

Accurate Metering of Water Production Flows

FINAL ASSESSMENT

The test pool is comprised of 20 to 30 questions, participants receive 10 questions that are randomly selected. They have three tries to pass the test and must have a 70% passing score to be able to print a certificate.

Question 01: Pick One

Which flow of the ones shown below is considered a production flow measured by production flowmeters?

Points	Choices
0	a. chemical process
10	b. finished (treated) water
0	c. water supplied to the largest customer
0	d. filter backwash water

Question 02: Pick One

The AWWA Free Water Audit Software calculates the “Water Supplied Volume” by taking the “Volume from Own Sources” and adding to it any “Water Imported” volume. If there is any “Water Exported” volume, should it be added or subtracted from the resulting number?

Points	Choices
0	a. added to the resulting number
10	b. subtracted from the resulting number

Question 03: Pick One

Data from production flowmeters should be entered into which section of the data-entry “Worksheet” of the AWWA Free Water Audit Software?

Points	Choices
10	a. Water Supplied
0	b. Authorized Consumption
0	c. System Data
0	d. Cost Data

Question 04: Pick One

Which of the below help make Production Flows the most important number in the AWWA Water Audit?

Points	Choices
0	a. These flows are the hardest to measure
10	b. These are the largest flows managed by the water utility
0	c. These flows always equal the annual volume of consumption by customers during the year

Question 05: Pick One

Which of the below types of meters is **NOT** a type typically used as a production flowmeter?

Points	Choices
0	a. Head-type velocity meters
0	b. Volumetric meters
10	c. Weirs on open channels
0	d. Linear velocity of inferential meters

Question 06: Pick One

TRUE or FALSE: Venturi meters employ sensing lines?

Points	Choices
10	True
0	False

Question 07: Pick One

TRUE or FALSE: Static Meters have no moving parts?

Points	Choices
10	True
0	False

Question 08: Pick One

TRUE or FALSE: Mag-meters and ultrasonic meters require electric power to operate?

Points	Choices
10	True
0	False

Question 09: Pick One

TRUE or FALSE: Electro-magnetic Meters (magmeters) function well when they are installed vertically with the flow moving downward?

Points	Choices
0	True
10	False

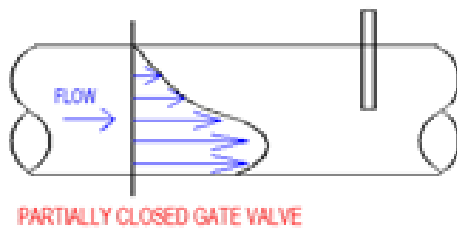
Question 10: Pick One

Which of the below are the most common “portable” meters used to test permanently installed production flowmeters?

Points	Choices
0	a. Turbine and compound meters
0	b. Nutating disk and oscillating piston meters
0	c. Propeller meters and single-jet meters
10	d. Insertion and strap-on meters

Question 11: Pick One

Is the below velocity profile a strong or weak profile for accurate flow measurement?



Points	Choices
0	a. Strong
10	b. Weak

Question 12: Pick One

What is the purpose of a flow conditioner as part of a production flowmeter installation?

Points	Choices
0	a. To balance the pH in the water
10	b. To straighten the velocity profile of the flow
0	c. To moderate the water pressure
0	d. To control flow into water storage tanks

Question 13: Pick One

Water utilities should regularly confirm the accuracy of the primary device in a production flowmeter installation by removing the meter and testing it at a certified test facility or testing it in-situ. The process of confirming the accuracy of the primary device is known as:

Points	Choices
0	a. Calibration
0	b. Certification
10	c. Verification
0	d. Clarification

Question 14: Pick One

A storage tank or clearwell drop test is a useful and inexpensive way to test the accuracy of a production flowmeter installation. However, a drop test can be conducted only if a specific flow configuration exists. This configuration is:

Points	Choices
0	a. Treatment works – production flowmeter – storage tank
10	b. Treatment works - storage tank - production flowmeter
0	c. Production flowmeter – treatment works – storage tank

Question 15: Pick One

As flowmeters wear or malfunction, they produce flow data that is less accurate. Which of the below is **NOT** a consequence of this loss of accuracy of flow data?

Points	Choices
0	a. Inaccurate billing of export water sales
0	b. Lost revenue from export water sales
10	c. A precise measure of water supplied to the distribution system
0	d. Inaccurate annual report and usage estimates
0	e. Errors in the data in the annual water audit

Question 16: Pick One

What does UME stand for?

Points	Choices
0	a. Utilizing Mass and Energy
0	b. Unified Mobilization Effort
10	c. Unitized Measuring Element
0	d. United Manufacturers Entity

Question 17: Pick One

When production flowmeter data are collected continuously using a Supervisory Control and Data Acquisition (SCADA) system, or similar system, gaps in the data (data gaps) can occur due to:

Points	Choices
0	a. Unplanned interruption: lightning strike, power failure
0	b. Planned interruption: instrumentation calibration
0	c. SCADA system communications equipment failure
10	d. All of the above

Question 18: Pick One

A data error resulted in the volume from a production flowmeter being over-stated for a year. This resulted in the calculated volume of Non-revenue water being _____ than a NRW level that would have been registered had the flowmeter data been very accurate.

Points	Choices
10	a. Higher
0	b. Lower

Question 19: Pick One

TRUE or FALSE: In order to employ the Mass Balance Method, the water utility must have at least two production flowmeters existing in series to compare the flow data of the flowmeters.

Points	Choices
10	a. True
0	b. False

Question 20: Pick One

Water utilities can ensure accurate production flowmetering over the long-term by conducting which of the below activities?

Points	Choices
0	a. Leaving production flowmeters alone to function as they have been for many years
10	b. Flowmeter repair, rotation, and replacement in appropriate manners
0	c. Deactivate your old production flowmeters and estimate the flow going through the pipelines