***Advanced System-on-Chip Course***

**QUIZ**

**Issue 1.0**

# MODULE 3: Arm Development Studio

**Question 1:**

What are the compiler options in Arm Development Studio for C/C++ code?

1. ARM Compiler 5 and ARM Compiler 6.
2. ARM Compiler 5.
3. ARM Compiler 5, ARM Compiler 6, and GNU compiler (GCC).
4. GNU compiler (GCC).

**Question 2:**

ARM Compiler 5 supports

1. ARMv7-A and ARMv8-A architectures.
2. ARMv6 and ARMv7 architectures.
3. all ARM architectures from ARMv4 to ARMv7 inclusive..
4. ARMv7-A and ARMv7-R architectures.

**Question 3:**

The Arm Development Studio debugger enables easy debugging of

1. bare metal, Linux, and Android applications.
2. bare metal applications. Embedded OS are not supported.
3. bare metal, Linux and Embedded Widows applications.
4. bare metal, VxWorks and FreeRTOS.

**Question 4:**

An ETMs or Embedded Trace Macrocell

1. is a hardware block of every ARM architecture-based system and is able to monitor data accesses in the processor.
2. is an optional hardware block of ARM architecture-based systems and is able to monitor both data accesses and instruction execution in the processor.
3. is an optional hardware block of ARM architecture-based systems and is able to monitor data accesses in the processor.
4. is a hardware block of every ARM architecture-based system and is able to monitor both data accesses and instruction execution in the processor.

**Question 5:**

If data tracing wants to be performed at the debugging stage

1. a debug hardware agent (DSTREAM/VSTEAM) is required.
2. a debug hardware agent and an ETM connected to the processor are required.
3. a debug hardware agent, an ETM connected to the processor, and an Embedded Trace Buffer(ETB) are required.
4. no hardware is required. Data trace can be performed on Fast Models by simulation.

**Question 6:**

Instruction trace

1. can be performed on Fast Models, because Fast Models are instruction accurate, but timing is not accurate because Fast Models are no cycle-accurate.
2. cannot be performed by simulation and a proper debug hardware is necessary.
3. can be performed on Fast Models, because Fast Models are instruction accurate, and timing will be accurate because Fast Models are cycle-accurate.
4. can be performed by simulation on FVPs but not on fast Models.

**Question 7:**

Embedded Trace Buffers (ETB)

1. are part of the ETM hardware blocks.
2. are memory-buffers located in the external debug hardware.
3. are virtual memory-buffers that are mapped in the processor data memory to collect trace data and alleviate the problem of getting-information of chip at high rates.
4. are extra on-chip memory-buffers to collect trace data and alleviate the problem of getting-information of chip at high rates .

**Question 8:**

The VSTREAM Virtual Debug Interface

1. is a model-based debugging tool that uses Fixed Virtual Platforms (FVP) as targets.
2. is a hardware-based debugging system that enables running debug sessions remotely through TCP/IP communication .
3. provides an alternative to hardware-based debugging by connecting software debuggers (DS-5) to RTL emulators and simulators .
4. is the high-end high-bandwidth version of the DSTREAM hardware debugging platform.

**Question 9:**

Arm Development Studio Streamline

1. is a software based system-wide visualizer and profiler for ARM Cortex targets.
2. is a software based system-wide visualizer and profiler for ARM Cortex-A targets running bare-metal applications.
3. is a software based system-wide visualizer and profiler for ARM Cortex-A targets running Linux or Android.
4. is a software based system-wide visualizer and profiler for ARM Cortex-M targets running bare-metal applications.

**Question 10:**

Arm Development Studio Streamline

1. is a software based solution that does not require ICE/trace units nor target hardware since it runs on Fast Models and FPVs.
2. is a software based solution that does not require ICE/trace units and runs on ARM-powered hardware targets.
3. is a hardware based solution that requires ICE/trace units and runs on ARM-powered hardware targets.
4. is a hardware based solution that requires ICE/trace units and ARM Energy Probes.

**Question 11:**

Which of the following statements is correct?

1. FPVs are fixed executable files obtained from Fast Models.
2. Fast Models are fixed executable files obtained from previously configured FPVs.
3. FPVs are configurable models used to simulate custom SoCs based on ARM and third-party IP blocks.
4. FPVs are configurable models used to simulate ARM processors.

**Question 12:**

Which of the following statements is correct?

1. It is possible to gather energy consumption data from ARM-powered hardware using Streamline and an Energy Probe.
2. It is possible to estimate energy consumption data from ARM-powered hardware using Streamline and a FPV model.
3. The Energy Probe is a high-precision data acquisition instrument to gather energy consumption data from ARM-powered hardware.
4. Supported NI-DAQ devices are a low-cost solution to gathering energy consumption data from ARM-powered hardware.

**Question 13:**

How can an application for a complex ARM-powered SoC be simulated using Arm Development Studio?

1. Only using Fast Models as targets.
2. Using Fast Models and/or FPVs as targets.
3. Only using FPVs as targets.
4. Complete SoCs cannot be simulated. Target hardware is needed.

**Question 14:**

Which of the following statements is correct?

1. DSTREAM is high-performance high-bandwidth debug hardware for real data and instruction trace.
2. ULINKpro devices are high-performance high-bandwidth debug hardware for real data and instruction trace.
3. DSTREAM, connected to RTL simulators, is high-performance high-bandwidth debug hardware for virtual tracing.
4. ULINKpro devices, connected to RTL simulators, are high-performance high-bandwidth debug hardware for virtual tracing.

**Question 15:**

ARM Arm Development Studio is built following this layer sequence (up-down):

1. Device Configuration Database, Eclipse, compiler/debugger/analyzer, simulation/hardware debug.
2. Eclipse, Device Configuration Database, compiler/debugger/analyzer, simulation/hardware debug.
3. Eclipse, compiler/debugger/analyzer, Device Configuration Database, simulation/hardware debug.
4. Eclipse, simulation/hardware debug, compiler/debugger/analyzer, Device Configuration Database.

**Answers**

Q1)3

Q2)3

Q3)1

Q4)2

Q5)2

Q6)1

Q7)4

Q8)3

Q9)3

Q10)2

Q11)1

Q12)1

Q13)2

Q14)1

Q15)3