MAKERERE UNIVERSITY

COLLEGE OF COMPUTING & INFORMATION SCIENCES

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

TEST1

CSC2118: Embedded and Real Time Systems

Date: 12th-Oct-2023

DURATION: 1 Hour

Instructions:

Answer all 11 questions; Total marks = 50; closed book test, no copying; Indicate student number, name, and stream on all answer booklets.

1. What are embedded systems? **(2 marks)**
2. What is the difference between a general-purpose micro-processor and a micro-controller? **(2 marks)**
3. What is the main difference between the Von-Neuman and Harvard computer architectures? **(2 marks)**
4. How does Security differ from Safety in embedded systems? **(2 marks)**
5. List out the 5 steps of the embedded systems design process, explaining what each step entails. **(10 marks)**
6. Is ANSI C a compiled or interpreted language? **(1 mark)**
7. What are some 3 uses pointer in C? **(3 marks)**
8. Explain 2 dangers of pointers in C **(4 marks)**
9. Fill out the values of n and x after the statements in the first column are executed **(8 marks)**

Statement	**x Before**	**n After**	**x After**
n = x++;	10		
n = ++x;	20		
n = x--;	30		
n = --x;	40		

10. Fill in the value of z after each statement execution and the name of the operation **(8 marks)**

Statement	**x**	**y**	**z After**	**Operation**
z = (x ^ y);	0xF0	0x0F		
z = (x && y);	1	2		
z = (x | y);	1	2		
z = (x & y);	1	2		

11. Assuming that p is a pointer to a variable c which is of type char, and c is stored at address 100, what are the values of p and *p after each scenario of statements in the table is executed **(8 marks)**

Statement	**c Before**	**p After**	***p After**
*p += 1;	5		
++*p;	10		
*p--;	20		
(*p)++;	40		