



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2016/2017

**FOURTH YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE IN INFORMATION
TECHNOLOGY**

CITY CAMPUS - EVENING

**CIT 412: MOBILE EMBEDDED HARDWARE AND
ARCHITECTURE**

Date: 31st July, 2017

Time: 5.30 - 8.30 pm

INSTRUCTIONS:

- Answer ALL the questions in SECTION A and ANY TWO questions from SECTION B.



SECTION A: COMPULSORY QUESTION {30 MARKS}

QUESTION 1

- a) Define Embedded System with the help of Microwave Oven as an example (4 marks)
- b) Differentiate between general purpose computers & embedded systems (8 marks)
- c) Give a classification of embedded systems (4 marks)
- d) List some applications of embedded systems (4 marks)
- e) Explain the various possible purposes of using an embedded system. (4 marks)
- f) Explain the characteristics of an embedded system (3 marks)
- g) Explain the operational quality attributes of an embedded system (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS {20 MARKS EACH}

QUESTION 2

- a) Explain the working of embedded system with respect to: (8 marks)
 - i. Washing Machine
 - ii. MICROWAVE Oven
- b) Conduct case studies for working of embedded systems for the following topics: (8 marks)
 - i. Air Conditioner
 - ii. Automobile
- c) Explain the non quality attributes of an embedded system (4 Marks)

QUESTION 3

- a) What do you mean by core of the embedded system? What is its significance? What are the possible options that can be used as a core? (6 marks)
- b) Distinguish between Microprocessor & Microcontroller (4 marks)
- c) Explain the different types of processors according to their system bus architecture (5 marks)
- d) Explain the different types of processors according to Instruction set Architecture (5 marks)

QUESTION 4

- a) Explain the different types of processors according to Endianness (6 marks)
- b) Write short note on :
 - i. DSP
 - ii. PLD
 - iii. ASIC
 - iv. COTS (8 marks)
- c) Explain Communication Interfaces with respect to embedded system (6 marks)

QUESTION 5

- a) Explain the following with example:
 - a. Onboard communication interface
 - b. Peripheral communication interface (4 marks)
 - b) Find out information and write case studies on the following communication interfaces: (8 marks)
 - i. Infrared
 - ii. WiFi
 - iii. Zigbee
 - iv. UART
- c) Explain the use of Simulators, Logic analyzers and Oscilloscopes in debugging embedded systems. (8 marks)