ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO STATE
FACULTY OF ENGINEERING
DEPARTMENT OF COMPUTER ENGINEERING

FIRST SEMESTER EXAMINATION, 2019/2020 ACADEMIC SESSION

COURSE TITLE: INTRODUCTION TO COMPUTER TECHNOLOGY

COURSE CODE: GNE 101

EXAMINATION DATE: MARCH, 2020

COURSE LECTURER: PROF. A. OLUWATOPE & MRS. OLOWU A.

HOD's SIGNATURE

TIME ALLOWED: 3 HOURS

INSTRUCTIONS:

1. ANSWER **QUESTION ONE** AND ANY OTHER **FOUR QUESTIONS**, FIVE QUESTIONS IN ALL.
2. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM.
3. YOU ARE **NOT** ALLOWED TO BORROW ANY WRITING MATERIALS DURING THE EXAMINATION.
4. REMEMBER TO WRITE YOUR MATRIC NUMBER BOLDLY ON YOUR ANSWER BOOKLET.

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QUESTION #1

COMPULSORY (12 MARKS)

a) Oluwaferanmi is a student of Chemistry Department, she was given as assignment to perform some computations using a formula peculiar to her field. She chose the equation to compute the number of moles in a gas using n = (P*V)/(R*T). She created the variable identifiers as follows:

gas_constant = 8.314

temp_of_gas = float (input (Enter ("Enter the temperature in Kelvin")

pressure_of_gas = float (input (Enter ("Enter the pressure in atm")

volume_of_gas = float (input (Enter ("Enter the volume in cm³")

no_of_moles = (pressure_of_gas * volume_of_gas) / (gas_ratio * temp_or_gas)

print ("The number of moles of the gas is",no_of_moles)

Write a program in Python, in this form above, using a formula peculiar to your course of study.
[12 marks]

QUESTION #2   (12 Marks)

a) Evolution of digital computer comprises six (6) generations, each with unique improvements over the previous generation in the technology. Mention and explain briefly the first five (5) generations of digital computers, stating their years, unique improvements and advantages over the previous generation.   [5 marks]

b) Mention four (4) characteristics of computer system and explain in details two (2) out of them.
[3 marks]

c) What is the difference between single line, multi-line strings and comments?   [2 marks]

d) Mention stages or steps required to solve a computational problem   [2 marks]

QUESTION #3   (12 Marks)

a) What are the classifications of computer you know? Explain the differences between general-purpose computer and special-purpose computer and state two (2) examples each. [3 marks]

b) Central processing unit is part of the functional components of computer system comprising of three parts. Explain the functions of these three (3) parts.   [3 marks]

c) Given the string course = "GNE101",

     i. What will be the outcome of course[2:4]?   [2 marks]
     ii. What will be the outcome of course * 3?   [2 marks]
     iii. What will be the outcome of course + "201"?   [2 marks]

QUESTION #4 (12 Marks)

a) Discuss the following terms:

    (i) RAM (ii) ROM (iii) PROM (iv) EPROM   [4 marks]

b) Proof this Boolean expression $\neg(X \wedge Y) = \neg X \vee \neg Y$ with a truth table   [3 marks]

c) Write an algorithm or (draw a flowchart) and a Python program to accept the gender and height (in centimetre) information of a user as inputs and check if the user is qualified to enrol in the military assuming the minimum height for a female is 167cm and a male 172cm.   [5 marks]

QUESTION #5 (12 Marks)

a) What is the function of cache memory and register?   [2 marks]

b) Mention three (3) differences between algorithms and flowcharts.   [3 marks]

c) Give two differences and two similarities between a list and a tuple.   [4 marks]

d) Isaac opened a file on two occasions with the following lines:

$$File = open(\text{“textfile.txt”}, \text{“w”})$$
$$File = open(\text{“textfile.txt”}, \text{“a”})$$

What will happen if he writes into the file on the two occasions?   [3 marks]

QUESTION #6 (12 Marks)

a) Perform the following arithmetic in 2's complement;

    (i) $8_{10} - 10_{10}$ (ii) $13_{10} - 7_{10}$ [2 marks]

b) Convert 1011001_2 to decimal, octal and hexadecimal.   [3 marks]

c) What is the difference in the operation of the following operators?

    i.   // and /

    ii.   * and **

    iii.   // and %

    iv.   *= and =

    v.   << and >>   [5 marks]

d) Hammed saved the details of a student in a dictionary as

Student = {"name": "Ciroma Chukwuka Adekunle", "sex": "male", "exam": "WASSCE", "subject": "Mathematics", "score":81}

Write the lines of code to extract the name and score of the student.   [2 marks]

QUESTION #7 (12 Marks)

a) Habibath, Glory, Joel, Sayo and Angela wrote the following codes to select an item from the list.

list1 = ["abcd", 786, 2.23, "john", 70.2]. Write out the outcome of the operations (i-iv).

i. Habibath wrote list1[-1]

ii. Glory wrote list1[0]

iii. Joel wrote list1[2]

iv. Sayo wrote list1[2:4]

v. Angela wrote list1[-5]   [10 marks]

b) Differentiate between Data and Information.   [2 marks]