Pennsylvania Mining Law

Questions and Answers

181. The molecular weight of methane is _____.

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

182. The product of incomplete combustion is _____.

A. methane
B. nitrogen
C. carbon monoxide
D. carbon dioxide

183. The chemical symbol for acetylene is _____.

A. CH_4
B. C_2H_2
C. SO_4
D. S_2O_2

184. The molecular weight of oxygen is _____.

A. 8
B. 16
C. 32
D. 64

185. The atomic weight of hydrogen is _____.

A. 1
B. 2
C. 4
D. 8

186. The chemical symbol for water is _____.

A. H_2S
B. H_2O
C. H_2S_2
D. H_2S_4

187. The molecular weight of water is _____.

A. 16
B. 18
C. 32
D. 36

188. _____ is the gas used as the standard in determining the molecular weight of other gases.

A. Hydrogen
B. Oxygen
C. Nitrogen
D. Air

189. A ph of 7 indicates that a substance is _____.

A. alkaline
B. neutral
C. acid
D. contaminated

190. Which is heaviest, 100 pounds of air or 150 pounds of methane?

A. air
B. methane
C. they are the same weight

191. A ph of 9 indicates _____.

A. alkaline
B. neutral
C. acid
D. contaminated

192. A ph of 3 indicates _____.

A. alkaline
B. neutral
C. acid
D. contaminated

193. The action of excessive weight upon pillars not strong enough to support that weight is a _____.

A. fault
B. creep
C. squeeze
D. bump

194. The action of excessive weight upon a weak floor or roof causing the floor to heave or the roof to sag is a _____.

A. fault
B. creep
C. squeeze
D. bump

195. A fracture of strata along which there has been movement of the two sides relative to one another is a _____.

A. fault
B. creep
C. squeeze
D. bump

196. A vertical excavation between the coal seam and the surface, large enough for passage of workers or the ventilation of a mine is a _____.

A. slope
B. highwall
C. shaft
D. borehole

197. An incline passage driven from the surface to the coal seam is a _____.

A. slope
B. highwall
C. shaft
D. borehole

198. Bursting of coal caused by excessive pressure is known as a _____.

A. fault
B. creep
C. squeeze
D. bump

199. The three types of mine openings are an incline, a shaft and a slope.

A. true
B. false

200. Secondary mining consists of cutting, drilling, blasting, loading of coal, and bolting.

A. true
B. false

201. Large hydraulic supports used to hold up the roof in longwall sections are _____.

A. ATRS
B. chocks
C. shields
D. B or C

202. The first step (or mining cycle) in conventional mining is

A. cutting of coal
B. mining and loading of coal
C. drilling of coal
D. bolting

203. Faulting is due to either compression or stretching of the outer shell of the earth's surface.

A. true
B. false

204. What is the rubbing surface in a circular airway that is 4 feet in diameter and 5000 feet long?

A. 15,700 square feet
B. 31,400 square feet
C. 47,100 square feet
D. 62,800 square feet

205. If the return air current of a mine consists of 50,000 cubic feet of air per minute and also contains 0.8% methane, how much air must be added to reduce the methane content to 0.5%?

A. 30,000 cubic feet
B. 60,000 feet
C. 90,000 cubic feet
D. none of the above

206. If a return airway is 14 feet wide at the bottom, 12 feet high at the top, and 6 feet high, and the anemometer reads 200 feet in 30 seconds, what would be the quantity of air per minute?

A. 400 cubic feet
B. 16,100 cubic feet
C. 32,100 cubic feet
D. 31,200 cubic feet

207. If an airway is 14 feet wide and 4 feet high and is passing 25,000 cubic feet of air per minute, what is the velocity?

A. 446.4 fpm
B. 223.2 fpm
C. 160.1 fpm
D. 85.6 fpm

208. If an airway is 12 feet wide and 6 feet high, what is the area?

A. 36 square feet
B. 72 square feet
C. 36 cubic feet
D. 72 cubic feet

209. If the area of an airway is 60 square feet and the quantity of air is 30,000 cubic feet per minute, what is the velocity?

A. 500 feet per minute
B. 5000 feet per minute
C. 50 feet per minute
D. none of the above

210. If a circular airway is 6 feet in diameter, 3000 feet long, and the anemometer reads 5 feet per second, what would be the quantity of air per minute?

A. 4220 cfm
B. 4821 cfm
C. 8281 cfm
D. 8481 cfm

211. An entry is 6100 feet in length, 12 feet wide and 5 feet high. What is the rubbing surface?

A. 207,400 square feet
B. 207,400 cubic feet
C. 103,700 square feet
D. 103,700 cubic feet

212. Calculate the barrier pillar that should exist between two mines when the bottom elevation is 1570 feet and the surface elevation is 1971 feet. The coal seam is 6 feet 3 inches high.

A. 49 feet
B. 59 feet
C. 72 feet
D. 98 feet

213. How many tons of coal would be in an entry driven through solid coal 14 feet wide and 7.5 feet high if the specific gravity of coal is 1.3 and driven the legal distance to make an air connection?

A. 1706 tons
B. 8531 tons
C. 170.6 tons
D. 853.1 tons

214. A mine fan has a speed of 125 rpm and delivers 150,000 cubic feet of air. How much air would be delivered with a speed of 200 rpm?

A. 175,000 cubic feet
B. 200,000 cubic feet
C. 240,000 cubic feet
D. 320,000 cubic feet

215. How many gallons of water would be stored in a sump, the entries being 5 feet high, 12 feet wide, and 500 feet long (2 entries), by 3 crosscuts 5 feet high, 12 feet wide and 45 feet through, when the sump is full?

A. 226,782 gallons
B. 509,388 gallons
C. 756,480 gallons
D. 1,054,388 gallons

216. How long would it take to pump the sump in question 215, if the water is flowing into it at the rate of 100 gpm, and it is being pumped out at the rate of 300 gpm?

A. 42 hours, 37 minutes
B. 28 hours, 34 minutes
C. 16 hours, 17 minutes
D. 7 hours, 56 minutes

217. What would be the weight of one cubic foot of air if the barometer reads 29 inches of mercury and the temperature is 65 degrees F?

A. 1 pound
B. 0.869 pounds
C. 0.0733 pounds
D. not enough information given to compute

218. A circular shaft, 8 feet in diameter, is carrying a current of air and gas at a rate of 1200 feet every 2 minutes. What is the quantity of air and gas reaching the exhaust fan at the top of the shaft every minute?

A. 8,040 cfm
B. 16,180 cfm
C. 30,120 cfm
D. 32,360 cfm

219. If a methane detector indicates .8% CH_4 at the exhaust fan in the above question, how many cubic feet of gas is in this air and gas mixture?

A. 214.28 cfm CH_4 per minute
B. 240.96 cfm CH_4 per minute
C. 296.40 cfm CH_4 per minute
D. 421.24 cfm CH_4 per minute

220. The _____ is the pressure which must be exerted upon air current to overcome the mine resistance.

A. barometric pressure
B. ventilating pressure
C. atmospheric pressure
D. operating pressure

221. If a fan speed is constant, and obstructions are placed in the airway:

A. air quantity increases
B. air quantity decreases
C. air quantity remains the same
D. air quantity is diverted to another area

222. If an air course is short-circuited, air quantity at the fan:

A. increases
B. decreases
C. remains the same

223. If the mime resistance decreases, the fan can _____.

A. circulate more air at less resistance
B. circulate less air at more resistance
C. circulate more air at the same resistance
D. circulate less air at the same resistance

224. Movements of air produced by the difference of the weights of air columns or by difference in temperature are called _____.

A. forced ventilation
B. natural ventilation
C. artificial ventilation
D. stratified ventilation

225. What are the two types of fans commonly used?

A. radial and centrifugal
B. axial flow and radial
C. centrifugal and axial flow
D. radial and vane

226. _____ relieve the pressure of an explosion before it reaches the fan.

A. Explosion doors
B. Ventilating canvas
C. Water gauge
D. Relief valve

227. What electrical requirement is necessary for a mine fan?

A. must be equipped with an overload device
B. must be operated from an independent power source
C. must be gear driven
D. no special requirement is necessary

228. Man doors at a mine fan should be installed:

A. in pairs to form an airlock
B. man doors should not be installed in fan areas
C. together with explosion doors
D. when nobody is around

229. Should mine fans be made reversible?

A. yes
B. no

230. Where multiple fans are used, are neutral areas permitted?

A. yes
B. no

231. A _____ shall be established to prevent accumulations of gas in pillar recovery areas.

A. seal plan
B. bleeder system
C. auxiliary fan
D. none of the above

232. While line brattice, tubing, or other ventilation devices are being installed inby the machine operator, production may continue.

A. true
B. false

233. Gob material is an acceptable material in which to construct air stoppings.

A. true
B. false

234. As air leaks in ventilation stoppings increase, air in face areas _____.

A. increase
B. decrease
C. remain the same
D. is used as belt air

235. Brattice cloth can be used _____.

A. as a temporary control of ventilation
B. as a permanent control of ventilation
C. at all times
D. none of the above

236. Auxiliary fans and tubing shall be used in conjunction or without _____.

A. permanent stoppings
B. line canvas
C. an approved ventilation plan
D. none of the above

237. If the air going through the auxiliary fan or tubing has an excess of _____% CH_4, power to that auxiliary fan shall be shut off.

A. 0.5%
B. 1.0%
C. 1.5%
D. 2.0%

238. Stoppings, doors, overcasts, undercasts, check curtains and line brattice are all some forms of ventilation controls.

A. true
B. false

239. _____ is an enclosed airway constructed to provide a means of one air current to cross another without mixing.

A. A stopping
B. A door
C. A bleeder system
D. An overcast

240. A variable partial obstruction in an airway is called a regulator.

A. true
B. false