Section C Programming 50 marks

Question 16

(a) **50 (5, 5, 5, 10, 10, 15) marks**

Possible solution:

```
# Question 16(a)
# Examination Number:

# function definition used in part (v)
def is_anagram(w1, w2):
    if sorted(w1) == sorted(w2):
        return True
    else:
        return False

word1 = input("Enter the first word: ")
word2 = input("Enter the second word: ") # Solution (i)

# test whether the sorted strings are the same as each other
# if the sorted strings are the same then they must be anagrams
if (sorted(word1.upper()) == sorted(word2.upper())): # (iv)
    print(word1, "is an anagram of", word2) # (ii)
else:
    print(word1, "is NOT an anagram of", word2) # (iii)

# (v)
if (is_anagram(word1.upper(), word2.upper())):
    print(word1, "is an anagram of", word2)
else:
    print(word1, "is NOT an anagram of", word2)


# Part (vi)
phrase = input("Enter a phrase: ")
phrase_no_spaces = phrase.replace(" ", "")
if (is_anagram(word1.upper(), phrase_no_spaces.upper())):
    print(word1, "is an anagram of", phrase)
else:
    print(word1, "is NOT an anagram of", phrase)

if (is_anagram(word2.upper(), phrase_no_spaces.upper())):
    print(word2, "is an anagram of", phrase)
else:
    print(word2, "is NOT an anagram of", phrase)
```

(i) **5 marks (A-5 scale)**

5 marks	**Correct response** Correct implementation using solution above or similar.
3 marks	**Almost correct response** Correct implementation using solution above or similar but with syntax error. Attempted use of `input` function in an assignment statement Minor error in string.
2 marks	**Response with some merit** Any other reasonable attempt.

(ii) **5 marks (A-5 scale)**

5 marks	**Correct response** Correct implementation using solution above or similar.
3 marks	**Almost correct response** Correct implementation using solution above or similar but with syntax error. Attempted use of `print` function with both variables (`word1` and `word2`). Minor error in construction of string.
2 marks	**Response with some merit** Any other reasonable attempt.

(iii) **5 marks (A-5 scale)**

5 marks	**Correct response** Correct implementation using solution above or similar.
3 marks	**Almost correct response** Correct implementation using solution above or similar but with syntax error (allow use of `else`, `elif` or a separate `if` statement). Attempted use of `print` function with both variables (`word1` and `word2`). Minor error in construction of string.
2 marks	**Response with some merit** Any other reasonable attempt.

(iv) **10 marks (B-10 scale)**

10 marks	**Correct response** Correct implementation using solution above or similar.
8 marks	**Almost correct response** Correct implementation using solution above or similar but with syntax or semantic error.
5 marks	**Response about half-right** Attempt to convert the case of either variable.
3 marks	**Response with some merit** Any other reasonable attempt.

(v) **10 marks (B-10 scale)**

10 marks	**Correct response** Correct implementation using solution above or similar (even if the case is ignored).
8 marks	**Almost correct response** Any 3 of: • A call to the function `is_anagram` • Passing in the correct arguments to `is_anagram` • Correct processing of `return` value • Display result.
5 marks	**Response about half-right** Any 2 of: • A call to the function `is_anagram` • Passing in the correct arguments to `is_anagram` • Correct processing of `return` value • Display result.
3 marks	**Response with some merit** Any other reasonable attempt.

(vi) **15 marks (B-15 scale)**

15 marks	**Correct response** Correct implementation using solution above or similar.
10 marks	**Almost correct response** Any 3 of: • Phrase correctly read • Spaces removed • Processing for `word1` anagram of phrase • Processing for `word2` anagram of phrase.
5 marks	**Response about half-right** Any 2 of: • Phrase correctly read • Spaces removed • Processing for `word1` anagram of phrase • Processing for `word2` anagram of phrase.
2 marks	**Response with some merit** Any other reasonable attempt.

Coursework (90 marks in total)		
Description		***Marks***
Presentation of report	Quality of report structure and layout; evidence of student's adherence to the principles of good user interface design when creating the website.	**5**
A rationale for the approach to the brief		
Research	Shows evidence of research and investigation of the context and the task.	**10**
Response to the brief	Clearly explains choices made; offers clear rationale behind the overall design approach.	
The artefact (design, development and operation)		
Meeting the brief	The artefact is consistent with the context and theme of the brief. The requirements of the brief are met; identified end-user needs are met.	**10**
Iterative design process	Presents a design timeline with justification of key decisions; explains the iterative design approach adopted.	**15**
Computational thinking and problem solving	The construction of the artefact shows skills such as abstraction, decomposition, algorithmic thinking, evaluation and testing. The ability to systematically address and solve problems thrown up in the implementation of the design are clearly demonstrated.	**15**
Programming skills	Fundamental skills are demonstrated, such as using a modular approach, using high level data structures, testing and debugging, minimal duplication of code, readability, effective use of commenting.	**15**
Use of computing technologies and awareness of social impacts	Shows an awareness of adaptive technology; creative and appropriate use of technology; an awareness of core computer science concepts. Demonstrates an awareness of the end-user(s) and potential social impacts.	**10**
Evaluation		
Reflection	Explains the extent to which the artefact meets the design ambition; how well the needs of the envisaged end user are met.	**10**
Future development	Describes with justification how the artefact could be modified and improved.	
References		
References	You must also include references and/or a bibliography.	**0**
Summary word count		
Summary word count	Include a summary of the word count of the report, including the total word count.	**0**

Higher grade	Ordinary grade	Reference Mark	Higher Mark	Ordinary Mark
1		81 – 90	81 – 90	90
2		72 – 80	72 – 80	90
3		63 – 71	63 – 71	90
4		54 – 62	54 – 62	90
5	1	45 – 53	45 – 53	81 – 90
6	2	36 – 44	36 – 44	72 – 80
7	3	27 – 35	27 – 35	63 – 71
8	4	23 – 26	23 – 26	54 – 62
	5	18 – 22	18 – 22	45 – 53
	6	14 – 17	14 – 17	36 – 44
	7	9 – 13	9 – 13	27 – 35
	8	0 – 8	0 – 8	0 - 26

COURSEWORK – conversion from reference mark to Ordinary-level mark

For Ordinary-level candidates, the final mark is found from the reference mark as follows:

- If the reference mark is 54 or more the final mark is 90.
- If the reference mark is at least 27 but less than 54, then add 36 to the reference mark to get the final mark.
- If the reference is at least 1 but less than 27, then double the reference mark and add 9 to get the final mark.
- If the reference mark is 0 the final mark is 0.

Reference Mark	Conversion
54 or more	Award 90 marks
27 – 53	Add 36 marks
1 - 26	Multiply the reference mark by 2 and add 9 marks
0	0

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