



**GWANDA STATE UNIVERSITY**  
**FACULTY OF ENGINEERING AND THE ENVIRONMENT**  
**DEPARTMENTS OF MINING AND METALLURGICAL**  
**COMPUTING FOR ENGINEERS**

**EMI 1203 & EMR 1203**

**Final Examination Paper**

**August 2021**

This examination paper consists of 3 pages

**Time Allowed: 3 hours**

**Total Marks: 100**

**Examiner's Name: Mr. T. Mathe**

**INSTRUCTIONS**

**Answer ALL questions in chronological order**

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**QUESTION 1**

**20**

- 
- a) Define the following terms:
- i. Programming language (2)
  - ii. Machine code (2)
  - iii. Program (2)
  - iv. Statement (2)
  - v. An instruction (2)
- b) What does the statement 'print' do? (2)
- c) What does the statement 'while' do? (2)
- d) What do the statements 'if' and 'else' do? (3)
- e) What is a computer? (3)

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**QUESTION 2**

**10**

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At Chicken Inn one can buy chicken pieces in buckets containing 6, 9 or 20 pieces. Write a Python function that accepts an integer, **num**, as an argument and decides whether or not it is possible to buy **num** chicken pieces at Chicken Inn.

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**QUESTION 3**

**25**

- 
- a) Discuss on computer malware [10]
- b) What are the functions of Arithmetic logic unit (ALU)? [5]
- c) What is the difference between application software, system software and operating system? [10]

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**QUESTION 4**

**30**

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- a) Differentiate between analog, digital and hybrid computers [10]
- b) List and describe the characteristics of a computer. [10]
- c) List and the generations of computers you have studied. [10]

A file containing data about a collection of lecturers has the following format.

Fred Smith 28000 CSEE

Jim Brown 33000

Sociology

Ann Simpson 31000 CSEE

Each line contains a first name, a second name, a salary (in pounds) and a department.

Write a complete Python program that will input

the contents of the file into a list of tuples, and output full details of the lecturers sorted by salary (smallest first) in a neatly formatted table.

The output for the data shown above would be

|            |        |
|------------|--------|
| Fred Smith | £28000 |
| CSEE       |        |

|             |           |
|-------------|-----------|
| Ann Simpson |           |
| £31000      | Sociology |

|           |        |
|-----------|--------|
| Jim Brown | £33000 |
| CSEE      |        |

You may assume that no name occupies a total of more than 20 characters and no salary has more than 6 digits.

The filename should be obtained from the user; if the file does not exist the program should terminate after displaying an appropriate message.

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**END OF EXAMINATION**