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