Gedächtnisprotokoll der Klausur zur Vorlesung
Introduction to Embedded Systems

1. **Microcontroller Part**
   a. Multiple Choice:
      i. General structure
      ii. Characteristics: word width, frequency, performance
      iii. AD-, DA-conversion
   b. „Provide three realization options for counting the number of button-press events."
      i. <u>Polling</u> the button state and incrementing an <u>internal variable</u>.
      ii. Using an <u>interrupt</u> and incrementing an <u>internal variable</u>.
      iii. Using <u>built-in COUNTER facility</u> and incrementing the <u>COUNTER register</u>.
   c. "What are the advantages and disadvantages of interrupts?"
   d. "Provide three examples for internal peripherals."
   e. "Provide three techniques to bring a program to the MCU. Which debugging capabilities does one have with the corresponding approach?"
2. **PLC Part**
   a. "Transform the following Boolean expression into a FBD, LD and IL program respectively."
      i. (a || NOT b) && (b || NOT c)
   b. "Given the following Sequential Function Chart [not shown] …"
      i. Which transitions can fire? (Assume all conditions are TRUE.)
      ii. Fire one of these transitions. Which steps are (in-) active now?