

# **University of Eswatini**

## **Department of Computer Science**

**Examination(Main)**

**2019/2020**

**FIRST SEMESTER**

**Title of Paper: INTRODUCTION TO COMPUTER SCIENCE**

**Course Code: CSC111**

**Time Allowed: Three (3) Hours**

**Instructions:** Answer Question one and any other three Questions.

Don't write anything on the Examination Question paper.

QUESTION ONE

- a) "Technology being a two edged sword and can be used for building weapons of destruction or advancing human life". Discuss how the fourth industrial revolution can be used to advance human life in the Kingdom of Eswatini by government  
15marks
- b) Explain how to apply five bitwise operators to solve for a=10 and b =15 in Python  
10MARKS

QUESTION TWO

- a) List and explain five elements of a system 5MARKS
- b) Consider a Turing machine that has the following two instructions  
(1,0,1,2,R) and (1,1,1,1,R)

Determine its output when it is run on the following tape

.	.	b	0	1	1	b	.	.
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4MARKS

- c) Differentiates between SRAM and DRAM 3MARKS
- d) Write a python program to generate the multiplication tables below using a for loop

2x1=2    3x1=3    4x1=4    5x1=5  
2x2=4    3x2=6    4x2=8    5x2=10  
:  
:  
:  
2x12=24    3x12=36    4x12=48    5x12=60

6marks

- e) List and explain five responsibilities of a DBA 7marks

QUESTION THREE

- a) Describe the physical components of a magnetic disk. 4MARKS
- b) Convert the hexadecimal number A3D7 to Binary directly 5MARKS
- c) Write a python program to draw a square and circle with length of 100cm and radius of 200cm 8marks
- d) Write short note on four common related disciplines of computing according to Association of Computing Machinery (ACM) 8MARKS

QUESTION FOUR

- a) What in your views are the strengths and weaknesses of open source in view of the diversity of institutional contexts? 10MARKS
- b) Calculate the check digit of the ISBN 1-337-56191 5MARKS
- c) Write a python program to calculate the sum of even numbers between 1 and 100 using a for loop with if statement 10MARKS

### QUESTION FIVE

- a) A computer has 256MB of memory. Each word is 16bytes. How many bits are needed to address each single word in memory? 4MARKS
- b) Convert the octal number 642 to binary using binary coded octa 4MARKS
- c) List and explain five qualities of a good Computer Scientist 5MARKS
- d) Write a python code to sum the numbers below using a list and a loop

11,7,10, 32,41

7marks

- e) List and explain five characteristics of an algorithm 5marks

### QUESTION SIX

- a) List and explain five differences of FOSS and traditional software with the support of two examples for each 5marks
- b) What is the role of a program in a computer based on the Von Neumann Model? 3MARKS
- c) What is gained and lost when a computer is hacked? 5MARKS
- d) Write a python code to solve the system of linear equations below using an array and numpy

$$8x+3y-2z=9$$

$$-4x+7y+5z=15$$

$$3x+4y-12z=35$$

8MARKS

- e) Write short notes on the following operating system
  - i. Single-user and multitask OS
  - ii. Multi-user OS
  - iii. Network OS
  - iv. Mobile OS

4MARKS