

# MATH 108• COMPUTER MATHEMATICS

## SECOND SEMESTER ASSIGNMENT TWO

Faculty: Information and Communication Technology

Issued in: Week 4

To be submitted in: Week 12

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lecturers Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

##### **INFORMATION FOR CANDIDATE**

1. This Assignment is worth **15%** of the overall semester assessment.
2. The total number of marks available for this test is **100 Marks**.

##### **INSTRUCTIONS TO CANDIDATE**

1. Answer all questions in **Sections A, B** and **C**.
2. Write all your answers in the spaces provided on the question paper.
3. If you make a mistake please put a single diagonal line through the section you wish to be ignored by the lecturer.
4. Return the answered assignment paper by the dead line.
5. No materials, electronic or hardcopy must be used without referencing.

**SECTIONA–[40 Marks]**

**Answer all the questions in this section by filling/writing in the blank spaces provided.**

|  |  |  |
| --- | --- | --- |
| **NO** | **QUESTION** | **Mark(s)** |
| **1** | Find *AB* where *A* = and *B* = | 5 |

2.

Compute: [10 Marks]

1. 6!
3. Suppose A = [5 Marks]
4. Find the determinant of A

|  |  |  |
| --- | --- | --- |
| **2** | Evaluate: (*a*) log2 8; (*b*) log2 64; (*c*) log10 100; (*d*) log3 9 | 4  1 mark for each |

a) 8 marks

b) 8 marks

**SECTION B – [30 Marks]**

**Answer all the questions in this section by filling/writing in the blank spaces provided.**

1

|  |  |  |
| --- | --- | --- |
|  | 1. Find 2*A* − 3*B*, where *A* = and *B* =      1. Suppose *u* =  *v* = *w* =   Find: (*a*) 5*u* − 2*v*; (*b*) −2*u* + 4*v* − 3*w.* | **10**  5 marks  2 marks  3 marks |

2. A box contains 8 blue socks and 6 red socks. Find the number of ways two [10 Marks]

socks can be drawn from the box if:

a. They can be any color.

b. They must be the same color.

3. Draw the logic circuit L with inputs A, B, C and output Y which corresponds to [10 Marks]

each Boolean expression:

(a)

**SECTION C – [30 Marks]**

**Answer all the questions in this section by writing in the blank spaces provided.**

1. Let a coin and a die be tossed; and let the sample space *S* consists of the 12 elements:  
 *S* = {*H* 1*, H* 2*, H* 3*, H* 4*, H* 5*, H* 6*, T* 1*, T* 2*, T* 3*, T* 4*, T* 5*, T* 6}

(*a*) Express explicitly the following events:  
 *A* = {heads and an even number}, *B* = {prime number}, *C* = {tails and an odd number}

(*b*) Express explicitly the events: (i) *A* or *B* occurs; (ii) *B* and *C* occur: (iii) only *B* occurs.

(*c*) Which pair of the events *A*, *B*, and *C* are mutually exclusive? **10 marks**

2.

|  |  |  |
| --- | --- | --- |
| **NO** | **QUESTION** | **Mark(s)** |
|  | Express the output *Y* as a Boolean expre**s**sion in the inputs *A*, *B*, *C* for the logic circuit in: (a) and (b) | **10** |

3. Express DIAGRAMATICALLY (a) *and (b) below in the usual GATES*

*(a) Y* = (*A.B’)* + (*A+C’)* *(b) Y* = (*A’+B). (B’+C)’* .

**10 MARKS**