p>Code in Python to read a text file Nipah.txt and displays those lines that contains the string 'high-risk'</p> <pre>>>> import os >>> os.chdir(r'c:\py01') >>> file=open('nipah.txt','r') >>> ss=file.readlines() >>> for i in ss: v=i.split() for j in v: if j=='high-risk': print(i)</pre> <p>OR</p> <p>Write a function VowelC() that counts the number of vowels from the text file Nipah.txt and displays the total count.</p> | 3 | | | | | | | | | | | | | | | | | | | | | | | | | |

```
>>> import os
>>> os.chdir(r'c:\py01')
>>> file=open('nipah.txt','r')
>>> count=0
>>> s=file.read()
>>> for i in s:
    if i in 'aeiouAEIOU':
        count+=1
```

29 Look at the table structure of itemmast table and write the MySQL queries 3

```
MySQL localhost:33060+ ssl spcdb SQL > describe itemmast;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| itemno | int | NO | PRI | NULL | |
| itemname | varchar(30) | YES | | NULL | |
| stock | int | YES | | NULL | |
| itemprice | int | YES | | NULL | |
| supupdate | varchar(20) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
```

- i. Drop the Primary key
`alter table itemmast drop primary key;`
- ii. Increase itemprice for each by 10%
`update itemmast set itemprice=itemprice*1.1;`
- iii. Delete the records where itemprice is more than 200
`delete from itemmast where itemprice>200;`

30 A list, **items** contain following record as list elements [itemno, itemname, stock]. 3

Each of these records are nested to form a nested list.

Write the following user defined functions to perform the following on a stack **reorder**

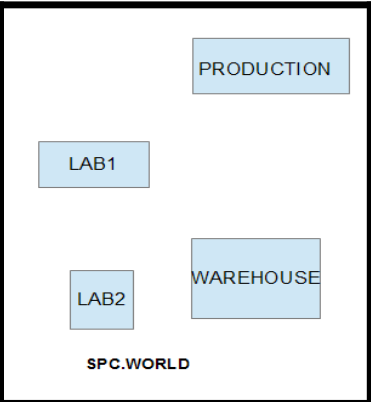
- i. **Push(items)** it takes the nested list as its argument and pushes a list object containing itemno and itemname where stock is less than 10
- ii. **Popitems()** It pops the objects one by one from the stack reorder and also displays a message 'Stack empty' at the end.

```
>>> items=[[101,'abc',8],[102,'gg',12],[103,'tt',5],[104,'yy',15]]
>>> reorder=[]
>>> def Push(items):
for i in items:
if i[2]<10:
    reorder.append([i[0],i[1]])
```

```
>>> Push(items)
>>> reorder
[[101, 'abc'], [103, 'tt']]
```

```
>>> def Popitems():
while len(reorder):
    print(reorder.pop())
else:
    print("Stack empty")
```

```
>>> Popitems()
[103, 'tt']
[101, 'abc']
Stack empty
>>>
```

| Section D | | 08 Marks |
|-----------|--|----------|
| 31 | <p>Write a Python program that reads a text file and copies all the words in another file if the word starts with a vowel letter.</p> <pre> >>> import os >>> os.chdir(r'c:\py01') >>> file=open("story.txt","r") >>> file1=open("story2.txt","w") >>> ss=file.readlines() >>> ss ['this Is a line the and this Are \n', 'atwo words that is the this a\n', 'this is a Eline the and this are \n', 'two words that is the this a\n', 'ethis Uis a line the and this are \n', 'Itwo words that is Othe this a'] >>> for i in ss: if i[0] in 'aeiouAEIOU': file1.write(i) 30 35 30 >>> file.close() >>> file1.close() >>> file1=open("story2.txt","r") >>> x=file1.readlines() >>> x ['atwo words that is the this a\n', 'ethis Uis a line the and this are \n', 'Itwo words that is Othe this a'] </pre> | 4 |
| 32 | <p>Create a binary file to store a mapping data type say name and roll number. Also write another function that search for a given roll number and display the name. If not found displays an error message.</p> <pre> >>> student={1:'abc',2:'def',3:'ghi'} >>> import pickle >>> import os >>> os.chdir(r'c:\py01') >>> file=open("ssppcc.dat","wb") >>> pickle.dump(student,file) >>> file.close() >>> file=open("ssppcc.dat","rb") >>> s=pickle.load(file) >>> s {1: 'abc', 2: 'def', 3: 'ghi'} >>> for i in s: if i==2: print(s[i]) def </pre> | 4 |
| Section E | | 15 Marks |
| 33 |  <pre> graph TD LAB1 --- LAB2 LAB1 --- PRODUCTION LAB2 --- WAREHOUSE subgraph SPC_WORLD [SPC.WORLD] LAB1 LAB2 PRODUCTION WAREHOUSE end </pre> | 1*5=5 |

| | | |
|----|--|---|
| | <p>SPC.WORLD is a research facility in Aurach in Kitzbühel Austria that pioneers in promoting world class electronic gadgets that can withstand subfreezing temperature and can be installed in remote facilities throughout the world. A rough sketch of the campus is shown here with some additional parameters. You have to answer the subsequent queries based on it</p> <p>Distance in meters LAB1 to LAB2 68 m LAB1 to WAREHOUSE 28 m LAB1 to PRODUCTION 45 m</p> <p>LAB2 to PRODUCTION 100 m LAB2 to WAREHOUSE 18 m</p> <p>WAREHOUSE to PRODUCTION 95 m</p> <p>NO of Interconnected devices (as PCs etc) PRODUCTION 24 LAB1 88 LAB2 20 WAREHOUSE 16</p> <ol style="list-style-type: none"> Where can we place the Server? LAB1 Draw a star topology in connecting the campus emanating from the place where Server is housed. What device can be used to connect the PCs in any of the facilities? SWITCH How to connect economically this campus in Austria with the one located in Germany? INTERNET-5G Where the firewall should be placed in the campus? LAB1 | |
| 34 | <p>Write a Python program using mysql connector to display all columns from a table itemmast under item database (both exists) and display all records from itemmast. The program will update the table by changing the price of an item and finally display the altered updated records. For example it will display the structure as below</p> <pre>('item_no', 'int(11)', 'NO', '', None, '') ('item_name', 'varchar(30)', 'YES', '', None, '') ('item_manuf', 'varchar(30)', 'YES', '', None, '') ('item_pr', 'int(11)', 'YES', '', None, '') ('item_qy', 'int(11)', 'YES', '', None, '')</pre> <p>Display all records</p> <pre>(10, 'laptop', 'pineapple', 287496, 36)</pre> | 5 |

| | | |
|----|---|---|
| | <pre> (11, 'printer', 'HP', 30666, 87) (12, 'wireless mouse', 'HP', 3066, 287) (13, 'mouse', 'HP', 550, 450) Update a record say change price to 1200 for itemno 12 (10, 'laptop', 'pineapple', 287496, 36) (11, 'printer', 'HP', 30666, 87) (12, 'wireless mouse', 'HP', 1200, 287) (13, 'mouse', 'HP', 550, 450) >>> import mysql.connector >>> spcdatabase=mysql.connector.connect(user='root', host='localhost', password=' ', database='item') >>> spccur=spcdatabase.cursor() >>> spccur.execute('show columns from itemmast') >>> for i in spccur: print(i) #OUTPUT WILL COME HERE >>> spccur.execute('select * from itemmast') >>> for i in spccur: print(i) #OUTPUT WILL COME HERE >>> spccur.execute('update itemm set itemprice=1200 where itemno=12') >>> spccur.execute('select * from itemm') >>> for i in spccur: print(i) #OUTPUT WILL COME HERE </pre> | |
| 35 | Write the MySQL queries for I to iii and outputs for iv and v taking into consideration the tables shown below | 5 |

```
mysql> select * from suppliers;
```

| suppid | suppname | whats |
|--------|--------------------|-----------------|
| 101 | oracle corp | db software |
| 102 | macrosoft corp | os software |
| 103 | that games company | gaming software |
| 104 | spc unlimited | routers |

```
4 rows in set (0.02 sec)
```

```
mysql> select * from orders;
```

| ordid | orddt | suppid | qty | rem | ival | totval |
|-------|------------|--------|-----|------------------|-------|--------|
| 1001 | 2022/11/26 | 104 | 20 | all is very well | 20000 | 200000 |
| 1002 | 2022/11/26 | 104 | 10 | all is very well | 20000 | 100000 |
| 1003 | 2022/11/25 | 101 | 6 | all is very well | 2100 | 12600 |
| 1004 | 2020/11/25 | 102 | 7 | all is very well | 5000 | 3500 |
| 1005 | 2022/11/24 | 103 | 2 | all is very well | 4000 | 8000 |

```
5 rows in set (0.05 sec)
```

- To drop the column rem in orders table
`alter table orders drop column rem;`
- To find the sum of the totval for the day 2022/11/26
`select sum(totval) from orders where orddt='2022/11/26';`
- Display all suppname from suppliers having the alphabet 'o'
`select * from suppliers where suppname like '%o%';`
- select distinct suppid from suppliers natural join orders;
`mysql> select distinct suppid from suppliers natural join orders;`

| suppid |
|--------|
| 101 |
| 102 |
| 103 |
| 104 |

- select orddt from orders order by orddt desc;

| orddt |
|------------|
| 2022/11/26 |
| 2022/11/26 |
| 2022/11/25 |
| 2020/11/25 |
| 2022/11/24 |