

Ch3 ARM ISA Quiz ANS

1. Which ARM processor family is specifically designed for microcontroller applications and is cost-sensitive?

- A) ARM Cortex-A family
- B) ARM Cortex-R family
- C) ARM Cortex-M family
- D) ARM Cortex-X family

ANS: C) ARM Cortex-M family

2. What is the bit width of each register in ARM Cortex-M processors?

- A) 16 bits
- B) 24 bits
- C) 32 bits
- D) 64 bits

ANS: C) 32 bits

3. Which registers are considered "Low Registers" in ARM Cortex-M and can be accessed by any instruction?

- A) R0-R7
- B) R8-R12
- C) R13-R15
- D) R0-R12

ANS: A) R0-R7

4. What does the R15 register represent in ARM architecture?

- A) Stack Pointer
- B) Link Register
- C) Program Counter
- D) Status Register

ANS: C) Program Counter

5. Which instruction set was first introduced in ARM7TDMI processors in 1995?

- A) ARM32
- B) Thumb-1 (16-bit ThumB)
- C) Thumb-2
- D) ARM64

ANS: B) Thumb-1 (16-bit ThumB)

6. In ARM assembly instruction format, what is typically the first operand (operand1)?

- A) Source register
- B) Immediate value
- C) Destination register
- D) Memory address

ANS: C) Destination register

7. Which assembly directive is used to allocate one or more 32-bit words of data?

- A) DCB
- B) DCW
- C) DCD
- D) DCQ

ANS: C) DCD

8. How many ENTRY directives must be present in an ARM assembly application?

- A) Zero
- B) Exactly one
- C) At least one per source file
- D) One per subroutine

ANS: B) Exactly one

9. What does the EXPORT directive do in ARM assembly?

- A) Imports symbols from other files
- B) Declares a symbol and makes it visible to the linker
- C) Defines the end of a procedure
- D) Allocates memory space

ANS: B) Declares a symbol and makes it visible to the linker

10. Which two stack pointers does ARM Cortex-M4 support?

- A) MSP and LSP
- B) PSP and LSP
- C) MSP and PSP
- D) SSP and USP

ANS: C) MSP and PSP. Cortex-M4 supports Main SP (MSP) for privileged access and Process SP (PSP) for application access.

11. Which directive pair is used to mark the start and end of a function in ARM assembly?

- A) AREA and END
- B) PROC and ENDP
- C) ENTRY and EXIT
- D) START and STOP

ANS: B) PROC and ENDP

12. What type of access do peripheral registers use in ARM Cortex-M processors?

- A) Direct register access
- B) Memory-mapped I/O
- C) Port-mapped I/O
- D) Interrupt-driven access

ANS: B) Memory-mapped I/O

13. Which assembly directive is used to give a symbolic name to a register?

- A) EQU
- B) RN

- C) EXPORT
- D) IMPORT

ANS: B) RN

14. What does the ALIGN directive accomplish in ARM assembly?

- A) Sets register values to zero
- B) Aligns data or code to a particular memory boundary
- C) Imports external symbols
- D) Defines constant values

ANS: B) Aligns data or code to a particular memory boundary