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Q633 - Engineering Safety & Environmental Protection

1. Static water pressure on the hull of a ship is greatest at the _____.

- boot topping
- stern
- bow
- **keel**

Note:

Static water pressure increases with depth; therefore, the keel, being the deepest point on the hull, experiences the greatest pressure.

2. In a compartment that has been completely flooded with water, the greatest pressure will be exerted _____.

- at a point that is one-third from the bottom of the bulkhead
- at the vertical center of the bulkhead
- **along the bottom of any bulkhead**
- along the top of the bulkhead

Note:

Hydrostatic pressure increases with depth; therefore, the greatest pressure in a flooded compartment is exerted along the bottom of any bulkhead.

3. Which of the precautions listed should be observed when taking on diesel fuel?

- Provide a portable fan to blow away fumes.
- **Prohibit smoking in the area.**
- Display a black triangle during daylight hours.
- Secure all lighting to the main deck.

Note:

Prohibiting smoking prevents ignition of flammable fuel vapors and is a standard safety precaution during diesel fueling operations.

4. When should you expect to find an insulating flange in a fueling hose?

- When static electricity is not expected to be a problem.
- When a bonding cable is employed.
- When transferring LNG.
- **When the terminal is equipped with a cathodic protection system.**

Note:

Insulating flanges are used in fueling hoses to electrically isolate a vessel's systems from a terminal's cathodic protection system, preventing stray currents and potential arcing.

5. One consideration for determining the safest maximum rate at which bunker fuel may be received is by the _____.

- distance to the fuel storage tanks ashore
- **number of tanks to be filled**
- size of the fuel storage tanks ashore
- type of fuel transfer pump

Note:

The number of tanks to be filled limits the safe bunker fuel receiving rate because it dictates the need for timely control and redirection of flow to prevent overfilling.

6. Why is it important for double bottom fuel oil tanks not to be topped off when loading fuel at cold temperatures?

- Fueling valve may become stuck closed and cause the fuel oil to spill before the valve can be opened.
- Increased viscosity of the product needs higher loading pressure, which increases the chances of a spill.
- Air pockets may cause the fuel to bubble out of the ullage hole.
- **A temperature rise of the fuel will cause an overflow from the tank vent.**

Note:

Fuel expansion during warming necessitates leaving ullage space in double bottom tanks to prevent overflow through the vent.

7. If deck cargo is carried, it should be stowed so that it _____.

- is not higher than 12 inches above the deck
- will be easily visible from the bridge
- **does not block access to the fire station hydrant**
- will cover less than 25 percent of deck space

Note:

Deck cargo must be stowed to ensure unobstructed access to firefighting equipment, specifically fire station hydrants, to maintain immediate readiness in emergency situations.

8. A fire in a pile of dunnage would be classified as a _____.

- **class "A"**
- class "B"
- class "C"
- class "D"

Note:

Dunnage, typically wood, is an ordinary combustible material and therefore classified as a Class A fire, which involves wood, paper, textiles, and rubbish.

9. Which of the listed classes of fire would most likely occur in the engine room of a vessel?

- Classes "A" and "B"
- **Classes "B" and "C"**
- Classes "C" and "D"
- Classes "A" and "D"

Note:

Engine rooms contain flammable liquids and energized electrical equipment, making Class B and Class C fires the most likely.

10. The process that occurs when heat is generated by a chemical reaction within a substance and continues to a point of ignition is known as _____.

- spontaneous combustion
- chemical combustion
- radiation ignition
- chemical ignition

Note:

Spontaneous combustion is the correct term; it describes ignition resulting from heat generated by internal chemical reactions without an external ignition source. This process occurs when heat buildup exceeds dissipation, leading to ignition temperature. The term distinguishes itself from other options by specifically denoting self-heating and ignition without external factors, unlike chemical combustion, radiation ignition, or chemical ignition.
