

4-2156

1. The flammable limits of gasoline are 1.3 to 7.6 percent volume of the air. You are testing a tank that contained gasoline by using a combustible gas indicator. Under testing, the tank sample registered "55" on the instrument's dial. What is the concentration of flammable gases?

A combustible gas indicator is used for detecting and measuring the percentage of vapors given off by a flammable liquid relative to the lower explosive limit (LEL). The actual concentration of a specific gas in the space measured by a combustible gas indicator is determined by the meter reading multiplied by the LEL.

A. 0.7%

Correct Answer: The indicated value was calculated by multiplying 55% by the lower explosive limit stated as 1.3.
((55% = 0.55) X 1.3 = 0.72%)

B. 4.1%

Incorrect: The indicated value was calculated by multiplying 55% by the upper explosive limit stated as 7.6.
((55% = 0.55) X 7.6 = 4.18%)

C. 5.5%

Incorrect: The indicated value was calculated by multiplying 55% by 10, which is a non-factor.
((55% = 0.55) X 10 = 5.50%)

D. 55%

Incorrect: The indicated value is only the meter reading and must be factored by the multiplier to produce a value of percent volume of air as the answer.

4-3669

2) The free surface correction depends upon the dimensions of the surface of the free liquid and the _____.

The height of a vessel's center of gravity is initially determined without considering the effect of free liquid. This correction is the distance by which the vessel's center of gravity is raised by the effect of free liquid in a tank. This vertical distance is directly proportional to the surface dimensions (length and breadth) of the tank and inversely proportional to the vessel's displacement.

A. volume of liquid in the tank

Incorrect: The depth of free liquid in the tank is not a factor.

B. displacement of the vessel

Correct Answer: As noted above, the correction is inversely proportional to the vessel's displacement.

C. location of the tank in the vessel

Incorrect: The correction is not related to the location of the tank.

D. height of the center of gravity of the vessel

Incorrect: The center of gravity will be raised from wherever it would otherwise be, if there were no free surface effect.

2-953

3. When bunkering at anchorage, which of the following signals must be displayed?

The required warning signal for vessels transferring combustible and flammable bulk liquids are cited in 46 CFR 35.30-1(a).

A. A red flag by day, red light by night

Incorrect: These are the required warning signals if the vessel is "Fast to a Dock."

B. A red flag by day, ONLY _____

Correct Answer: This flag may be left up at night. There is no requirement to take it down.

C. A red light by night, ONLY

Incorrect: A red light is not displayed at anchorage because it could be confused with a vessel's port sidelight.

D. No signal is required, at anchorage

Incorrect: Vessels transferring oil are required to display a red flag during daylight while at anchorage.

3-2048

4. You are upbound approaching a lock and dam, and see two green lights in a vertical line. This indicates _____.

Locks and Dams – The required lighting is specified in 33 CFR, part 207.

A. the downstream end of an intermediate wall

Correct Answer: Two green lights mark the downstream end of either the river wall or the intermediate wall, whichever extends farther. The upstream end is required to have three green lights. These green lights signify that the lock is in use.

B. that a double lockage is in progress

Incorrect: Double lockage is indicated by an interrupted flashing light on each end of the intermediate wall.

C. the downstream end of the land wall

Incorrect: Each end of the land wall is required to be marked by one red light.

D. the navigable pass of a fixed weir dam _____

Incorrect: The assembly that - when removed - allows for a navigable pass through a dam is a "wicket". If the wicket assembly were removed, there would not be a need to operate the lock because the water upstream of the dam would be at the same level as the water downstream. In this case, the lights in choice "A" would be red instead of green to signify that the lock is not in use. An open weir would not establish a navigable pass and a fixed weir can't be opened.