

BOWEN UNIVERSITY IWO, OSUN STATE
COLLEGE OF COMPUTING AND COMMUNICATION STUDIES
SOFTWARE ENGINEERING PROGRAMME
B. Sc. DEGREE, FIRST SEMESTER EXAMINATION, 2023/2024 SESSION
COURSE CODE: SEN 415 || COURSE TITLE: EMBEDDED SYSTEMS
COURSE CREDITS: 2 Units || DATE: FRIDAY 31ST JANUARY, 2024 TIME
ALLOWED: 2hours Instruction: Answer any four questions

Question One

- a. What is (i). Embedded system? (ii). Internet of things?
- b. Discuss three characteristics of embedded computing applications.
- c. Explain (i). three challenges in embedded computing system design (ii). Possible way to resolve the challenges.

Question Two

- a. Describe the four classifications of embedded systems.
- b. Provide three differences between Microprocessors and Microcontrollers.
- c. Give 3 reasons why you will (i). use microprocessors (ii). NOT use PC in your embedded system design.

Question Three

- a. Give three basic reasons why you need embedded systems design methodology..
- b. (i). Discuss five Design Considerations in embedded systems? (ii). Complete a sample requirements form to design a typical Tracker Smartwatch.

Question Four

- a. Discuss four differences between i. Harvard Processor Architecture and Von-Neumann Processor Architecture.
- b. Using suitable examples, describe (i). COTS Components. (ii). Two advantages of COTS (iii). Two disadvantages of COTS.

Question Five

- a. Describe (i). three types of memory used for Program storage in embedded system design? (ii). Operation of a Seven segment display
- b. Discuss three factors you need to consider in the selection of memory for Embedded Systems.

Question Six

- a. (i). What is Embedded Firmware? (ii). What are the two approaches available for Embedded Firmware development? (iii). Which will you recommend for a beginner? Why?
- b. Explain the roles of (i). Real Time Clock (RTC) (ii). Watchdog Timer in Embedded System.