NATIONAL OPEN UNIVERSITY OF NIGERIA,
PLOT 91 CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI – ABUJA
FACULTY OF SCIENCES

MARCH 2018 EXAMINATION

COURSE CODE: CIT 341
COURSE CREDIT: 3
COURSE TITLE: DATA STRUCTURES
TIME ALLOWED: 3 Hours
INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER FOUR (4) QUESTIONS

QUESTIONS

1a. In view of the fact that you have just completed the course on 'Data Structures', outline the procedure involved in using an array called Abuja to store 55 elements in a computer system, by means of the BASIC programming language. (4 marks)

1b. In order to assess your knowledge of 'Statements', you are required to write a suitable programme in java, to print the grade of a test score which is 65. The programme should be based on the value of a test score where an A signifies a score of 80% or above, a B signifies a score of 70% or above, a C signifies a score of 60% and above, a D signifies a score of 50% and above and an F signifies a score of 49% and below. (18 marks)

[Total = 22 marks]

2a. Give a brief explanation of the concept of 'greedy algorithm', stipulating its precise application areas.

(6 marks)

2b. Outline the procedure for forming a greedy algorithm. (6 marks)

[Total = 12 marks]

3a. Subclasses are of immense importance in data structure. Write down any six (6) ways of using this sort of class in data structures. (6 marks)

3a.State the three (3) main features of Hash functions. (6 marks)

[Total = 12 marks]

4a. Name and describe the two (2) basic operations applicable to a stack. (6 Marks)

4b. Write down the effect corresponding to the following operations:

i. **IsEmpty**
ii. **IsFull** }2 marks each = 6 marks

iii. **Initialise**

[Total = 12 marks]

5a. Dynamic programming design is quite typical in data structures. Give four (4) main steps involved this sort of design. (8 Marks)

5b. State the main distinction between public modifiers and private modifiers. (4 Marks).

[Total = 12 marks]

6a. Give a brief description of the following terms:

i. **Parameters**
ii. **Fields** }2 marks each = 6 marks
iii. **Local variables**

6b. Write down three (3) reasons to justify the statement:
'Sub allocations are considered valuable in data structures'
.

[Total = 12 marks]