

ELECTRICAL REPAIRMAN EXAMINATION

Study Materials For Pump Practical Station #5

ELECTRICAL REPAIRMAN EXAMINATION

A. Practical Pump Station No. 5

Review and knowledge of State and Federal permissibility requirements are needed to complete this exam.

This station will require the applicant to be able to recognize and document basic permissibility violations and hazards. This station will include a breaker assembly, cathed and cable, pump starter box assembly and pump cable with permissible pump...

The student will be required to document deficiencies by visual examination only. Use any test equipment available and wear safety equipment supplied. You will have twenty (20) minutes to complete this station.

Enclosed is an example of two sample test that may be used.

This is a visual examination only.

STUDY MATERIALS

DEPARTMENT OF MINES, MINERALS AND ENERGY
DIVISION OF MINES

ELECTRICAL REPAIRMAN STUDY MATERIAL STATION NO. 5

Circuit Breaker and Pump Instruction Sheet (PP) STUDY MATERIALS

You are a certified electrician at Bad Luck Coal Co., Mine # 1. You have been assigned to do the weekly electrical examination on the 001 section. You have twenty (20) minutes to complete this station.

You **MUST**:

- Perform a weekly examination of the circuit breaker panel which includes the cat-head, power cable, starting box, and pump and pump cable.
- Identify deficiencies or hazardous conditions found
- Perform the examination in a safe manner

Note: Your work is limited to the face of the circuit breaker panel and the cable, starting box, pump cable and pump.

The instructor may only clarify any question you may have.

The instructor is not allowed to discuss the results with you.

You have a maximum of 20 minutes to complete this station.

You may use any test equipment provided.

You will be deducted five (5) points if you disconnect the cat head prior to de-energizing the circuit breaker.

STUDY MATERIALS

DEPARTMENT OF MINES, MINERALS AND ENERGY

DIVISION OF MINES

ELECTRICAL REPAIRMAN EXAMINATION

(PP)-STATION NO. 5

PUMP AND BREAKER TROUBLE SHOOTING

You are required to examine the circuit breaker, cat-head, trailing cable and Pump. Mark only the appropriate blocks of the deficiencies that you find. Inappropriate blocks marked will be discounted. Student has twenty (20) minutes to complete this station. When student begins this station the circuit breaker will be energized and the magnetic trip settings will be on HI. You will be provided necessary meters, gloves and safety glasses to perform this station. You will be given a list of conditions selected from below to identify by both visual observations and with meter test equipment. THIS IS A VISUAL EXAMINATION ONLY!!!!!!!

EXAMPLES OF POSSIBLE DEFICIENCIES.

- The cathead is frame grounded
- The breaker is the right size for the attached cable
- The cathead has the proper rubber bushing
- The cathead has the proper identification
- Latching plate missing on top of cat-head
- The pump has an approval tag as permissible
- The pump is rated for 460 volts
- The ground lug in the cathead will break last
- The ground monitor circuit is bridged out
- The pump is a 5 horsepower pump
- The pump is a 3 phase pump
- The breaker is marked for identification
- There are 50 feet of cable between the pump and starting box
- Magnetic trip (short circuit) is the correct magnetic trip
- Trailing cable is an approved cable
- The starting box for the pump is not permissible
- The cat-head will remain latched when coupled
- The circuit breaker handle has a hole drilled through it
- The circuit breaker handle is broken
- Jumper wire connected from ground monitor to receptacle
- Exposed power conductor where trailing cable enters cat-head
- The pump cable is too long
- Ground lug is installed in the wrong place in the cathead
- The cable is properly packed at the pump
- Trailing cable is flame resistant
- All the packing nuts are secured against loosening

STUDY MATERIALS

DEPARTMENT OF MINES, MINERALS AND ENERGY DIVISION OF MINES

ELECTRICAL REPAIRMAN EXAMINATION STATION NO. 5

PUMP STATION

Each of the four units will have nonpermissible deficiencies. Discrepancies may include but not limited to enclosure flange openings, bolts and washers, packing gland installation, conduit clamps, safety plugs, safety wire, etc.

You are required to examine the explosion-proof enclosures and identify nonpermissible deficiencies on the four units and associated conduit. Student has twenty (20) minutes to complete this station.

EXAMPLES OF POSSIBLE DEFICIENCIES.

BREAKER PANEL

1. The panel is not labeled for identification
2. The magnetic trip SETTING IS INCORRECT is the wrong one for the cable
3. Ground and monitor has a bridge wire inserted.
4. The latch plate is broken on the female receptacle bracket.

CATHEAD AND CABLE

1. The ground monitor is bridged out
2. The cable is bushed properly
3. The ground lug is in the wrong place
4. Is the cable the proper size?

STARTING SWITCH BOX

1. All of the packing nuts are not secured against movement
2. The packing nut has no packing
3. There is a lock washer missing
4. Gap exceeding .004 in the plane flange joint

PUMP AND PUMP CABLE

1. The packing nut is not secured against movement
2. The permissible tag is missing
3. Exposed conductor wires
4. Is the supplied cable fireproof?