Construction and Industry

CIH

Certified Industrial Hygienist Certification Exam

Latest Version: 6.1

Question: 1

What piece of legislation guaranteed benefits to workers with black lung disease?

A. Toxic Substances Control Act of 1976
B. Coal Mine Inspection Act of 1969
C. Mine Safety and Health Act of 1977
D. Metal and Nonmetal Mine Safety Act of 1966

Answer: B

Explanation:
The Coal Mine Inspection Act of 1969 guaranteed benefits to workers with black lung disease. This act created programs for studying health and safety hazards related to surface mining. The Toxic Substances Control Act of 1969 gave the Environmental Protection Agency the power to intervene before harmful chemical substances could harm human. One of the major consequences of the passage of this act was the compilation of an inventory of commercial chemicals. The Mine Safety and Health Act of 1977 shifted responsibility for mine safety from the Department of the Interior to the Department of Labor and OSHA. The Metal and Nonmetal Mine Safety Act of 1966 established mandatory annual inspections for underground mines, worker training programs, and protocols for the reporting of injuries.

Question: 2

Which of the following is NOT one of the three tiny bones of the middle

A. anvil
B. drum
C. hammer
D. stirrup

Answer: B

Explanation:
The drum is not one of the three tiny bones of the middle ear. Rather, the eardrum is a membrane that seals the end of the ear canal in the outer ear. Sound waves cause the eardrum to vibrate. The three bones of the middle ear are the hammer, anvil, and stirrup. They bridge the chamber and shift ear drum vibration to the end of the liquid-filled compartment of the inner ear.

Question: 3

In casting, what is the name of the hole through which metal enters the mold?

A. sprue
B. cope
C. flask
D. riser

Answer: A

Explanation:
In casting, a sprue is the hole through which metal enters the mold. The sprue must either be part of the pattern or, in the case of a sand mold, should be cut into the mold. The flask is the holder into which sand is placed in the creation of a sand mold. The top of the flask is called the cope, and the bottom is called the drag. A riser is a canal through which molten metal rises, indicating that the mold is full. These are not always included in a mold.

Question: 4

The employees of a factory are exposed to noise of 95 dB for three hours, 90 dB for two hours, and 100 dB for one hour. The rest of the noise exposure is less than regulated levels. What calculation will be used to determine whether the factory is in compliance with OSHA noise regulations?

A. 95/3 + 90/2 + 100
B. 3/95 + 2/95 + 1/100
C. 4/3 + 8/2 +2
D. $^{3}/_{4}$ +2/8+1/2

Answer: D

Explanation:

The calculation that must be used here is ¾ + 2/8 + ½ = 1 ½. Because this value is greater than one, the factory is not in compliance with OSHA noise regulations. Compliance is determined by adding up a series of fractions, in which the numerator is the time exposed at a given level and the denominator is the permissible time of exposure at that level. Workers may only be exposed to sound at 95 dB for four hours per day, to sound at 90 dB for 8 hours per day, and to sound at 100 dB for 2 hours a day.

Question: 5

Which of the following is NOT an advantage of local exhaust ventilation?

A. Hazards can be removed by shifting relatively small quantities of air.
B. It is rare that a large population will be exposed to a locally generated hazard.

C. Less energy is required to remove hazards.
D. The workstation does not need to be outfitted with a hood.

Answer: D

Explanation:
Local exhaust ventilation systems do require that a hood be installed above the workstation. These hoods are used to intake the surrounding air and thereby remove the hazard. The other answer choices are advantages of a local exhaust ventilation system. These systems remove air at the point of hazard, so they are able to accomplish their mission by shifting relatively small quantities of air, and therefore using considerably less energy. Also, because they work in a confined area, they reduce the risk of exposing a large population to a locally generated hazard.

Question: 6

What is the normal frequency range of speech?

A. 50 to 500 Hz
B. 10 to 1000 Hz
C. 100 to 2000 Hz
D. 3000 to 6000 Hz

Answer: C

Explanation:
The normal frequency range of speech is 100 to 2000 Hz. Hearing damage tends to occur when the air is exposed to a continuous noise around 4000 Hz. It is typical for hearing conservation programs to measure hearing at 500, 1000, 2000, 3000, 4000, and 6000 Hz.

Question: 7

Which of the following is NOT a characteristic of a permit required confined space according to OSHA?

A. The space contains a hazardous atmosphere.
B. The space contains a material that could engulf an entrant.
C. A trained rescue team must be stationed outside the door.
D. The space should only be entered by authorized workers.

Answer: C

Explanation:
OSHA does not mandate that a trained rescue team be stationed outside the door of a permit required confined space. Such a space is defined as any area that

contains or has the potential to contain a hazardous atmosphere; that contains a material that has the capacity to engulf an entrant; that is configured such that an entrant could be trapped or asphyxiated; or that contains any other serious safety or health hazard. Only authorized personnel should enter a permit required confined space, and the permission to enter should be signed by an entry supervisor. There should be an attendant stationed outside the door, and this attendant should have open lines of communication with both the entrant and a trained rescue team.

Question: 8

Which centrifugal collector would be the most efficient?

A. A collector with a small-diameter cone and a dynamic precipitator
B. A collector with a small-diameter cone and no dynamic precipitator
C. A collector with a large-diameter cone and a dynamic precipitator
D. A collector with a large-diameter cone and no dynamic precipitator

Answer: A

Explanation:
The most efficient centrifugal collector would be one with a small diameter cone and a dynamic precipitator. In a centrifugal collector, also known as cyclone collector, air is swirled around a conical chamber. Particles are spun out against the sides of the chamber and drop to the bottom. The smaller the diameter of the cone, the faster the particles move. A cone with a smaller diameter is also better at removing small particles. A dynamic precipitator uses a motor to accelerate the spinning of the air. It should be noted, however, that even the most efficient centrifugal collector will not extract all of the particles that can be inhaled.

Question: 9

Which of the following temperature measurements is required to determine whether a work environment is likely to cause heat stress?

A. dry bulb temperature
B. globe temperature
C. natural wet bulb temperature
D. All of the above

Answer: D

Explanation:
Dry bulb temperature, globe temperature, and natural wet bulb temperature are all required to determine whether a work environment is likely to cause heat stress. These three measures are required to create the Wet Bulb Globe Temperature index. Dry bulb temperature is the measure obtained with an ordinary

thermometer. Globe temperature is obtained by inserting the thermometer bulb into a small copper sphere painted black on the outside. Typically, globe temperature will be higher than dry bulb temperature. Natural wet bulb temperature is obtained by using a thermometer with a wick that transports water to the thermometer bulb. Typically, the evaporation of this water will cool the bulb, so the wet bulb temperature is usually lower than the dry bulb temperature.

Question: 10

Which measure of radioactivity is most important to industrial hygienists?

A. units of emission
B. units of exposure
C. half-life
D. decay constant

Answer: B

Explanation:
To industrial hygienists, the most important measure of radioactivity is units of exposure. This is because units of exposure indicate the dosage received by an individual. The most common unit of exposure is the rad, which is equal to an absorbed dose of 100 ergs per gram or 0.01 J per gram for whatever material is absorbing the radiation. The rate of exposure is often expressed as millirads per hour. Units of emission indicate the number of radioactive nuclides that have disintegrated in a given amount of time. The usual unit is the becquerel (Bq), equal to one disintegration per second, though some institutions use the Curie (Ci), which is equal to 3.7 x 1010 disintegrations per second. In radioactivity, half-life is the amount of time necessary for half the radioactive atoms of a particular isotope to disintegrate in a sample. The decay constant, finally, is the fraction of atoms that decay for each unit of time.

Question: 11

Which of the following is an inflammation of the elbow caused by over- rotation of the forearm?

A. tenosynovitis
B. epicondylitis
C. Raynaud's disease
D. Ischemia

Answer: B

Explanation:
Epicondylitis is an inflammation of the elbow caused by over-rotation of the forearm. It is also known as tennis elbow. Tenosynovitis is an inflammation of the

tendons caused by excessive use. Raynaud's disease is a loss of circulation and feeling in the hands. It is caused by prolonged exposure to extreme vibration. Ischemia is a loss of circulation and feeling caused by the compression or other blockage of blood vessels.

Question: 12

Which type of radioactive particle is the most highly charged?

A. alpha particle
B. beta particle
C. positron
D. gamma radiation

Answer: A

Explanation:
The most highly charged type of radioactive particle is the alpha particle.
Alpha particles are made up of two protons and two neutrons. They are also the largest of the radioactive particles. Beta particles are approximately half as charged and about 1/10,000 of the mass of an alpha particle. Positrons are positively charged electrons, and are emitted when a proton needs to assume a neutral charge. Gamma radiation has neither mass nor charge, and is emitted when changes in the composition of a nucleus require a shift to a more stable configuration.

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