



## HART Self-Assessment Quiz for Device Integration Workshop

- 1) **What is the definition of Primary Variable (PV)?**
  - a. 4-20 mA Loop Current
  - b. The Device Variable mapped to the first analog channel
  - c. The first floating point parameter in a HART command
  - d. The first numeric value returned by "Maximum Number of Device Variables" (Byte 12) of Command Zero.
- 2) **What is the definition of a Device Variable?**
  - a. A single parameter read from a device by any HART Command
  - b. A group of parameters providing process measurement information where one of its values changes as its connected process varies
  - c. A single parameter read from a device by HART Command 3
  - d. PV, SV, TV, QV
- 3) **What is the definition of a Dynamic Variable?**
  - a. A single parameter in a field device which is always changing
  - b. A group of parameters returned in Command 9
  - c. It is a Device Variable which is assigned to an analog channel
  - d. A single bit of a parameter read in command 48 status bytes
- 4) **Which Commands must be supported by all HART Devices**
  - a. All Universal commands: 0-30, 38 and 48
  - b. 1 or more Common Practice: 32-121, 512-767 range
  - c. 1 or more Device (manufacturer) Specific: 128-253 range
  - d. All of the above
- 5) **What is the minimum/maximum number of Dynamic Variables that a HART device supports?**
  - a. 0,1
  - b. 0,4
  - c. 1,1
  - d. 1,4
- 6) **What is the maximum (i.e., range) number of device variable codes that a HART device can support which expose its "Device Variables"?**
  - a. 4 (code 0-3)
  - b. 4 (codes 1-4)
  - c. 8 (codes 1-8)
  - d. 250 (codes 0-249)
  - e. None of the above
- 7) **What is a Device Variable code?**
  - a. A number which defines the engineering units of Device Variable's digital value
  - b. An index number used to read the Device Variable value using Command 3
  - c. A numerical address of a Device Variable which can be used to read its value and be mapped to a Dynamic Variable
  - d. b and c
- 8) **The "Device Variable Status" byte contains the following information**
  - a. "Device Family Specific Status" bits
  - b. "Process Data Status" & "Limit Status" bits
  - c. "More Status Available" bit
  - d. a and b
  - e. All of the above
- 9) **Which are Device Variable Commands?**
  - a. 1-3, 14, 15, 34-37, 40, 43-47, 49
  - b. 9, 33, 52-56, 79, 80- 83
  - c. 32-121
  - d. None of the above
- 10) **Which HART command(s) does not read a Device Variable nor Dynamic Variable value?**
  - a. Command 3
  - b. Command 9
  - c. Command 54
  - d. Command 33
- 11) **Identify a Device Variable "Classification"**
  - a. class DIAGNOSTIC
  - b. Type of Process (i.e., Pressure, Level, Temperature, Flow)
  - c. class DYNAMIC
  - d. a and c
- 12) **Which HART 7 commands are truncatable (number of response data bytes returned can be reduced) for all situations for a given HART registered Device Type and the DD needs to be modified to match?**
  - a. Command 3, 8, 9, 48, 115, 116, 119
  - b. Command 3, 8, 9, 33, 38, 48, 50- 56, 60-70, 79, 80- 83, 115, 116, 119
  - c. All Process Variable commands may be truncated
  - d. Any command may be truncated

Answers: 1)b; 2)b; 3)c; 4)c; 5)d; 6)d; 7)b; 8)c; 9)a; 10)b; 11)d; 12)a