



Advanced Training for Chemical Tanker Cargo Operations (CHEMCO)

30 Practice Questions and Answers for STCW Exams

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Practice Set 1

Q1. Which IMO Code regulates the carriage of dangerous chemicals in bulk on chemical tankers?

- A) IMSBC Code
- B) IGC Code
- C) IBC Code
- D) IMDG Code

Correct Answer: C (IBC Code)

Explanation: The International Bulk Chemical Code (IBC Code) establishes safety standards for design, equipment, and operation of chemical tankers.

Q2. Under MARPOL Annex II, which pollution category presents the major hazard to human health or marine resources?

- A) Category Y
- B) OS (Other Substances)
- C) Category Z
- D) Category X

Correct Answer: D (Category X)

Explanation: Category X substances pose the highest risk; discharge into the sea of Category X tank washings is strictly prohibited.

Q3. What test is performed on tank bulkhead surfaces to detect microscopic hydrocarbon residues before loading sensitive chemical cargoes?

- A) Hydrostatic pressure test
- B) Magnetic particle test
- C) Ultrasonic thickness test
- D) Wall Wash Test (WWT)

Correct Answer: D (Wall Wash Test (WWT))

Explanation: Wall Wash Testing uses solvents (methanol/acetone) to check tank cleanliness parameters such as Permanganate Time, Purity, and Chloride content.



- A) Type 1 chemical tanker
- B) Single hull barge
- C) Type 3 chemical tanker
- D) Open deck vessel

Correct Answer: A (Type 1 chemical tanker)

Explanation: Type 1 chemical tankers afford maximum preventive containment against severe environmental or safety hazards.

Q5. What material is widely used for cargo tanks carrying aggressive acids such as Nitric or Phosphoric acid?

- A) Stainless Steel (e.g. 316L, Duplex 2205)
- B) Aluminum alloy
- C) Zinc silicate coating
- D) Mild carbon steel

Correct Answer: A (Stainless Steel (e.g. 316L, Duplex 2205))

Explanation: Stainless steel offers superior corrosion resistance and versatility for acid and high-purity chemical cargoes.

Q6. What is the key limitation of Zinc Silicate tank coatings in chemical tankers?

- A) Highly flammable surface coating
- B) Incompatible with acids and strong alkalis (pH limits usually 6 to 10)
- C) Cannot handle aromatic solvents like Benzene
- D) Melts at room temperature

Correct Answer: B (Incompatible with acids and strong alkalis (pH limits usually 6 to 10))

Explanation: Zinc silicate reacts with acidic or strongly alkaline solutions, destroying the coating matrix.

Q7. What document must be maintained on board detailing all chemical cargo loading, discharging, tank washing, and slop handling?

- A) Radio Log Book
- B) Cargo Record Book (CRB)
- C) Bell Book
- D) Engine Log Book

Correct Answer: B (Cargo Record Book (CRB))

Explanation: MARPOL Annex II mandates a Cargo Record Book to log every chemical cargo operation and tank wash discharge.

Q8. What is self-polymerization in chemical cargoes?

- A) Dissolving of cargo into seawater
- B) Freezing of liquid into crystal ice
- C) Evaporation of cargo into atmosphere
- D) Chemical reaction where monomer molecules join to form long polymers, generating intense heat

Correct Answer: D (Chemical reaction where monomer molecules join to form long polymers, generating intense heat)

Explanation: Cargoes like Styrene monomer or Vinyl Acetate can spontaneously polymerize, producing dangerous heat and pressure building if uninhibited.



- A) Material Safety Data Sheet (MSDS)
- B) Tonnage Certificate
- C) Crew List
- D) Customs Manifest

Correct Answer: A (Material Safety Data Sheet (MSDS))

Explanation: MSDS (or SDS) provides vital chemical handling data and first-aid instructions before loading any chemical product.

Q10. What system is used to purge chemical lines and maintain an inert nitrogen cushion over moisture-sensitive cargoes?

- A) Steam lance system
- B) Seawater flushing system
- C) Nitrogen padding / inerting system
- D) Compressed air blower

Correct Answer: C (Nitrogen padding / inerting system)

Explanation: Nitrogen padding isolates air/moisture reactive cargoes (like Isocyanates) from atmospheric humidity and oxygen.

Q11. Under STCW Code Table A-V/1-1-3, what is the mandatory requirement regarding regulatory compliance and STCW code requirements during Advanced Chemical Tanker operations?

- A) Optional adherence based on vessel size
- B) Strict compliance with approved safety procedures and flag state regulations
- C) Applicable only during drydock operations
- D) Verbal recommendation without documentation

Correct Answer: B (Strict compliance with approved safety procedures and flag state regulations)

Explanation: STCW Code Table A-V/1-1-3 mandates strict compliance with approved safety protocols for Advanced Chemical Tanker.

Q12. What specific safety precaution must be observed when managing regulatory compliance and STCW code requirements for Advanced Chemical Tanker on board?

- A) Proceeding without informing the officer on watch
- B) Delegating tasks exclusively to untrained crew members
- C) Disabling automated safety alarms to save time
- D) Conducting a thorough risk assessment and briefing all involved personnel prior to starting work

Correct Answer: D (Conducting a thorough risk assessment and briefing all involved personnel prior to starting work)

Explanation: Risk assessments and pre-job briefings ensure all team members understand hazards during Advanced Chemical Tanker operations.

Q13. What is Threshold Limit Value - Time Weighted Average (TLV-TWA)?

- A) Safe airborne exposure concentration for normal 8-hour workday and 40-hour workweek
- B) Maximum limit for 1 minute
- C) Pressure limit
- D) Temperature limit

Correct Answer: A (Safe airborne exposure concentration for normal 8-hour workday and 40-hour workweek)

Explanation: TLV-TWA defines the safe average exposure concentration over a standard work shift.



Q14. What chemical cargo reaction occurs when two incompatible cargoes contact each other?

- A) Sublimation
- B) Condensation
- C) Incompatible chemical reactivity producing toxic fumes, heat, or explosion
- D) Freezing

Correct Answer: C (Incompatible chemical reactivity producing toxic fumes, heat, or explosion)

Explanation: Incompatible cargoes (e.g. Acids and Caustic Soda) react violently if mixed.

Q15. What is mandatory prior to personnel entering a chemical cargo tank for inspection?

- A) Washing with seawater
- B) Verbal permission from cook
- C) Tank gas-freeing, atmospheric testing for O₂ (20.9%), toxic gas (0 ppm), LEL (0%), and Enclosed Space Entry Permit
- D) Opening main valve

Correct Answer: C (Tank gas-freeing, atmospheric testing for O₂ (20.9%), toxic gas (0 ppm), LEL (0%), and Enclosed Space Entry Permit)

Explanation: Rigorous enclosed space entry safety testing is legally required before tank entry.

Q16. What personal protective equipment is required during chemical cargo sampling of toxic substances?

- A) Leather apron
- B) Chemical suit, boots, face shield/goggles, chemical resistant gloves, and organic vapor mask or SCBA
- C) Short sleeves
- D) Standard coveralls

Correct Answer: B (Chemical suit, boots, face shield/goggles, chemical resistant gloves, and organic vapor mask or SCBA)

Explanation: Sampling toxic or corrosive chemicals requires full chemical protective equipment.

Q17. What equipment must be available near chemical cargo manifolds during transfer operations?

- A) Steam boiler
- B) Radio receiver
- C) Paint spray machine
- D) Emergency safety shower and eye-wash station

Correct Answer: D (Emergency safety shower and eye-wash station)

Explanation: Safety showers and eyewash stations provide immediate decontamination for accidental spills.

Q18. What is the P&A Manual on a chemical tanker?

- A) Pump manual
- B) Procedures and Arrangements Manual approved by Flag State Administration
- C) Port anchorage guide
- D) Personnel manual

Correct Answer: B (Procedures and Arrangements Manual approved by Flag State Administration)

Explanation: The P&A Manual details specific procedures for tank washing, stripping, and slop handling under MARPOL Annex II.



Q19. What device is installed on chemical tank venting systems to prevent over-pressure or vacuum?

- A) Check valve
- B) High-velocity Pressure/Vacuum (P/V) valve
- C) Globe valve
- D) Needle valve

Correct Answer: B (High-velocity Pressure/Vacuum (P/V) valve)

Explanation: High-velocity P/V valves vent tank vapors high above deck and protect tanks from pressure damage.

Q20. What cargo stripping result is required for modern Type 2 chemical tankers built after May 2007 carrying Category X, Y, Z cargoes?

- A) Maximum residue remaining per tank must not exceed 75 liters
- B) 1000 liters
- C) 5 cubic meters
- D) No limit

Correct Answer: A (Maximum residue remaining per tank must not exceed 75 liters)

Explanation: Under MARPOL Annex II, modern chemical tankers must strip residue down to no more than 75 liters per tank.

Q21. What is the function of a toxic gas detector tube system (e.g. Dräger tube)?

- A) Test battery
- B) Measure oil viscosity
- C) Measure specific chemical vapor concentrations in ppm by colorimetric reaction
- D) Measure salinity

Correct Answer: C (Measure specific chemical vapor concentrations in ppm by colorimetric reaction)

Explanation: Indicator tubes measure exact parts-per-million concentrations of specific toxic gases.

Q22. Why are efficient stripping systems essential on chemical tankers?

- A) Increase ship speed
- B) Minimize cargo residue left in tanks prior to mandatory pre-wash or commercial cleaning
- C) Cool engine room
- D) Fill ballast tanks

Correct Answer: B (Minimize cargo residue left in tanks prior to mandatory pre-wash or commercial cleaning)

Explanation: Thorough stripping maximizes cargo delivery and minimizes slop washing quantities.

Q23. Which international regulation specifies the minimum standard for regulatory compliance and STCW code requirements concerning Advanced Chemical Tanker?

- A) STCW Code Section A-V/1-1-3 and relevant SOLAS/MARPOL conventions
- B) Port State Control advisory note only
- C) Tonnage Measurement Convention 1969
- D) International Load Line Certificate Annex 3

Correct Answer: A (STCW Code Section A-V/1-1-3 and relevant SOLAS/MARPOL conventions)

Explanation: STCW Code Section A-V/1-1-3 sets international standards for training and operational competency in Advanced Chemical Tanker.



Advanced Chemical Tanker tasks, what immediate action is required?

- A) Attempt to resolve the incident silently without raising the alarm
- B) Wait until the end of the watch to log the issue
- C) Raise the alarm, notify the Officer of the Watch, and execute assigned muster list duties
- D) Evacuate the vessel immediately without informing the bridge

Correct Answer: C (Raise the alarm, notify the Officer of the Watch, and execute assigned muster list duties)

Explanation: Prompt alarm activation ensures emergency response teams can mobilize immediately.

Q25. What is the purpose of a mandatory pre-wash under MARPOL Annex II?

- A) Clean windows
- B) Polish steel
- C) Remove high-viscosity or solidifying Category X / Y residues to shore reception
- D) Wash deck

Correct Answer: C (Remove high-viscosity or solidifying Category X / Y residues to shore reception)

Explanation: Mandatory pre-washes transfer persistent chemical slops to shore reception facilities before departure.

Q26. What is the Permanganate Time Test used for in chemical tank cleaning?

- A) Test oxygen concentration
- B) Test fuel sulfur
- C) Test water temp
- D) Detect trace presence of oxidizable organic impurities after cleaning for high-purity alcohol cargoes

Correct Answer: D (Detect trace presence of oxidizable organic impurities after cleaning for high-purity alcohol cargoes)

Explanation: Permanganate time measures how long potassium permanganate retains its pink color in wall wash samples.

Q27. What code specifies medical emergency response steps for chemical accidents on ships?

- A) SOLAS Chapter V
- B) STCW Reg I/9
- C) MARPOL Annex VI
- D) Medical First Aid Guide (MFAG)

Correct Answer: D (Medical First Aid Guide (MFAG))

Explanation: MFAG provides standardized medical response guidelines for chemical spills and exposures.

Q28. What type of cargo pump is fitted inside individual stainless steel chemical cargo tanks?

- A) Deepwell centrifugal pump
- B) Steam duplex pump
- C) Hand pump
- D) Gear pump

Correct Answer: A (Deepwell centrifugal pump)

Explanation: Deepwell pumps eliminate cargo pump rooms and isolate individual cargo parcels.



- A) Water freezes
- B) Water turns steel into wood
- C) Water reacts exothermically generating extreme heat and corrosive splattering
- D) Water turns acid into rock

Correct Answer: C (Water reacts exothermically generating extreme heat and corrosive splattering)

Explanation: Adding water to concentrated acid causes violent heat release and severe corrosive boiling.

Q30. What is a Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk?

- A) Crew medical fitness
- B) Engine overhaul certificate
- C) Statutory certificate listing all specific chemical products approved for carriage
- D) Pilot license

Correct Answer: C (Statutory certificate listing all specific chemical products approved for carriage)

Explanation: Certificates of Fitness verify tank coatings, containment types, and allowed chemical lists.