CSP Practice Test

1. Within the realm of statistics, which of the following is TRUE with regard to the fundamental counting principle?

a. When the principle is applied for a given sample, the standard deviation is always equal to the variance.
b. The order or position of an occurrence always affects the overall probabilistic outcome of an entire event.
c. The number of possible permutations is always greater than the possible number of combinations.
d. The number of possible permutations is always less than the possible number of combinations.

2. Which of the following sets of colors is associated with the NFPA 704 Diamond System for the labeling of hazardous materials?

a. Magenta, green, black, gold
b. Blue, green, orange, white
c. Red, yellow, green, black
d. Yellow, blue, red, white

3. A company is developing a new pharmaceutical product to help counteract the effects of mercury poisoning. Before it comes to market, however, the company must first seek approval by which of the following U.S. government agencies?

a. U.S. Department of Health and Human Services (DHHS)
b. U.S. National Institute for Drug Abuse (NIDA)
c. U.S. Consumer Product Safety Commission (CPSC)
d. U.S. Food and Drug Administration (FDA)

4. Which of the following is NOT typically categorized as a "class" of hazard within an industrial or process setting?

a. First-responder conveyance
b. Falling of loads
c. Handling of materials
d. Materials being in motion

5. If an injured worker wishes to file litigation against a company he or she feels is responsible for his or her maladies, which of the following attorneys should he or she most likely consult?

a. Compensatory tort
b. Criminal
c. Civil
d. OSHA attorney-general delegate

6. What are the two different categories of workers' compensation laws?

a. Antecedent and post-factual
b. Compulsory and elective
c. Standard and closure
d. Transitional and disability

7. Which of the following is NOT typically regarded as a primary safety hazard associated with the use of powered vehicles in a work area?

a. Potential carbon monoxide overexposure
b. Exceeding load limits
c. Blind spots
d. Operator physical overexertion

8. What is the conventional definition of a blasting agent?

a. A material that demonstrates adequate stability in a stand-alone condition yet possesses enough exothermic potential to prompt an explosion when initiated
b. A material, such as TNT, designed to detonate upon a threshold catalyst
c. A material designed to explode upon mechanical impact
d. Any solid or liquid substance that will easily ignite above standard temperature and pressure (STP) conditions

9. Which of the following is NOT a type of conveyor mechanism that is primarily used for transporting bulk products or materials within an industrial setting?

a. Belts
b. Buckets
c. Winches
d. Rollers

10. If a very large construction company experiences 369 work-related deaths, worldwide, over a recent 10-year span, about what number of them would likely be attributable to falls?

a. 30
b. 80
c. 150
d. 210

11. What device is commonly used in industrial settings to measure potentially hazardous noise levels?

a. An acoustics meter
b. A noise dosimeter
c. An audiometer
d. A gain-differential inductance meter

12. Which of the following is NOT a typical injury or illness-related metric that is regularly tracked by federal agencies?

a. Frequency of work-related retaliation events
b. Frequency of work-related deaths
c. Frequency of job transfers
d. Frequency of restricted duty

13. Which of the following terms is typically NOT associated with the domain of gas or vapor sampling?

a. Colorimetry
b. Chromatograph
c. Centrifugal separation
d. Grab sample

14. Which of the following is NOT inclusive of the OSHA Classification System for Occupational Illnesses and Conditions?

a. Respiratory-related disorders or conditions
b. Radiation-related disorders or conditions
c. Skin-related disorders or conditions
d. Blunt trauma-related disorders or conditions

15. U.S. citizen employees who live and work in the United States have a legal right to _____ certain records under their name.

a. inspect
b. replace
c. purge
d. transfer

16. A CSP and an industrial hygienist determine that the intensity of a certain physical parameter or phenomenon within a work area measures two footlamberts. Which of the following is being measured?

a. Gamma radiation
b. Ultraviolet radiation
c. Microwaves
d. Visible light

17. To counteract high-pressure environments (e.g., that seen during deep underwater diving), which of the following tactics is typically implemented to counteract the potential effects of nitrogen narcosis?

a. Replacing nitrogen with inert surrogate gases, such as helium
b. Increasing supplied-air oxygen levels by 0.5 percent for every 10 ft of depth
c. Requiring an ascension rate of at least 10 ft per min
d. Limiting underwater excursions to less than 1 hr for depths greater than 50 ft

18. Per the U.S. Clean Air Act, which of the following outdoor concentration readings would be considered a violation of National Ambient Air Quality Standards (NAAQS)?

a. 0.5 ppm of carbon monoxide over an 8-hr period
b. 0.05 ppm of ozone over an 8-hr period
c. 1.0 $\mu g/m^3$ of lead over a 3-month period
d. 10 ppb of sulfur dioxide over a 1-hr period

19. Which of the following functional-notation representations would depict a discount factor for a present dollar value given a future value at a 3 percent annual interest rate over 7 years?

a. (F|P, 7, 3%)
b. (P|F, 3%, 7)
c. (P|F, 7, 3%)
d. (F|P, 3%, 7)

20. What is a typical three-step process that should always be employed in industrial settings if there has been a hazardous material(s) spill?

a. Inspection, notification, cleanup
b. Isolation, mitigation, remediation
c. Evacuation, notification, remediation
d. Safety, containment, notification

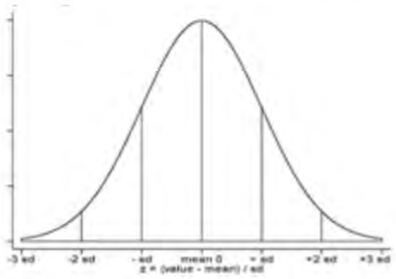
21. Acquired data from two distinct and separate variables is known as which of the following?

a. Bimodal data
b. Bivariate data
c. Tandem-statistical corollaries
d. Quadratic-bipolar data

22. In this data set (3, 7, 9, 12, 26, 32, 45, 58), which of the following is the mode?

a. 19
b. 24
c. None
d. 0

23. If the illustration shown here represents a standard normal distribution, approximately what percent of the total area below the curve is comprised of [(−2sd < x < −sd) + (0 < x < sd)]?



a. 44 percent
b. 48 percent
c. 52 percent
d. 56 percent

24. Which of the following U.S. federal agencies is responsible for distributing statistical information pertaining to job-related injuries and illnesses?

a. U.S. Occupational Safety and Health Administration
b. U.S. Department of Health and Human Services
c. U.S. Bureau of Labor Statistics
d. U.S. National Institute of Occupational Safety and Health

25. An ex-employee is looking to pursue legal action against his or her company for alleged wrongdoing. The company, in turn, is planning on defending itself based upon the fellow-servant rule. Which of the following grievance subject areas is the employee pursuing legal action for?

a. Wrongful termination
b. On-the-job injury
c. Racial discrimination
d. Sexual harassment

26. Which agency or organization is typically responsible for setting the rate premiums that employers will pay for workers' compensation insurance?

a. U.S. Department of Commerce
b. U.S. Department of Labor
c. National Council on Compensation Insurance
d. National Commission on Banking and Insurance Fiscal Regulation

27. Sound octaves are conventionally characterized by _____ with sequential octaves normally differing by a factor of _____.

a. wavelength, 10
b. pitch, 100
c. frequency, 2
d. tone, 10

28. If a pregnant employee is concerned about her child being exposed to potential teratogenic sources, which of the following should she avoid?

a. Microwave radiation
b. PCBs
c. Coffee
d. Acetic acid

29. Which of the following is typically NOT a potential mode of particulate contamination?

a. Aerosols
b. Gases
c. Mists
d. Fumes

30. Which of the following is usually NOT regarded as a hazard typically related to the use of high-pressure receptacles and containers?

a. Pressures exceeding design safety levels
b. Higher fire risks due to enhanced oxygen levels in certain containers
c. Container failure due to corrosion
d. Use of containers without always venting excess buildup

31. A monitoring system should be employed in tandem with a(n) _____ system to alert workforces of potentially hazardous conditions being at hand.

a. warning
b. emergency response
c. shutdown
d. actuator

Answer Key and Explanations

1. B: The fundamental counting principle essentially applies to circumstances where the order (or position) of an initial event occurrence ultimately influences the overall probabilistic outcome of an entire event scenario. In essence, the principle maintains that if a first event has "a" possible outcomes, and after that outcome has transpired, a subsequent event then has "b" possible outcomes, then there are resultantly (a x b) potential ways the outcomes can occur in that prescribed order.

2. D: The four colors of the NFPA 704 Diamond System are yellow (right side of the diamond, depicting instability level), blue (left side of the diamond, depicting health hazard level), red (top side of the diamond, depicting fire hazard level), and white (bottom side of the diamond, depicting special hazard levels for oxidizers and water reactions). Numbers from 0 to 4 are provided in each segment depicting the level of hazard (0 = lowest and 4 = highest).

3. D: The U.S. FDA is responsible for protecting the public at large from potential hazards associated with the use of all pharmaceutical products as well as sold foodstuffs, organics, cosmetics, or any other products available for curative applications.

4. A: Within an industrial or process setting, there are three principal hazard modes that a worker may be subjected to: falling of loads, handling of materials, and materials being in motion. Examples of dangers within these categories may include facets such as forklift accidents, toxic exposures, and pinch points, respectively.

5. C: The majority of laws that involve worker safety and health fall under the purview of civil law. The Occupational Safety and Health Act of 1970 is the chief civil law that is in use today for protecting worker safety and health and is regularly enforced by the Occupational Safety and Health Administration. Hence, injured workers should normally seek counsel from civil attorneys.

6. B: Workers' compensation laws are typically categorized into two separate designations: compulsory-related laws and elective-related laws. Compulsory laws require that employers adhere to all facets of the laws, otherwise they may be subjected to legal consequences; elective laws, conversely, provide employers the option of participation.

7. D: Primary safety hazards associated with the use of powered vehicles (e.g., backhoes, bulldozers, etc.) in a work area may include inadvertent exceedance of load limits, potential carbon monoxide overexposure(s), blind spots impeding operator visibility, power source malfunctions, flammable fuels, and operator error due to poor training, inexperience, mental fatigue, or incompetence. Operator physical overexertion is typically not expected because the balance of required actions usually does not go beyond the manipulation of powered controls within a climate-regulated cab.

8. A: The conventional definition of a blasting agent is a material that demonstrates adequate stability in a stand-alone condition yet possesses enough exothermic potential to prompt an explosion when initiated. OSHA 1910.109 defines it as any material or mixture, consisting of a fuel and oxidizer, intended for blasting. A very commonly used blasting agent is ammonium-nitrate fuel oil (ANFO).

9. C: There are several types of conveyor mechanisms regularly implemented within industrial settings for transporting bulk products and materials; these include belts, buckets, rollers, and

chains. The primary hazards associated with these devices are usually pinch points, snags, and falling materials.

10. C: Over recent years, fall-related deaths in construction have been accounting for approximately 40 percent of all fatalities in that industry, which is by far the number one cause. According to OSHA statistics, out of 4,251 worker fatalities in private industry for CY 2014, 874 (20.5 percent) were in construction, with falls accounting for 349 out of the 874 total deaths (39.9 percent). Hence, in the case of 369 construction-related deaths, roughly 150 of them would likely be related to fall incidents.

11. B: A noise dosimeter is a commonly used device for measuring potentially hazardous noise levels in industrial settings. It is usually employed in a manner that continuously processes noise levels throughout the duration of a work shift (in a particular work area) and then provides an equivalent cumulative quantity at the end of that shift, depicting what a worker's total noise exposure would be in that area.

12. A: Federal safety-regulating agencies, such as OSHA, normally track a host of metrics related to worker injuries and illnesses. Such metrics typically include frequencies of work-related deaths, job transfers, and restricted duty.

13. C: A variety of terminologies and technologies are regularly employed within the domain of gas or vapor sampling (for contaminants); these include colorimetry, chromatographs, and grab samples. Centrifugal separation, on the other hand, is strictly used within the realm of particulate sampling.

14. D: The OSHA Classification System for Occupational Illnesses and Conditions includes several categorical facets, including respiratory- and lung-related disorders or conditions, radiation-related disorders or conditions, skin-related disorders or conditions, toxic-related disorders or conditions, and repetitive-motion or ergonomic-related disorders or conditions.

15. A: U.S. citizen employees who live and work in the United States have a legal right to inspect certain records under their name.

16. D: There are several units that are regularly employed for characterizing or expressing visible-light intensity levels, including footlamberts, foot-candles, and lumens.

17. A: To counteract high-pressure environments (e.g., that seen during deep underwater diving), replacing nitrogen with inert surrogate gases, such as helium, is a conventionally implemented strategy for counteracting the potential effects of nitrogen narcosis.

18. C: Per NAAQS protocol (40 CFR 50), the maximum allowable criteria pollutant concentration for lead (Pb) is 0.15 $\mu g/m^3$ over a 3-month period.

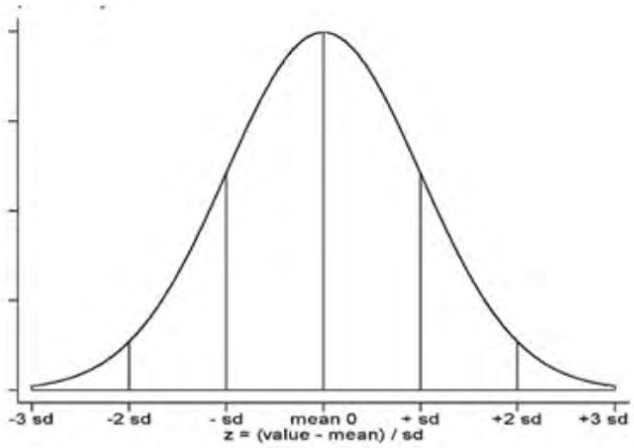
19. B: A discount factor for a present dollar value given a future value at a 3 percent annual interest rate over a 7-year period would have an associated functional-notation representation of (P|F, 3%, 7).

20. D: A typical three-step process that should always be employed in industrial settings in the event of a verified hazardous material(s) spill is (1) safety, (2) containment or isolation, and (3) notification.

21. B: Acquired data from two distinct and separate variables is known as bivariate data (e.g., x and y). Bivariate data can be displayed through a variety of illustrative and graphical tools, including comparative tables, scatter plots, bar charts, and linear regression best fits.

22. C: For the data set (3, 7, 9, 12, 26, 32, 45, 58), there is no mode. The mode is defined as the data value (or values) that occur(s) the most number of times relative to the rest of the values in a statistical sample or population. Because each (and all) of the subject values only occurs once in the subject data set, there is no mode.

23. B: For a standard normal distribution, approximately 48 percent of the total area below the curve would correlate to the adding of the segments in the ranges of $(-2sd < x < -sd)$ and $(0 < x < sd)$.



This is derived via the following per the 68-95-99.7 rule: The range of $(-2sd < x < -sd)$ would equate to an area allocation of ½(95%-68%) = 13.5%, and the range of $(0 < x < sd)$ would equate to an area allocation of ½(68%) = 34%. Hence, 34% + 13.5% = 47.5% ≈ 48%.

24. C: The U.S. Bureau of Labor Statistics is ultimately charged with and responsible for distributing statistical information pertaining to job-related injuries or illnesses. Other agencies, however, such as the U.S. Occupational Safety and Health Administration and the U.S. National Institute of Occupational Safety and Health often cite or reference such published statistics in support of their missions, campaigns, outreach, and enforcement initiatives.

25. B: The fellow-servant rule is an often-utilized defense posture corporate entities implement against on-the-job injury claims filed by employees. Dependent upon the situation and extent of litigation, however, other legal defense approaches such as contributory negligence and assumption of risk may also potentially be utilized by employers who endeavor to protect their corporate interests against such claims.

26. C: The National Council on Compensation Insurance is responsible for setting general rate premiums that employers will pay for workers' compensation insurance. Some employers, however, may choose to institute their own private plans or programs with independent funding mechanisms.

27. C: Sound octaves are conventionally characterized by frequency with sequential octaves normally differing by a factor of two. Hence, an octave may exist at a frequency of 100 Hz, with the octave directly below it existing at 50 Hz and the one directly above it existing at 200 Hz.

28. B: A teratogen is best defined as an agent, material, or chemical that can cause deformities or birth defects in unborn embryos or fetuses. Substances such as alcohol, tobacco, psychoactive drugs, various diseases, and an array of potential environmental contributors (including numerous hypothetical workplace chemicals (e.g., PCBs and ionizing radiation) can all be potential teratogens.

29. B: Particulate contamination can come in a variety of forms, including aerosols, mists, fumes, and smoke. Gases are an altogether different state of matter than particulates and hence do not fall under the subject category as a potential form thereof. As such, there is an entirely separate category of contaminants (contamination) that is strictly associated with gases.

30. D: There are several potential hazards that are conventionally tied to the normal use of high-pressure receptacles and containers in the workplace; these may include: pressures exceeding design safety levels, elevated fire risks due to enhanced oxygen levels in certain containers, and possible container failure or rupture due to corrosion buildup.

31. A: A monitoring system should always be employed in tandem with a warning system to alert workforces of hazardous conditions potentially at hand.

32. B: Quite often, hazardous material spills can ultimately result in an ensuing dangerous chemical reaction. Typical observable characteristics of such reactions may include the emission of smoke and/or vapors, bubbling, unusual odors, or the generation or buildup of heat.

33. A: A financial covenant typically between an individual (e.g., an investor) and a corporate or government body that guarantees to repay an investment, plus accrued interest, at a predesignated time is known as a bond.

34. C: A stem-and-leaf plot is typically regarded as one of the most useful graphical aids for clearly illustrating data groups that fall within particular value ranges.

35. D: A number of statistical parameters may be potentially utilized if one wishes to calculate a measure of dispersion for a given data set. These may include: variance, standard deviation, and range.

36. B: The standard deviation ("σ") for the whole population data set (2, 7, 11, 24, 44, 62, 79, 81, 105, 120, 139, 162) is calculated per:

$$\sigma = \sqrt{\frac{\Sigma(x - \bar{x})^2}{N}}$$

This equates to:

$\sigma = [(4579 + 3927 + 3442 + 2085 + 659 + 59 + 87 + 128 + 1248 + 2533 + 4807 + 8525) \div 12]^{0.5} \approx 52.$

37. D: There are several characteristic shapes of frequency curves that exist in the realm of statistics. These include multimodal, (left- or right-) skewed, j-shaped, U-shaped, and symmetrical (such as a Gaussian normal distribution).