Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

CT

Section Id :	640653142685
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	15
Number of Questions to be attempted :	15
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653401911
Question Shuffling Allowed :	No

Question Number : 1 Question Id : 6406532180726 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : COMPUTATIONAL

THINKING (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406537087440. ✔ Yes

6406537087441. ✖ No

Question Number : 2 Question Id : 6406532180727 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

Scores

SeqNo	Name	Gender	DateOfBirth	TownCity	Mathematics	Physics	Chemistry	Total
0	Bhuvanesh	M	7 Nov	Erode	68	64	78	210
■ ■ ■								
29	Naveen	M	13 Oct	Vellore	72	66	81	219

Words

SeqNo	Word	PartOfSpeech	LetterCount
0	It	Pronoun	2
■ ■ ■			
64	cane.	Noun	4

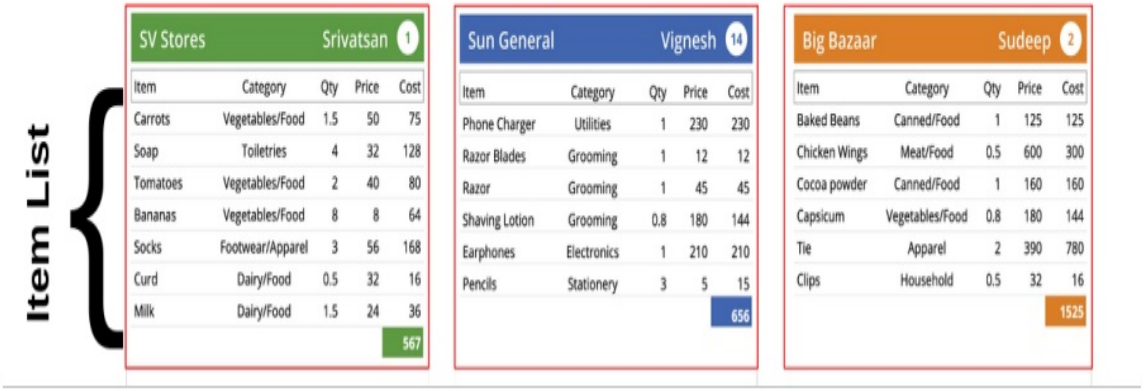
Library

SeqNo	Name	Author	Genre	Language	Pages	Publisher	Year
0	Igniting Minds	Kalam	Nonfiction	English	178	Penguin	2002
■ ■ ■							
29	Malgudi Days	Narayan	Fiction	English	150	Indian Thought	1943

Olympics

SeqNo	Name	Gender	Nationality	Host country	Year	Sport	Medal
0	Karnam Malleswari	F	Indian	Australia	2000	Weightlifting	Bronze
			- - -				
49	Michael Phelps	M	American	China	2008	Swimming	Gold

Three sample cards out of 30 for Shopping Bills dataset



Options :

6406537087442. ✔ Useful Data has been mentioned above.

6406537087443. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653401912

Question Shuffling Allowed : Yes

Question Number : 3 Question Id : 6406532180728 Question Type : MCQ

Correct Marks : 5

Question Label : Multiple Choice Question

The following pseudocode is executed using the **Scores** dataset.

```
D = {}

while (Table 1 has more rows) {
    Read the first row X from Table 1
    C = X.TownCity

    if (isKey(D, C)) {
        D[C]["Count"] = D[C]["Count"] + 1

        if (X.Total >= D[C]["First"]) {
            D[C]["Second"] = D[C]["First"]
            D[C]["First"] = X.Total
        }
        else {
            if (X.Total > D[C]["Second"]) {
                D[C]["Second"] = X.Total
            }
        }
    }
    else {
        D[C] = {"First": X.Total, "Second": -1, "Count": 1}
    }

    Move X to Table 2
}

L = []
foreach C in keys(D) {
    if (D[C]["Count"] >= 2 and D[C]["First"] - D[C]["Second"] <= 10) {
        L = L ++ [C]
    }
}
```

What does **L** contain at the end of the execution?

Options :

6406537087444. ✔ Towns/cities where the highest and second highest total scores among students from that town/city differ by at most 10

6406537087445. ✖ Towns/cities where every student has a total score within 10 marks of every other student from that town/city

6406537087446. ✖ Towns/cities where the highest and second highest total scores among students from that town/city differ by more than 10

6406537087447. ✖ Towns/cities where the first two students read from that town/city differ in total score by at most 10

Sub-Section Number : 3

Sub-Section Id : 640653401913

Question Shuffling Allowed : Yes

Question Number : 4 Question Id : 6406532180729 Question Type : MCQ
Correct Marks : 3
Question Label : Multiple Choice Question
The following pseudocode is executed using the **Library** dataset.

```
D = {}
while (Table 1 has more rows) {
    Read the first row X from Table 1
    D = update(D, X)
    Move X to Table 2
}

Procedure update(D, Y)
    if (Y.Language == "English") {
        P = Y.Publisher
        if (isKey(D, P)) {
            if (Y.Year < D[P]["Year"]) {
                D[P] = {"Name": Y.Name, "Year": Y.Year}
            }
        }
        else {
            D[P] = {"Name": Y.Name, "Year": Y.Year}
        }
    }
    return (D)
End update
```

What does **D** store at the end of the execution?
Options :
6406537087448. ✔ For each publisher, the name and year of one of its earliest English books in the dataset
6406537087449. ✖ For each publisher, the name and year of one of its latest English books in the dataset
6406537087450. ✖ For each publisher, the number of English books published by it
6406537087451. ✖ For each publisher, the name and year of its earliest book, irrespective of language

Question Number : 5 Question Id : 6406532180732 Question Type : MCQ
Correct Marks : 3
Question Label : Multiple Choice Question
The following pseudocode is executed on the **Words** dataset.

```
count = 0

while(Table 1 has more rows){
    Read the first row X from Table 1
    if(X.LetterCount >= 8){
        count = count + 1
    }
    Move X to Table 2
}
```

What does `count` represent at the end of execution?

Options :

6406537087460. ✔ Total number of words having at least 8 letters.

6406537087461. ✖ Total number of nouns having at least 8 letters.

6406537087462. ✖ Total number of sentences having at least 8 words.

6406537087463. ✖ Total number of distinct words having at least 8 letters.

Question Number : 6 Question Id : 6406532180733 Question Type : MCQ
Correct Marks : 3

Question Label : Multiple Choice Question

The following procedure takes a list of integers as input.

```
Procedure DoSomething(L)
    ans = []
    while(length(L) > 0){
        ans = ans ++ [last(L)]
        L = init(L)
    }
    return(ans)
End DoSomething
```

What is returned by `DoSomething([3, 8, 1, 6])`?

Options :

6406537087464. ✖ `[3, 8, 1, 6]`

6406537087465. ✔ `[6, 1, 8, 3]`

6406537087466. ✖ `[8, 1, 6]`

6406537087467. ✖ `[6, 8, 3, 1]`

Sub-Section Number : 4
Sub-Section Id : 640653401914
Question Shuffling Allowed : Yes

Question Number : 7 Question Id : 6406532180730 Question Type : MCQ
Correct Marks : 4
Question Label : Multiple Choice Question
The following pseudocode is executed using the **Shopping Bills** dataset.

```
D = {}

while (Pile 1 has more cards) {
    Read the top card X from Pile 1
    foreach A in X.ItemList {
        C = A.Category
        if (isKey(D, C)) {
            D[C]["Amount"] = D[C]["Amount"] + A.Cost
            D[C]["Units"] = D[C]["Units"] + A.Qty
        }
        else {
            D[C] = {"Amount": A.Cost, "Units": A.Qty}
        }
    }
    Move X to Pile 2
}

foreach C in keys(D) {
    D[C]["Value"] = D[C]["Amount"] / D[C]["Units"]
}
```

What does `D[C]["Value"]` represent for a category **C**?
Options :
6406537087452. ✖ The average price of distinct item names in category C, where each item name is counted once
6406537087453. ✔ The average unit price of all purchased units belonging to category C across all bills
6406537087454. ✖ The average total bill amount of bills that contain at least one item from category C
6406537087455. ✖ The total cost of all items belonging to category C across all bills

Question Number : 8 Question Id : 6406532180731 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

The following pseudocode is executed using the **Shopping Bills** dataset. What will **D** represent at the end of the execution?

```
D = {}
while (Pile 1 has more cards) {
    Read the top card X in Pile 1
    D = updateDictionary(D, X)
    Move X to Pile 2
}

Procedure updateDictionary(D, Y)
    foreach A in Y.ItemList {
        C = A.ItemName
        if (isKey(D, C)) {
            if (isKey(D[C], Y.ShopName)) {
                if (D[C][Y.ShopName]["Price"] != A.Price) {
                    D[C][Y.ShopName]["Flag"] = True
                }
            }
            else {
                D[C][Y.ShopName] = {"Price": A.Price, "Flag": False}
            }
        }
        else {
            D[C] = {}
            D[C][Y.ShopName] = {"Price": A.Price, "Flag": False}
        }
    }
    return (D)
End updateDictionary
```

Options :

6406537087456. ✖ For an item C, and a shop S, `D[C][S]["Flag"]` is set to True if and only if the item is sold for a constant price

6406537087457. ✖ For an item C, and a shop S, `D[C][S]["Flag"]` is set to True if and only if the item is billed in more than one bill

6406537087458. ✔ For an item C, and a shop S, `D[C][S]["Flag"]` is set to True if and only if the item is sold for variable price

6406537087459. ✖ For an item C, and a shop S, `D[C][S]["Flag"]` is set to True if and only if the item is billed in exactly one bill

Sub-Section Number : 5

Sub-Section Id : 640653401915

Question Shuffling Allowed : Yes

Question Number : 9 Question Id : 6406532180734 Question Type : MSQ
Correct Marks : 4 Max. Selectable Options : 0
Question Label : Multiple Select Question
The following pseudocode is executed using the **Words** dataset. Choose all the correct statements.

```
P = 0
L = []

while (Table 1 has more rows) {
    Read the first row X from Table 1

    if (X.PartOfSpeech == "Noun") {
        (m, t) = checkWord(X)
        if (m == t) {
            P = P + 1
        }
        if (m == 0) {
            L = L ++ [X.Word]
        }
    }
    Move X to Table 2
}

Procedure checkWord(Y)
    i = 1
    j = Y.LetterCount
    match = 0
    total = 0

    while (i < j) {
        total = total + 1
        if (i-th letter of Y.Word == j-th letter of Y.Word) {
            match = match + 1
        }
        i = i + 1
        j = j - 1
    }
    return (match, total)
End checkWord
```

Options :

6406537087468. ✔ P counts nouns that are palindromes

6406537087469. ✔ Every word in L is a noun such that no pair of letters at symmetric positions (first–last, second–second-last, etc.) is the same.

6406537087470. ✖ A word whose `PartOfSpeech` is not "Noun" can still increase `P` if the word is a palindrome

6406537087471. ✔ A noun with `LetterCount` equal to 1 will always increase `P`

Question Number : 10 Question Id : 6406532180736 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The procedure **visitedShop** returns the list of names of people who have visited a particular shop in the **Shopping Bills** dataset. It accepts the shop's name as a parameter. Additionally, each customer must be represented exactly once in the returned list. The following pseudocode may have mistakes. Identify all such mistakes (if any).

```
1 Procedure visitedShop(shop)
2    S = "None"
3    while (Pile 1 has more cards) {
4        Read the top card X from Pile 1
5        if (X.ShopName == shop) {
6            if (not(isPresent(S, X.CustomerName))) {
7                S = S ++ [X.ShopName]
8            }
9        }
10        Move X to Pile 2
11   }
12   return (S)
13 End visitedShop
14
15 Procedure isPresent(L, name)
16   present = True
17   foreach x in L {
18       if (x == name) {
19           present = True
20           exitloop
21       }
22   }
23   return (present)
24 End isPresent
```

Options :

6406537087477. ✔ Error in line 2

6406537087478. ✖ Error in line 6

6406537087479. ✔ Error in line 7

6406537087480. ✔ Error in line 16

6406537087481. ✖ Error in line 18

6406537087482. ✖ Error in line 19

6406537087483. ✖ No error

Question Number : 11 Question Id : 6406532180737 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed on the **Scores** dataset. Assume `SeqNo` uniquely identifies each student.

```
A = []
B = []

while(Table 1 has more rows){
    Read the first row X from Table 1
    if(X.Mathematics >= 90){
        A = A ++ [X.SeqNo]
        if(X.Total >= 270){
            B = B ++ [X.SeqNo]
        }
    }
    Move X to Table 2
}
```

Which of the following statements are always true?

Options :

6406537087484. ✔ Every sequence number stored in `B` is also present in `A`.

6406537087485. ✔ `A` stores the sequence numbers of students whose Mathematics marks are at least 90.

6406537087486. ✖ `length(B) >= length(A)`

6406537087487. ✔ `length(A) >= length(B)`

Sub-Section Number :	6
Sub-Section Id :	640653401916
Question Shuffling Allowed :	Yes

Question Number : 12 Question Id : 6406532180735 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the **Library** dataset. Choose all the correct statements.

```
D = {}

while (Table 1 has more rows) {
    Read the first row X from Table 1
    G = X.Genre
    if (isKey(D, G)) {
        if (not(member(D[G]["Authors"], X.Author))) {
            D[G]["Authors"] = D[G]["Authors"] ++ [X.Author]
            D[G]["Pages"] = D[G]["Pages"] + X.Pages
        }
    }
    else {
        D[G] = {"Authors": [X.Author], "Pages": X.Pages}
    }
    Move X to Table 2
}
```

Options :

6406537087472. ✔ For each genre G, `D[G]["Authors"]` contains each author at most once

6406537087473. ✖ For each genre G, `D[G]["Pages"]` is the total number of pages across all books in that genre

6406537087474. ✔ If an author has three books in the same genre, at most one of those books contributes to `D[G]["Pages"]`

6406537087475. ✔ If an author has more than one book in the same genre with different page counts, `D[G]["Pages"]` may depend on the order in which the rows are read

6406537087476. ✖ For each genre G, `D[G]["Pages"]` is the sum of pages of the latest book written by each author in that genre

Sub-Section Number :	7
Sub-Section Id :	640653401917
Question Shuffling Allowed :	Yes

Question Number : 13 Question Id : 6406532180738 Question Type : SA Keyboard Layout : Inscript

Correct Marks : 4

Question Label : Short Answer Question

Consider the following procedure.

```
Procedure DoSomething(L)
    count = 0
    foreach X in L{
        if(length(X) >= 2){
            count = count + last(X)
        }
    }
    return(count)
End DoSomething
```

What is returned by

```
DoSomething([[2], [5,1], [4,7,3], [6,8]])
```

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
12

Question Number : 14 Question Id : 6406532180739 Question Type : SA Keyboard Layout : Inscript
Correct Marks : 4
Question Label : Short Answer Question
The given pseudocode is executed using a dataset having the same fields as the **Words** dataset, and contains the following words:

"I ordered this product from Gitark. I am very happy to share my review regarding this awesome product. It is not only nice to use, but also has a very cool look. I think this is the best product which can be bought in this price range."

Consider the following information:

1. `unique(L)` returns a list of unique elements of list L. For example, `unique(["think", "like", "toppers", "think"])` will return `["think", "like", "toppers"]`.

2. `comNo(L1, L2)` returns the number of common elements in lists L1 and L2.

3. Ignore the upper and lower case, and punctuation symbols while comparing with other

words.

```
positiveList = ["happy", "awesome", "nice", "fine", "best", "cool"]
posSen = 0, L = []

while (Table 1 has more rows) {
    Read the first row X in Table 1
    L = L ++ [X.Word]
    if (X.Word ends with full stop) {
        L = unique(L)
        posCount = comNo(positiveList, L)
        if (posCount >= 2) {
            posSen = posSen + 1
        }
        L = []
    }
    Move X to Table 2
}
```

What will be the value of **posSen** at the end of the execution of the above pseudocode?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number :	8
Sub-Section Id :	640653401918
Question Shuffling Allowed :	Yes

Question Number : 15 Question Id : 6406532180740 Question Type : SA Keyboard Layout : Inscript

Correct Marks : 5

Question Label : Short Answer Question

What is the value of **S** at the end of the execution of the following pseudocode?

```
Procedure modify(A)
    count = 0
    i = 1
    while (i <= length(A)) {
        if (A[i] % 2 == 0) {
            A[i] = A[i] / 2
            count = count + 1
        }
        else {
            A[i] = A[i] + 3
        }
        i = i + 1
    }
    return (count)
End modify

Procedure calculate(A, n)
    total = 0
    i = 1
    while (i <= length(A)) {
        total = total + A[i] * n
        i = i + 2
    }
    return (total)
End calculate

L = [5, 8, 3, 10, 7, 4]
C = modify(L)
S = calculate(L, C)
```

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
63