Pennsylvania Mining Law
Questions and Answers

Mine Gases

121. What gas is most likely found above a pillar fall?

A. carbon monoxide
B. methane
C. carbon dioxide
D. hydrogen sulfide

122. Which gas can accumulate along the bottom in unventilated areas?

A. carbon monoxide
B. methane
C. carbon dioxide
D. hydrogen sulfide

123. Carbon dioxide is detected by _____.

A. feeling light headed
B. flame safety lamp
C. carbon dioxide detector
D. chemical analysis

124. Carbon dioxide is a colorless, odorless gas formed by the chemical combination of _____.

A. carbon and oxygen
B. carbon and dioxin
C. carbon and methane
D. none of the above

125. Carbon dioxide is a product of incomplete combustion.

A. true
B. false

126. Is carbon dioxide combustible?

A. yes
B. no

127. What supports the chemical reaction that produces fires and explosions?

A. carbon monoxide
B. carbon dioxide
C. oxygen
D. hydrogen sulfide

128. What is the normal percentage of oxygen found in the atmosphere?

A. 79.2%
B. 20.9%
C. 19.5%
D. 17.0%

129. _____ is a tasteless, odorless and colorless gas that neither support life or combustion.

A. Oxygen
B. Hydrogen sulfide
C. Nitrogen
D. none of the above

130. Where might accumulations of carbon dioxide be found?

A. along the roof line
B. at the face area
C. near the floor at inadequately ventilated places
D. near standing bodies of water

131. Carbon Dioxide is a product of complete combustion.

A. true
B. false

132. The specific gravity of carbon dioxide is _____.

A. 0.555
B. 0.967
C. 1.192
D. 1.529

133. There can be a mine fire without the presence of oxygen.

A. true
B. false

134. _____ is a phenomenon by which gases mix by natural forces.

A. Stratification
B. Homodulation
C. Integration
D. Diffusion

135. CH_4, CO and H_2S are all explosive gases.

A. true
B. false

136. The gas which is generated from a storage battery is _____.

A. CH_4
B. H_2S
C. H_2
D. N_2

137. Any gas which is harmful to life when inhaled is an obnoxious gas.

A. true
B. false

138. What mine gas can be detected by odor?

A. sulfur dioxide
B. hydrogen sulfide
C. hydrogen dioxide
D. hydrogen monoxide

139. What does the presence of CO in a sealed mine indicate?

A. large amounts of water
B. methane liberation
C. a roof fall
D. a fire

140. What is the specific gravity of hydrogen sulfide?

A. 0.555
B. 0.967
C. 1.191
D. 1.529

141. What is the explosive range of hydrogen sulfide?

A. 5% to 15%
B. 4.3% to 45%
C. 12% to 74%
D. 45% to 72%

142. The specific gravity of sulfur dioxide is _____.

A. 1.192
B. 1.529
C. 2.263
D. 3.074

143. A diffused atmosphere is easier to detect gases than a stratified atmosphere.

A. true
B. false

144. A person will breathe faster and deeper while working in ____% of 0_2?

A. 79.2%
B. 20.9%
C. 19.5%
D. 17.0%

145. Is nitrogen combustible?

A. yes
B. no

146. Nitrogen has no effect toward propagating an explosion.

A. true
B. false

147. What is the ignition temperature of nitrogen?

A. 1100 to 1300 degrees F.
B. 1100 to 1380 degrees F.
C. 700 degrees F.
D. nitrogen has no ignition temperature

148. The threshold limit value for oxides of nitrogen is _____.

A. 5 ppm
B. 10 ppm
C. 50 ppm
D. 81 ppm

149. The threshold limit value of nitrogen is _____.

A. 5%
B. 10%
C. 50%
D. 81%

150. Mine air should not contain less than _____% 0_2.

A. 19.5
B. 17.0
C. 16.5
D. 16.0

151. The threshold limit value of H_2S is _____.

A. 5 ppm
B. 10 ppm
C. 50 ppm
D. 81 ppm

152. What supports the chemical reaction that produces fires and explosions?

A. carbon monoxide
B. carbon dioxide
C. oxygen
D. hydrogen sulfide

153. How is sulfur dioxide formed in a mine?

A. by burning coal containing pyrites
B. by rotting timbers and wooden pipes
C. by charging batteries underground
D. it is a by-product of methane

154. The specific gravity of sulfur dioxide is _____.

A. 1.529
B. 2.101
C. 1.191
D. 2.263

155. Sulfur dioxide is a harmless gas.

A. yes
B. no

156. How if sulfur dioxide primarily detected?

A. smell
B. taste
C. sight
D. flame safety lamp

157. Is sulfur dioxide combustible?

A. yes
B. no

158. The chemical symbol for sulfur dioxide is _____.

A. H_2S
B. SO_2
C. S_20
D. H_20

159. Hydrogen sulfide is a by-product of the use of explosives.

A. true
B. false

160. Hydrogen sulfide is primarily detected by _____.

A. sight
B. smell
C. taste
D. flame safety lamp

161. The specific gravity of hydrogen sulfide is _____.

A. 1.191
B. 1.529
C. 2.263
D. 2.623

162. What is the explosive range of hydrogen sulfide?

A. 4.3% to 45%
B. 12.5% to 74%
C. 5% to 15%
D. 4.3% to 12.5%

163. Hydrogen sulfide is not poisonous.

A. true
B. false

164. Hydrogen sulfide is water soluble.

A. true
B. false

165. What is the chemical symbol for methane?

A. CO_2
B. CO
C. C_2H
D. CH_4

166. What percentage of blood saturation by CO will cause death?

A. 10% to 20%
B. 40% to 50%
C. 70% to 80%
D. CO saturation will not cause death

167. What is meant by gas diffusion?

A. gases separate naturally
B. gases unite naturally
C. gases mix naturally
D. gases explode

168. The rate of gas diffusion varies directly as the square root of their specific gravity.

A. true
B. false

169. Which gas is generated from a storage battery?

A. H_2
B. H_2S
C. SO_2
D. SO

170. What two gases are non-explosive?

A. CH_4 and CO
B. CO_2 and CH_4
C. CO_2 and N_2
D. CO and N_2

171. Which explosive gases are found in bituminous coal mines?

A. CH_4, CO, and H_2S
B. CH_4, N_2, and CO
C. $C0_2$, CH_4, and N_2
D. H_2S, CO, and SO_2

172. Is CH_4 poisonous?

A. yes
B. no

173. Which gas has the lowest ignition temperature?

A. CH_4
B. H_2S
C. CO
D. N_2

174. What type of atmosphere would it be easier to detect a noxious gas?

A. stratified
B. diffused

175. The flame in a flame safety lamp will _____ when black damp is encountered.

A. burn brighter
B. go out
C. turn blue
D. do nothing

176. Stink damp refers to _____.

A. H_2
B. H_2S
C. SO_2
D. SO

177. Convert .01% of CO into ppm.

A. 1 ppm
B. 10 ppm
C. 100 ppm
D. 1000 ppm

178. A gallon of water weighs _____.

A. 7.70 pounds
B. 7.50 pounds
C. 8.34 pounds
D. 8.53 pounds

179. _____ is defined as the average atomic mass for a naturally occurring element.

A. atomic weight
B. nuclear weight
C. molecular weight
D. none of the above

180. There are _____ atoms in a molecule of hydrogen.

A. 2
B. 4
C. 8
D. 16