**Pennsylvania Mining Law**

**Section 300: Electrical Test Questions**

1. If methane gas is found at \_\_\_\_\_\_\_ or greater, the individual in charge shall immediately stop the machine, cut off the current at the nearest switch and report the matter to a mine official.

a. 1.0%\*

b. 1.5%

c. 2.0%

d. none of the above

2. Methane monitors shall be maintained in permissible and proper operating conditions and shall be calibrated with a known airmethane mixture at least \_\_\_\_\_\_\_\_\_\_.

a. once each operating shift

b. once each week

c. once every 31 days\*

d. once each month

3. Retain the record of calibration tests of methane monitors for two years from the date of the test.

a. True

b. False\* (one year)

4. When the methane concentrations at any methane monitor reach 1%, the monitor shall give a warning signal. The warning signal of the methane monitor shall be audible to the mining machine operator.

a. True

b. False\* (the warning signal shall be visible)

5. A gas check shall be completed in accordance with this act if at any time the methane concentrations at any methane monitor reach \_\_\_\_\_\_\_\_.

a. 1.0%

b. 1.5%\*

c. 2.0%

d. none of the above

6. The methane monitor shall automatically deenergize electric equipment or shut down diesel powered equipment when the methane accumulation reaches \_\_\_\_\_\_\_\_ or the methane monitor is not operating properly.

a. 1.0%

b. 1.5%

c. 2.0%\*

d. none of the above

7. All electric motors and cables in mechanical sections shall have all excessive coal dust removed from their exterior surfaces once \_\_\_\_\_\_\_\_\_\_.

a. each week

b. each shift

c. each operating shift\*

d. each month

8. Underground electrical installations shall be ventilated with intake air that is monitored for carbon monoxide or smoke by an atmospheric monitoring System installed and operated according to 30 CFR \_\_\_\_\_\_\_\_\_\_ (relating to atmospheric monitoring systems).

a. § 75.341

b. § 75.300

c. § 75.328

d. § 75.351\*

9. At underground electrical installations, sensors shall de-energize power to the installation, activate a visual and audible alarm located outside of and on the intake side of the enclosure when the temperature in the noncombustible structure reaches \_\_\_\_\_\_\_\_\_\_.

a. 150 degrees Fahrenheit

b. 165 degrees Fahrenheit\*

c. 140 degrees Fahrenheit

d. 135 degrees Fahrenheit

10. At underground electrical installations, sensors shall de-energize power to the installation when the carbon monoxide concentration reaches \_\_\_\_\_\_\_\_\_\_ above the ambient level for the area, or the optical density of smoke reaches .022 per meter.

a. fifteen parts per million

b. ten parts per million\*

c. twenty-five parts per million

d. fifty parts per million

11. Electric lamps, when used in face areas of any mine, shall be installed in \_\_\_\_\_\_\_\_\_\_ enclosures.

a. fire-proof

b. water-proof

c. explosion-proof\*

d. permissible

12. Underground photography using flash bulbs or other sources of artificial illumination shall be prohibited unless immediately preceded by an examination for gas by a mine foreman, assistant mine foreman or mine examiner and the place found safe.

a. True\*

b. False

13. Telephone service or equivalent two-way communication facilities shall be provided in all mines between the surface and each working section that is more than \_\_\_\_\_\_\_\_\_\_ from the main portal.

a. 750 feet

b. 1,000 feet

c. 1,500 feet\*

d. 3,000 feet

14. In the face areas of any mine, the potential used for signal purposes shall not exceed \_\_\_\_\_\_\_\_\_\_, and bare wires shall not be used for signal circuits.

a. 18 volts

b. 12 volts

c. 24 volts\*

d. 36 volts

15. The voltage on signal circuits confined to intake air and using insulated conductors may be greater than 36 volts, but shall not exceed 125 volts average.

a. True

b. False\* (may be greater than 24 volts)

16. In no case shall the potential used in the trolley system be higher than \_\_\_\_\_\_\_\_\_\_.

a. 480 volts

b. 600 volts\*

c. 1,000 volts

d. 24 volts

17. Disconnecting switches shall be installed underground in all main direct-current power circuits within 500 feet of the bottom of shafts, boreholes or at other places where main power circuits enter a mine.

a. True\*

b. False

18. On main haulage roads, both rails shall be bonded, except welded track, and cross bonds shall be placed at points not to exceed \_\_\_\_\_\_\_\_\_\_ apart.

a. 200 feet\*

b. 500 feet

c. 600 feet

d. 1,000 feet

19. All trolley wires and feeder lines installed on underground haulage roads shall be placed as far to one side of the passageway as is practicable, but not less than \_\_\_\_\_\_\_\_\_\_ outside of line of rail, and securely supported upon hangers which shall not be more than \_\_\_\_\_\_\_\_\_\_ apart and efficiently insulated.

a. twelve inches, 36 feet

b. six inches, 24 feet\*

c. six inches, 12 feet

d. twelve inches, 12 feet

20. In all mines, trolley and feeder wires shall not extend beyond the last open crosscut and shall be kept at least 150 feet from open pillar workings.

a. True\*

b. False

21. Switches or circuit breakers shall be provided on haulage roads to de-energize all trolley and feeder lines at intervals not to exceed \_\_\_\_\_\_\_\_.

a. 200 feet

b. 500 feet

c. 1,000 feet

d. 2,000 feet\*

22. Temporary connections for portable equipment may be made through circuit breakers.

a. True

b. False\* (fused trolley taps)

23. Safety ground and negative connections for temporary or permanent installations shall be made at two separate points, at least twelve inches apart.

a. True

b. False\* (at least six inches)

24. At all landings and partings or other places where individuals are required to regularly work or pass under trolley or other bare power wires, which are placed less than six and one-half feet above top of rail, a suitable protection shall be provided. This protection shall consist of placing boards along the wire, which boards shall not be more than \_\_\_\_\_\_\_\_\_\_ apart nor less than \_\_\_\_\_\_\_\_\_\_ below the lowest point of the wire.

a. six inches, four inches

b. five inches, two inches\*

c. six inches, two inches

d. twelve inches, four inches

25. It shall be unlawful to run or operate a locomotive, fed directly or indirectly from a trolley wire, by the open entrances to worked out places wherein the pillars have been drawn or places in which the pillars have not been drawn but in places where the roof has collapsed.

a. True\*

b. False

26. Secondary or underground transmission voltage shall not exceed \_\_\_\_\_\_\_\_\_\_ volts, nominal, phase to phase.

a. 15,000\*

b. 12,000

c. 2,000

d. 10,000

27. An outdoor substation shall include ground fault-current limiting resistor capable of continuously limiting ground fault current to \_\_\_\_\_\_\_\_\_\_ or less.

a. 15 amperes

b. 50 amperes

c. 25 amperes\*

d. 12 amperes

28. An outdoor substation shall include a neutral or primary ground bed located at least \_\_\_\_\_\_\_\_\_\_ away from the station ground at its closest point and to which shall be connected only the inby or load end of the neutral current limiting resistor.

a. 15 feet

b. 10 feet

c. 25 feet\*

d. 24 feet

29. Ground bed resistance shall be measured at least every six months and appropriate action taken to assure the maintenance of four amperes or less of ground bed resistance.

a. True

b. False\* (four ohms)

30. At locations where cables cross haulageways or travelways or where equipment must pass over or under the cable, the cables shall be either installed in a trench in the roof, protected by some mechanical means or buried at least \_\_\_\_\_\_\_\_\_\_ below combustible material and adequately protected from crushing by the weight of equipment passing over it.

a. 24 inches

b. 12 inches\*

c. 18 inches

d. 10 inches