1. Which statement about entering into a tank which has been sealed for a long time is TRUE?
   A. The tank should be tested only once to ensure the oxygen content is at least 14% before entry.
   B. The tank must be tested at frequent intervals to ensure that hazardous gases have not regenerated.
   C. The tank need not be tested for oxygen content if it is ventilated for more than 24 hours.
   D. If the oxygen content tests at less than 12% you should wear an approved gas mask.

2. Which statement about entry into a water ballast tank that has been sealed for a long time is TRUE?
   A. A "buddy system" should be used where someone enters the tank with you.
   B. Sea water acts on the ship’s metal and generates chlorine gas which may accumulate in poisonous quantities.
   C. You should always wear a gas mask.
   D. After ventilation and testing, and the tank is found safe for entry, someone should stand by at the tank entrance while you are inside.

3. In order for combustion to occur inside a piping system such as a vapor collection header in a marine emission control system, there must be __________.
   A. fuel
   B. oxygen
   C. ignition
   D. All of the above

4. Fuel oil tank vents are fitted with a screen which will stop __________.
   A. oil from flowing out of the tank vent
   B. air from entering the tank vent
   C. vapors from leaving the tank vent
   D. flames on deck from entering the tank vent

5. Outlets in gasoline fuel lines are __________.
   A. prohibited
   B. permitted for draining fuel from lines
   C. permitted for drawing fuel samples
   D. permitted for bleeding air from lines

6. During fueling, all doors, hatches, and ports __________.
   A. to windward should be opened and the ones to leeward should be closed
   B. to leeward should be opened and the ones to windward should be closed
   C. should be opened
   D. should be closed

7. While your vessel is taking on fuel you notice oil on the water around the vessel. What should you do FIRST?
   A. Stop the fueling.
   B. Notify the Coast Guard.
   C. Notify the terminal superintendent.
   D. Determine the source of the oil.

8. You are fueling your vessel when you notice oil in the water around your vessel. You should immediately stop fueling and __________.
   A. begin cleanup operations
   B. notify the U. S. Coast Guard
   C. leave the area
   D. notify the Corps of Engineers
9. You detect oil around your tank vessel while discharging. The FIRST thing to do is _________.
   A. try to find out where the oil is coming from
   B. call the Master
   C. have the pumpman check the discharge piping
   D. shut down operations

10. Your vessel is at a dock taking bunkers. If oil begins to flow out of a tank vent, what should you do FIRST?
    A. Open the intake valve to an adjacent tank.
    B. Set out drip pans and sawdust and begin to mop up the spill.
    C. Signal the shore control point to shut down.
    D. Close the valve on the tank vent line.

11. Your vessel is taking on fuel when a small leak develops in the hose. You order the pumping stopped. Before you resume pumping, you should _________.
    A. notify the terminal superintendent
    B. place a large drip pan under the leak and plug the scuppers
    C. repair the hose with a patch
    D. replace the hose

12. What best describes for how long a gas-free test is good?
    A. For as long as is indicated on the gas-free certificate
    B. For the instant that it is made
    C. Until valves in line with the tank or compartment are reopened
    D. Until changes in temperature or pressure affect the vapor content in the space

13. On a hydrocarbon flammability chart the line which extends from 0% to 21.8% oxygen, lying tangent to the flammability range, is called the _________.
    A. minimum oxygen content line
    B. critical displacement line
    C. critical dilution line
    D. upper threshold limit

14. After the initial cleaning of flue gas in an inert gas system the gas is passed through what device for final cleaning?
    A. Scrubber
    B. Demister
    C. Deck water seal
    D. Final filter

15. An inert gas system installed on a tanker is designed to _________.
    A. aid in the stripping and cleaning of cargo tanks
    B. increase the rate of discharge of cargo
    C. force toxic and explosive fumes from a cargo tank to vent to the outside atmosphere
    D. lower the oxygen levels inside cargo tanks, making explosion nearly impossible

16. An inert gas system is designed to reduce the possibility of tank explosions by _________.
    A. eliminating sparks and fire in the vicinity of cargo tanks
    B. removing all hydrocarbon gases from the cargo tanks
    C. blanketing cargo tanks with inert foam
    D. reducing the oxygen concentration below levels necessary for combustion
17. An inert gas system on a tanker should be used to __________.
A. prevent the generation of flammable or combustible gas in tanks
B. blow out cargo lines to prevent the build up of gas concentrations
C. dilute tank atmospheres to keep gas concentrations below the lower explosive limit
D. prevent fires in the pumproom by continually displacing flammable vapors

18. Coast Guard Regulations permit which of the following systems to be used for fire prevention and the simultaneous inerting of cargo tanks on tank vessels?
A. An inert gas system
B. The deck foam system
C. The fire main system
D. A fixed water spray system

19. Each inert gas system gas main must have an automatic shut down valve at the outlet of the gas production plant. This valve must close automatically upon __________.
A. cargo pump failure
B. blower failure
C. deck seal low water level
D. low inert gas temperature

20. How does an inert gas system on a tanker function to prevent explosions in cargo tanks?
A. De-energizes the "charged mist" effect.
B. Maintains a positive pressure on the vent header to cool the flammable vapors.
C. Inert gas filters out the flammable vapors from the cargo tank spaces.
D. Inert gas dilutes the flammable vapor and air concentrations to keep them below the lower explosive limit.

21. Introducing inert gas into a tank already inert with the object of further reducing the oxygen or hydrocarbon content to prevent combustion if air enters the tank is called __________.
A. purging
B. gas freeing
C. gas dispersion
D. bonding

22. The advantages of using an inert gas system on a tank vessel is that it provides __________.
A. for faster loading
B. tank atmosphere with low oxygen content
C. better fuel economy
D. All of the above

23. The blowers of an inert gas generation system aboard a tanker, will be automatically secured if __________.
A. normal water supply at the water seal is lost
B. the temperature of the inert gas being delivered to the cargo tanks is more than 150°F
C. the cooling water supply to the scrubbers is lost
D. all of the above

24. The combined fan discharge rate in an inert gas system is related to the __________.
A. shoreside loading rate
B. cargo pump discharge rate
C. boiler forced draft fan rate
D. size of the largest cargo tank

25. The component in an inert gas system used for cleaning the gas of solid and sulfur combustion products, while simultaneously cooling the inert gas, is called the __________.
A. filter
B. cooler
C. scrubber
D. purifier
26. 2342  Ref: Tankers, Inert gas
The deck water seal of the inert gas system ________.
A. cools the inert gas and prevents soot from entering the cargo tanks
B. acts as an emergency system shutdown when the inlet pressures exceed the safe working pressure in the hazardous zone
C. prevents the backflow of hydrocarbon gasses into nonhazardous areas
D. relieves sudden large overpressures in the system

27. 2611  Ref: Tankers, Inert gas
The fresh air intake of the inert gas system _____.
A. prevents the flue gas from falling below an oxygen content of 3%
B. allows the inert gas piping to be used for gas freeing the tanks
C. opens when there is excessive vacuum on the deck water seal
D. enables outside air to mix with and to cool the hot flue gasses

28. 2917  Ref: Tankers, Inert gas
The purpose of inert gas systems aboard tank vessels is to ________.
A. allow sufficient oxygen in the tank to sustain life
B. prevent outside air from entering the tank
C. provide increase in cargo discharge pressure
D. comply with double hull pollution prevention regulations

29. 2918  Ref: Tankers, Inert gas
The purpose of the deck seal in an inert gas system is to prevent ________.
A. flammable vapors from entering machinery space
B. flue gas escaping to atmosphere
C. inert gas escaping to atmosphere
D. air entering inert gas system

30. 3659  Ref: Tankers, Inert gas
What is the major function of the deck water seal in an inert gas system?
A. Relieves excessive pressures from the system.
B. Isolates hazardous areas from nonhazardous areas.
C. Prevents the flow of inert gas into closed or isolated tanks.
D. Removes any leftover water or soot after the gas has been scrubbed.

31. 4143  Ref: Tankers, Inert gas
Where are remote readouts for oxygen concentration, pressure, and temperature of an inert gas system required to be located?
A. Bridge and engine control consoles
B. Bridge and tank(s) being inerted
C. Main deck and engine control consoles
D. Cargo control and engine control consoles

32. 4172  Ref: Tankers, Inert gas
Which action must be taken when an individual cargo tank is closed off from the inert gas system by the tank isolation valve?
A. The tank must be gas freed.
B. The tank must be ballasted.
C. The tank must be vented to the atmosphere.
D. The bypass valve must also be closed.

33. 4180  Ref: Tankers, Inert gas
Which alarm is NOT found on an inert gas system?
A. Low oxygen alarm
B. Low pressure alarm
C. Scrubber high water level alarm
D. Deck seal low water alarm
34. Which function is NOT provided by the scrubber of an inert gas system?
   A. Cools the inert gas.  
   B. Removes particulate matter like soot.  
   C. Maintains gas pressure in the tanks.  
   D. Removes chemical impurities from the gas.  
   **C**

35. Which method is used to supply inert gas from a flue gas system to the cargo tanks?
   A. Exhaust gas pressure from the stack  
   B. High capacity fan  
   C. Inert gas compressor  
   D. Natural aspiration  
   **B**

36. Which of the listed functions is the purpose of a gas scrubber in an inert gas generation system?
   A. Cools the inert gas.  
   B. Maintains the oxygen content at 5% by volume.  
   C. Bleeds off static electricity in the inert gas.  
   D. Maintains flow to the water seal on the gas main.  
   **A**

37. Which part of the inert gas system is designed to relieve sudden large overpressures that exceed the capacity of the mechanical P/V valves?
   A. Pressure control valve  
   B. Deck water seal  
   C. Liquid filled P/V breaker  
   D. Isolation valve  
   **C**

38. Which statement about inert gas pressures in a cargo tank is TRUE?
   A. The pressures of the inert gas in the tank may create excessive pressure at the pump while discharging.  
   B. Gas pressures should be maintained at the highest permissible level throughout the discharging process.  
   C. High gas pressures may cause pyrophoric oxidation in the tank.  
   D. High gas pressures may cause loss of suction when stripping.  
   **B**

39. Which statement about the inert gas system is TRUE?
   A. Boiler soot blowers should never be used when the IG system is operating.  
   B. The boiler will produce the best quality of flue gas for the IG system when the boiler load is very light.  
   C. The boiler will produce the most quantity of flue gas for the IG system when the boiler system is very light.  
   D. Flue gas with excessive oxygen content is de-oxygenated in the scrubber.  
   **A**

40. Which statement is TRUE concerning inert gas systems on tank vessels?
   A. Flue gases from the ship's boilers are used in some systems.  
   B. Helium is the preferred inert gas.  
   C. Using the system accelerates the rusting of the tanks.  
   D. All of the above  
   **A**

41. Flames from small leaks of LFG may be extinguished by __________.
   A. utilizing carbon dioxide or dry chemical fire extinguishers  
   B. utilizing soda and acid fire extinguishers  
   C. blowing the flames out  
   D. letting it burn itself out  
   **D**
42. Ref: Tankers, LFG
LFG tank and pipeline maintenance should include __________.
A. exclusion of all sand and solid matter  
B. cleaning with clean fresh or sea water  
C. examination for fractures and pitting  
D. All of the above

43. Ref: Tankers, LFG
Name one major advantage of transporting gas under refrigeration.
A. It increases its volume.  
B. It reduces its volume.  
C. It has less product per volume.  
D. None of the above

44. Ref: Tankers, LFG
The primary concern(s) for safely transporting and handling LFG is(are) __________.
A. a system of cargo tanks and piping free from leaks  
B. cargo tanks and piping strong enough to withstand the pressure  
C. cargo tanks and piping located or protected to minimize physical damage  
D. All of the above

45. Ref: Tankers, LFG
Upon release to the atmosphere, LFG readily __________.
A. vaporizes  
B. attacks caustically  
C. rises  
D. attacks corrosively

46. Ref: Tankers, LFG
What normally helps in detecting escaping gas?
A. Running hand along pipe  
B. Red flame  
C. Odor  
D. Increase the line pressure

47. Ref: Tankers, LFG
Which is NOT a safety precaution to be observed during the loading of LFG?
A. Report any leakage of cargo.  
B. Make sure the rake ends of the barge are completely dry and mopped.  
C. Ascertain that the hoses to be used are in good order.  
D. Be on the lookout for work being accomplished ashore in the vicinity of the barges.

48. Ref: Tankers, LPG
A chemical additive to LPG gives it a characteristic __________.
A. odor  
B. color  
C. pressure  
D. density

49. Ref: Tankers, LPG
Why is gas-freeing rarely required for LPG cargo tanks?
A. LPG is compatible with all cargoes.  
B. LPG's high oxygen content makes it nonvolatile.  
C. Cargo tanks are inspected less frequently than on oil tankers.  
D. The cargo tanks are used for one type of cargo only.

50. Ref: Tankers, Oxygen Indicator
What is used to test a tank for oxygen content?
A. Combustible gas indicator  
B. Vapor indicator  
C. Atmosphere analyzer kit  
D. None of the above

51. Ref: Tankers, Pump, Centrifugal
On what type of pump would you find an impeller?
A. Centrifugal  
B. Gear  
C. Piston  
D. Vane
52. What causes cavitation in a centrifugal pump?
   A. Vapor pockets in the flow stream  
   B. Rough impeller surfaces  
   C. Worn wearing rings  
   D. Heavy fluid in the flow stream

53. What prevents water running along the shaft of a leaking centrifugal pump from entering the shaft bearing?
   A. Shaft seal  
   B. Water flinger  
   C. Drain hole  
   D. Lantern ring

54. Why does a centrifugal bilge pump require priming?
   A. To lubricate shaft seals  
   B. Lack of ability to lift water level to impellers  
   C. Head pressure must equal discharge pressure  
   D. To overcome resistance of water in the discharge line

55. What does the term "head" mean when applied to a pump?
   A. Length of its discharge pipe  
   B. Height of its discharge pipe  
   C. Difference between the discharge and suction pressures  
   D. Sum of discharge and suction pressures

56. When two ballast pumps used for deballasting a single tank start cavitating, you should __________.
   A. open all valves on the discharge side to permit improved flow  
   B. close the valve on the discharge side of the pump to re-acquire suction  
   C. close the valve on the suction side of the ballast pump to re-prime the pump  
   D. shut down one pump

57. The liquid-filled PV breaker has acted to relieve a vacuum in a tank. What action must be taken in regards to the PV-breaker before continuing operations?
   A. Check to make certain that it has reset itself.  
   B. Refill the breaker with liquid.  
   C. Manually reset the vacuum side of the breaker.  
   D. Install a new rupture disc.

58. What type of liquid is used in the liquid P/V breaker?
   A. Hydraulic oil  
   B. Water-antifreeze mixture  
   C. Distilled water  
   D. Oil from the cargo

59. Small oil spills on deck can be kept from going overboard by __________.
   A. driving wooden plugs into the vents  
   B. closing the lids on the vents  
   C. plugging the scuppers  
   D. plugging the sounding pipes

60. A spark arrestor __________.
   A. keeps sparks from falling into an open tank  
   B. secures covers on ullage openings  
   C. prevents sparks from getting out of an engine’s exhaust system  
   D. grounds static electricity
61. A vessel is equipped with cross-connected deep tanks. In which situation should the cross-connection valve be closed?
A. The tanks lie above the waterline and are filled.
B. The tanks are partially filled with dry cargo.
C. The tanks are partially filled with liquid cargo.
D. The tanks are filled and lie below the waterline.

62. Which is the MOST important consideration for a tank vessel?
A. GM
B. The longitudinal center of gravity
C. The stress on the hull
D. The vertical center of gravity

63. What is the purpose of a striker plate?
A. Provides surface for applying force on machinery
B. Provides landing surface for the sounding bob
C. Absorbs machinery vibration
D. Prevents valve stem over-travel

64. If you observe any situation which presents a safety or pollution hazard during fuel transfer operations, what action should you take FIRST?
A. Close the valves at the transfer manifold
B. Notify the person in charge of the shore facility
C. Shut down the transfer operation
D. Sound the fire alarm

65. What is not usually a concern when loading a single-hulled tanker?
A. Bending moments
B. Initial stability
C. Draft
D. Trim

66. Which operation may cause the pressure in an inert tank to fall below the prescribed limits?
A. Loading
B. Discharging
C. Crude oil washing
D. Steaming tanks

67. While taking on fuel oil, the transfer hose leaks causing a sheen on the water. You should
A. apply dispersants to the sheen
B. repair the leak with duct tape
C. reduce the rate of transfer
D. shut down operations

68. You are discharging cargo and the inert gas system is in operation to inert the tanks. The pressure in a tank being discharged starts to drop below the allowable limit. What action should you take?
A. Cut in another IG fan to increase gas flow.
B. Open the pressure control valve until the pressure increases.
C. Open the tank isolation valve to the fully open position.
D. Reduce the pumping rate.

69. What is the purpose of a check valve?
A. Passes air but not liquid
B. Regulates liquid flow
C. Permits flow in one direction only
D. Passes liquid but not air

70. What is the proper direction of flow through a globe valve when the valve is installed to be in a normally open position?
A. Direction is unimportant
B. Depends on seat configuration
C. From below the seat
D. From above the seat