L2 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