

Operator Quiz Test No. 106 – Pumps, Equipment and Safety

The following questions are designed for trainees as they prepare to take the ABC wastewater operator test. It is also designed for existing operators to test their knowledge. Each issue of *Clear Waters* will have more questions from a different section of wastewater treatment. Good Luck!

1. A pump with a mechanical seal has developed a leak at the gland. What could be causing this?:
 - a. The pump packing has failed allowing water to slowly drip out.
 - b. The pump ran dry ruining the seal faces.
 - c. This is normal operation for mechanical seals.
 - d. When the seal spring was installed, it allowed pressure between the two seal parts allowing water to leak out.
2. How does maintaining a standard three-phase, single speed, synchronous AC motor compare to maintaining a standard three-phase, variable-speed AC motor?
 - a. The single speed motor does not need cleaning and lubrication included in its preventative maintenance program.
 - b. The single speed motor does not need testing of electrical circuits included in its preventative maintenance program.
 - c. The single speed motor does not need attention to slip rings and carbon brushes included in its preventative maintenance program.
 - d. The variable-speed motor does not need lubrication or slip ring and carbon brush attention included in its preventative maintenance program.
3. When inspecting an electrical motor it is noticed that a film has developed on the slip rings. What should be the next course of action?
 - a. What is seen is oxidation of the slip rings and it should be completely removed for proper operation of the motor.
 - b. What is seen is oxidation of the slip rings and it should remain on the slip rings for proper electrical flow.
 - c. What is seen is oxidation of the brushes and the brushes should be replaced immediately.
 - d. What is seen is mechanical wear of brushes due to light pressure between the slip ring and brushes. The brushes need to be properly adjusted on the slip rings.
4. When inspecting a failed pump, it is found that the main cause of failure was damage of the bearings due to brinelling. This can best be described as:
 - a. Misalignment of the bearing during installation
 - b. Over lubrication of the bearing with incorrect lubrication
 - c. Under lubrication of the bearing resulting in contamination
 - d. Dents formed in the bearing race or bearing
5. An automatic controller excessively starts and stops an induction motor. The resulting short cycling causes the motor to fail. This failure is most commonly due to:
 - a. An automatically controlled induction motor only has a limited amount of start sequences.
 - b. Increased frequency of increased amps at startup overheated the internal winding.
 - c. Decreased frequency of planned shutdowns for maintenance
 - d. Internal contaminants due to insulation failure
6. The packing gland is pulled from the stuffing box of a locked out and tagged out centrifugal pump and excessive leakage occurs. What should be the next course of action?
 - a. After removing the packing and determining it was not the cause, examine the shaft sleeve and replace if scored or grooved.
 - b. Remove the packing, examine the alignment of shaft, realign if necessary
 - c. Check bearings for wear and rough spots
 - d. Check operating temperature of bearings before startup
7. How do Material Safety Data Sheets (MSDS) differ from Safety Data Sheets (SDS)?
 - a. SDSs are not concerned with the composition and handling of liquid chemicals.
 - b. MSDSs do not outline the dangers of specific chemicals and substances.
 - c. SDSs will be obsolete in 2015.
 - d. SDSs serve the same purpose of MSDSs, however, they are formatted to a standardized 16 section Global Harmonized System.
8. Which of the following is not required when entering a permit required confined space?
 - a. Wearing appropriate Personal Protective Equipment (PPE)
 - b. Testing for atmospheric hazards to determine acceptable conditions are maintained
 - c. An attendant to monitor personnel and air quality in the confined space
 - d. MSDSs for chemicals in the plant
9. A wall mounted gas meter display is reading high levels of H₂S and dangerous LEL and the alarm is not going off. After further inspection it was found that the alarm wire was disconnected. The most appropriate immediate action would be:
 - a. Ignore the gas readings – the alarm was disabled most likely due to false readings.
 - b. Obtain all necessary tools to re-attach the wires and recalibrate the meter.
 - c. Leave the area immediately and contact the proper personnel.
 - d. Obtain a portable gas meter to compare to wall mounted display.
10. Liquid Sodium Hypochlorite, NaOCl, is commonly used for disinfection of final effluent waters. Which of the following statements about this material is INCORRECT?
 - a. If mixed with acids, chlorine gas may be released from the solution.
 - b. If mixed with organic compounds, explosive and volatile organic compounds could form.
 - c. If mixed with wastewater, fecal counts may increase.
 - d. NaOCl exists as sodium and hypochlorite ions in water.
11. An inline grinder is found to be tripped and needs to be addressed. The most proper first step is to:
 - a. Electrically reverse the rotation to clear obstruction.
 - b. Remove the inspection plate and inspect with a flashlight and prodding rod.
 - c. Properly shut down the piece of equipment and lock and tag out.
 - d. Isolate the grinder by closing the suction and discharge valves.
12. The common practice of tailgate safety is most commonly described as:
 - a. Short reminders and continued conversation with employees on the importance of safety, safe conditions and procedures, and reviews of potential hazards
 - b. Making sure nobody trips over the cooler
 - c. Assuring the bungee cords are properly attached to the truck bed supports
 - d. Structured hour-long classes discussing a multitude of safety issues

Answers: 1 B, 2 C, 3 B, 4 D, 5 B, 6 A, 7 D, 8 D, 9 C, 10 C, 11 C, 12 A

For those who have questions concerning operator certification requirements and scheduling, please contact Tanya May Jennings at 315-422-7811 ext. 4, tnj@nywea.org, or visit www.nywea.org/OpCert.