PRACTICE EXAM 14: HAZMAT & TANKER SIMULATION (50 QUESTIONS)

HAZMAT SECTION (Questions 1–30)

1. A driver transporting 2,000 pounds of Division 5.1 Oxidizer in drums arrives at a customer's warehouse for delivery. While waiting for the dock door to open, the driver notices a strong gasoline odor coming from inside the warehouse. The dock worker says a forklift fuel spill was cleaned up earlier that morning. Should the driver proceed with unloading the oxidizer into this warehouse?

A. The driver should exercise caution — an oxidizer brought into a space with residual flammable vapors creates a heightened fire risk because oxidizers intensify combustion, and the driver should verify the area is fully ventilated before unloading

B. Yes, because the spill has already been cleaned up and the remaining odor is harmless residual vapor with no fire risk

C. No, the driver must refuse the delivery entirely and return the oxidizer to the shipper because the warehouse is permanently contaminated

D. Yes, because Division 5.1 Oxidizers are nonflammable materials that cannot contribute to or intensify fires under any circumstances

2. A driver is reviewing shipping papers for a load containing multiple hazardous materials. One entry reads: "Environmentally hazardous substance, solid, n.o.s. (lead compounds), 9, UN3077, PG III, RQ, 2,500 lbs." The driver sees both the "RQ" designation and the "n.o.s." proper shipping name. What two requirements do these designations trigger?

A. "RQ" requires double packaging, and "n.o.s." requires the driver to personally classify the material using the Hazardous Materials Table

B. "RQ" requires the driver to carry a spill cleanup kit, and "n.o.s." requires the shipper to attach a photograph of the material to the shipping papers

C. "RQ" triggers mandatory spill reporting if the material is released, and "n.o.s." requires the technical name (lead compounds) to appear in parentheses after the proper shipping name

D. "RQ" exempts the material from placarding requirements, and "n.o.s." allows the shipper to use any descriptive name in place of the proper shipping name

3. A driver is hauling a placarded load of hazardous materials on a highway. The driver exits the highway onto a surface street and encounters a school crossing guard holding a stop sign in the crosswalk while children cross the street. The driver's vehicle is the first vehicle at the crosswalk. What must the driver do?

A. Sound the vehicle's horn twice to alert the crossing guard that a HazMat vehicle is present, then proceed slowly through the crosswalk at 5 mph

B. Stop the vehicle and wait until the crossing guard signals that it is safe to proceed — HazMat vehicles must obey all traffic control directions including those from crossing guards

C. Make a Uturn to find an alternate route that avoids the school crossing zone entirely, because HazMat vehicles may never stop within 500 feet of a school

D. Flash the vehicle's headlights at the crossing guard to request priority passage through the crosswalk due to the hazardous materials on board

4. Under the Hazardous Materials Regulations, a driver discovers that the shipper has placed two different hazardous materials in the same outer packaging — a drum containing smaller containers of two different chemicals. The shipping papers list both materials. Is this "overpacking" practice permitted?

A. No, each hazardous material must always be packaged in its own separate outer container with no other materials enclosed

B. No, because combining two different hazardous materials in one outer package automatically creates a new, unclassified substance

C. Yes, but only if both materials are from the same hazard class and have identical packing group designations on their table entries

D. Overpacking is permitted under specific regulatory conditions — the materials must be compatible, the overpack must be marked with the word "OVERPACK," and all required markings and labels must be visible or reproduced on the outer packaging

5. A driver is transporting a shipment of Division 2.1 Flammable Gas cylinders on a flatbed trailer. During transit, a heavy rainstorm begins. The cylinders are secured with straps but are exposed to the rain. Is rain exposure a concern for these cylinders?

A. Yes, because water contact with Division 2.1 materials causes the gas to expand uncontrollably, potentially bursting the cylinders

B. Yes, because rain will wash away the hazard warning labels on the cylinders, creating a labeling violation during a roadside inspection

C. Rain exposure is not a significant concern for Division 2.1 compressed gas cylinders — they are sealed pressure vessels designed to withstand outdoor weather conditions including rain

D. Yes, because wet cylinder surfaces become extremely slippery, which could cause the cylinders to slide out of their securing straps

6. A driver transporting Division 1.1 Explosives approaches a construction zone on the highway. The construction zone uses temporary traffic signals — a portable traffic light showing a red signal. The driver stops at the red light. While waiting, the driver notices construction workers using an acetylene cutting torch approximately 150 feet from the stopped vehicle. What should the driver do?

A. The driver should be concerned about the proximity of open flame to the explosives — if possible, the driver should communicate the concern to construction zone personnel and consider requesting an alternate traffic route through the zone

B. Continue waiting at the red signal without concern because 150 feet exceeds the 25foot nosmoking zone requirement

C. Ignore the traffic signal, proceed through the red light, and clear the construction zone immediately to distance the explosives from the torch

D. Exit the vehicle and physically approach the construction workers to demand they extinguish the cutting torch before the vehicle passes

7. A vehicle is carrying 500 pounds of Class 3 Flammable Liquid (Table 2) and 100 pounds of Division 2.3 Poison Gas (Table 1). What placards must be displayed?

A. FLAMMABLE placards only, because Class 3 has the greater weight and Table 2 materials take priority when they outweigh Table 1 materials

B. DANGEROUS placards, because two hazard classes are present and the combined weight exceeds 1,001 pounds

C. No placards are required because the total combined weight of 600 pounds is below the 1,001pound threshold

D. POISON GAS placards for the Table 1 material at any quantity — the Class 3 at 500 pounds does not independently reach the Table 2 threshold, so no FLAMMABLE placard is required

8. A driver arrives at a shipper's facility to pick up a hazardous materials load. The shipper says the placards are in a box inside the facility office and tells the driver to grab them and put them on the trailer. When the driver opens the box, it contains eight different types of placards, and the driver is not sure which ones match the material listed on the shipping papers. What should the driver do?

A. Select the most common placard type from the box and apply it to all four sides, since any placard provides more safety than no placard

B. Ask the shipper to identify the correct placards for the specific material listed on the shipping papers, then verify the selection against the hazard class shown on the papers before applying them

C. Apply one of each type from the box to different sides of the vehicle to cover all possible hazard classes

D. Call the FMCSA hotline and ask a regulatory specialist to determine the correct placard based on the shipping paper information

9. A driver transporting hazardous materials parks at a rest area for a mandatory 30minute rest break. The driver remains in the cab with the seat reclined and eyes closed, intending to nap. The vehicle is placarded. Is the vehicle considered "attended" during this nap?

A. Yes, because the driver is physically present inside the vehicle, which satisfies the attendance requirement regardless of sleep status

B. Yes, because a 30minute nap is within the regulatory allowance for brief rest periods at attended HazMat vehicles

C. No, the driver must be in the cab and awake, or within 100 feet with clear view — sleeping or napping does not constitute attending the vehicle

D. No, but only if the nap exceeds 15 minutes — naps of 15 minutes or less satisfy the attendance requirement

10. A driver is assigned to transport a load of Class 8 Corrosive liquid in drums. During loading, the driver notices that the drums are being placed on their sides rather than upright. The bung closures are on the side of each drum, facing outward. Should the driver accept this loading orientation?

A. No, corrosive liquid drums must be loaded upright with closures facing up — sideways loading places liquid pressure against the closure seal, increasing the risk of leakage during transport

B. Yes, because Class 8 drums are specifically designed and tested for horizontal transport with closures on the side

C. No, but only for Packing Group I corrosives — PG II and PG III corrosive drums may be loaded on their sides without restriction

D. Yes, as long as absorbent material is placed underneath each drum to contain any minor drips that may occur during transit

11. A HazMat driver pulls into a truck stop for fuel and notices a vehicle fire in the truck stop parking lot approximately 250 feet from the fuel pumps. Fire trucks have not yet arrived. The driver's vehicle is placarded with FLAMMABLE placards. What should the driver do?

A. Proceed to the fuel pumps because the fire is in the parking lot, not at the pumps, and 250 feet provides adequate separation

B. Park the vehicle and use the onboard fire extinguisher to help fight the vehicle fire before it spreads to other parked trucks

C. Do not enter the truck stop — a fire at 250 feet is within the 300foot prohibition zone for placarded vehicles, and the situation could escalate unpredictably

D. Enter the truck stop but park on the opposite side of the lot from the fire, maintaining maximum possible distance while still fueling

12. A driver is reviewing the shipping papers for a load of hazardous waste. The papers include a Uniform Hazardous Waste Manifest. The driver notices that the manifest lists the designated disposal facility as "Green Valley Disposal, 123 Industrial Drive, Springfield." The driver's GPS shows two facilities named "Green Valley Disposal" in Springfield — one at 123 Industrial Drive and another at 456 Commerce Lane. What should the driver do?

A. Deliver to whichever facility is closest to reduce transit time and fuel costs for the carrier

B. Deliver to the exact address listed on the manifest — 123 Industrial Drive — because hazardous waste may only be delivered to the specific facility identified on the manifest

C. Call both facilities and deliver to whichever one answers the phone first, since both carry the same business name

D. Deliver to 456 Commerce Lane because the manifest listing 123 Industrial Drive is probably a typographical error

13. A driver transporting Class 3 Flammable Liquid in a cargo tank pulls off the highway to address a mechanical issue. While parked on the shoulder, the driver uses the vehicle's cigarette lighter to light a cigarette while remaining in the cab with all windows closed. Is this a violation?

A. No, because smoking inside the closed cab does not expose the hazardous materials to open flame or smoke

B. No, because the cigarette lighter is an integral part of the vehicle's electrical system and is not considered an "open flame"

C. Yes, but only if the vehicle's engine is running at the time, because the engine creates an additional ignition source

D. Yes, no person may smoke within 25 feet of a placarded vehicle — the driver is within the vehicle and therefore within 25 feet

14. Under 49 CFR, what is the maximum combined character count for a title and subtitle on a hazardous materials shipping paper entry?

A. There is no "title and subtitle" formatting requirement for shipping paper entries — the regulations specify required data elements (proper shipping name, hazard class, ID number, packing group, quantity) in a prescribed sequence, not titles and subtitles

B. The combined title and subtitle must not exceed 200 characters to ensure readability on standardwidth shipping paper forms

C. The title may contain up to 100 characters and the subtitle up to 50 characters, for a combined maximum of 150 characters

D. Each hazardous material entry is limited to a single line of 80 characters including all required elements and spacing

15. A driver transporting hazardous materials has a dashboardmounted GPS unit. During the trip, the GPS recalculates the route and directs the driver through a tunnel that the driver knows is posted as prohibited for HazMat vehicles. Should the driver follow the GPS route?

A. Yes, because GPS systems incorporate all current HazMat restrictions into their routing algorithms and would not direct a driver through a prohibited tunnel

B. No, the driver must override the GPS and follow the route that complies with all posted HazMat restrictions — electronic navigation does not supersede posted regulatory signs

C. Yes, but only if the GPS is a commercial truckspecific model that factors in vehicle height, weight, and HazMat restrictions

D. No, but the driver should call the GPS manufacturer's customer service line to report the routing error before taking the alternate route

16. A driver discovers during a stop that a package of Division 6.1 Toxic material has been crushed by a heavier package that shifted during transit. The crushed package has a visible crack, and a small amount of white powder is visible on the trailer floor near the crack. The driver is not wearing any personal protective equipment. What should the driver do?

A. Carefully sweep the powder back into the package using a broom and dustpan from the cab, then tape the crack closed

B. Pick up the crushed package by hand and move it to the rear of the trailer to prevent further contamination of other cargo

C. Use the vehicle's fire extinguisher to spray the powder, which will neutralize any toxic properties through chemical dilution

D. Do not touch the powder or the damaged package — move away from the trailer, close the doors if safe to do so, and contact the carrier and emergency services for guidance

17. A vehicle is loaded with 1,500 pounds of Division 2.2 NonFlammable Gas and 800 pounds of Division 5.1 Oxidizer. Both are Table 2 materials. What placards must be displayed?

A. Both NONFLAMMABLE GAS and OXIDIZER placards, because both materials independently exceed the 1,001pound threshold

B. Only OXIDIZER placards, because Division 5.1 materials take placarding priority over Division 2.2 in all mixedload situations

C. NONFLAMMABLE GAS placards only — Division 2.2 exceeds 1,001 pounds while Division 5.1 at 800 pounds does not reach the threshold independently

D. DANGEROUS placards, because two different Table 2 classes are present regardless of their individual weights

18. A driver transporting hazardous materials receives a text message on a personal cell phone while driving on the highway. The driver reads the text message while maintaining one hand on the steering wheel. Beyond the general distracted driving concern, what makes this behavior particularly dangerous with a HazMat load?

A. HazMat transport demands constant vigilance for changing conditions — a momentary distraction could cause the driver to miss a critical hazard, enter a curve too fast, or fail to maintain safe following distance, with potentially catastrophic consequences involving hazardous material release

B. Cell phone signals can interfere with the electronic monitoring systems on modern cargo tanks, causing false pressure readings

C. Reading text messages while driving a HazMat vehicle automatically doubles the federal fine structure compared to nonHazMat vehicles

D. The electromagnetic radiation from the cell phone screen can penetrate the trailer walls and increase the vapor pressure of flammable liquids

19. A driver transporting a load of Class 8 Corrosive material in a cargo tank stops for a break and parks at a truck stop. While parked, the driver notices a small puddle of clear liquid underneath the cargo tank near one of the discharge valve connections. The liquid has no odor. Could this be a corrosive leak even though the liquid appears to be water?

A. No, corrosive liquids always have a strong, distinctive odor that makes them immediately identifiable — odorless liquid is always water

B. No, because corrosive liquids are always colored and never appear clear, making visual identification straightforward

C. Yes, but only if the outside temperature is above 100°F, which causes corrosives to become colorless and odorless

D. Yes, many corrosive materials — including certain acid solutions and caustic solutions — can appear clear and have little or no detectable odor, making visual identification unreliable

20. A shipper offers a driver a load of hazardous materials with shipping papers that list all required elements. However, the proper shipping name for one material appears to have been printed incorrectly — it reads "Sulphuric acid" instead of "Sulfuric acid" (the spelling listed in the Hazardous Materials Table). Is this a compliance issue?

A. No, because "Sulphuric" and "Sulfuric" are both internationally recognized spellings and either is acceptable under DOT regulations

B. The driver should flag this discrepancy with the shipper — while minor spelling variations may be acceptable in some contexts, the shipping papers should use the exact proper shipping name as listed in the Hazardous Materials Table to ensure unambiguous identification

C. Yes, the single letter difference automatically reclassifies the material into a different hazard class requiring different placards

D. No, because shipping paper entries are reviewed by computer scanning systems that ignore spelling variations and match only on identification numbers

21. A driver is making a multistop delivery of hazardous materials. At the third stop, the driver delivers 800 pounds of Class 3 Flammable Liquid that was the only Class 3 material on the vehicle. After this delivery, the remaining load consists of 600 pounds of Class 8 Corrosive and 500 pounds of Division 5.1 Oxidizer. What placard changes are needed after the third delivery?

A. The FLAMMABLE placards should remain because the vehicle previously carried flammable material and residue may be present in the trailer

B. Remove the FLAMMABLE placards — the remaining Class 8 (600 lbs) and Division 5.1 (500 lbs) do not individually reach the 1,001pound threshold, but their combined total of 1,100 pounds allows DANGEROUS placards

C. No changes are needed because all placards applied at the origin must remain until the vehicle returns to the terminal

D. Remove all placards because neither remaining material individually reaches the 1,001pound threshold

22. A driver is transporting hazardous materials through an urban area. The driver encounters a street festival with crowds of people lining both sides of the street. A police officer is directing traffic through the festival area. The officer waves the HazMat vehicle through. Should the driver proceed?

A. Yes, because the police officer has authority over all traffic including HazMat vehicles, and the driver must follow the officer's direction

B. No, because HazMat vehicles are prohibited from operating within 500 feet of any organized public gathering regardless of police direction

C. Yes, but the driver should reduce speed to 5 mph and activate the vehicle's emergency flashers while passing through the festival area

D. The driver should inform the officer that the vehicle is carrying hazardous materials — the officer can then decide whether to allow the vehicle through or redirect it around the festival area

23. Under 49 CFR Part 172, what is the purpose of the "special provisions" listed in Column 7 of the Hazardous Materials Table?

A. Special provisions modify, supplement, or create exceptions to standard regulatory requirements for specific materials — they may authorize less restrictive conditions, impose additional requirements, or provide clarifications

B. Special provisions list the insurance requirements for each material, specifying the minimum coverage the carrier must maintain

C. Special provisions identify the congressional committee that approved the material's inclusion in the Hazardous Materials Table

D. Special provisions indicate the specific DOT regional office that has enforcement jurisdiction over each material during transport

24. A driver discovers during an enroute inspection that the seal on one of the trailer's rear doors has deteriorated — there is a gap where rain could enter the trailer. The load includes packages of Division 4.3 Dangerous When Wet material. Why is this door seal condition particularly concerning for this specific hazard class?

A. Rain entering through the gap could damage the shipping papers stored at the rear of the trailer, creating a documentation violation

B. The deteriorated seal allows road dust to enter the trailer, which could scratch and damage the hazard warning labels on the packages

C. Division 4.3 materials emit flammable or toxic gases when they contact water — rain entering through the deteriorated seal could reach the packages and trigger a dangerous reaction

D. The gap in the door seal allows the trailer's internal temperature to fluctuate, which could affect the stability of temperaturesensitive materials

25. A driver is transporting hazardous materials when the vehicle's horn stops working. Can the driver continue the trip?

A. Yes, because the horn has no specific HazMat function and its failure does not affect the safety of the hazardous materials cargo

B. Yes, because the vehicle's backup alarm serves the same warning function as the horn for all regulatory purposes

C. No, because the horn is the primary warning device used to alert bystanders to move away from a HazMat vehicle during an emergency

D. A nonfunctioning horn is a vehicle equipment violation — the driver should have it repaired at the earliest safe opportunity, as the horn is needed for general traffic safety and could be critical for warning others during a HazMat emergency

26. A driver picks up a hazardous materials shipment. The shipper hands the driver a tablet computer showing a digital copy of the shipping papers on the screen. No physical paper copy is provided. Does a digitalonly copy of the shipping papers satisfy the regulatory requirement?

A. No, the regulations require shipping papers to be in a physical form that can be handed to emergency responders and placed in the driver's door pouch or on the seat — a digital tablet display does not satisfy this requirement

B. Yes, because digital documents are legally equivalent to paper documents under the ESign Act for all federal regulatory purposes

C. Yes, as long as the tablet is fully charged and the shipping paper document is saved for offline viewing in case of signal loss

D. No, but only because tablet screens are difficult to read in direct sunlight, not because of any regulatory requirement for physical paper

27. A driver transporting Division 1.4 Explosives (1,200 pounds — above the 1,001pound Table 2 threshold) picks up a second load of Class 9 Miscellaneous Hazardous Materials (300 pounds) at a second stop. After the second pickup, what is the correct placarding status?

A. Both EXPLOSIVES 1.4 and CLASS 9 placards, because the vehicle carries two hazard classes and both must be individually placarded

B. EXPLOSIVES 1.4 placards remain for the 1,200pound load exceeding the 1,001pound threshold — the Class 9 at 300 pounds does not independently reach the threshold and does not change the existing placarding

C. DANGEROUS placards, replacing the EXPLOSIVES 1.4 placards because the vehicle now carries a mixed load from two different classes

D. CLASS 9 placards replace the EXPLOSIVES 1.4 placards because the most recently loaded material takes placarding priority

28. A driver is transporting hazardous materials on a highway when the "check engine" light and the "service transmission" light both illuminate simultaneously on the dashboard. The vehicle continues to drive normally. What should the driver do?

A. Continue driving at normal speed to the destination because dashboard warning lights are informational only and do not indicate actual problems

B. Accelerate to test whether the transmission is responding normally, and if it shifts properly, continue the trip without stopping

C. Pull over immediately and shut off the engine because simultaneous warning lights indicate the vehicle is about to experience a catastrophic drivetrain failure

D. Continue driving cautiously to the nearest safe stop while monitoring vehicle performance — multiple simultaneous warning lights warrant prompt investigation, and maintaining vehicle control is essential with a HazMat load

29. A driver is preparing to transport a load of hazardous materials. During the pretrip inspection, the driver discovers that the vehicle's rearview mirrors are properly adjusted but one of the two side mirrors has a crack running across its surface. The mirror still provides a usable reflection. Should the driver depart with the cracked mirror?

A. Yes, because a cracked mirror that still provides a usable reflection meets the minimum functional requirement for commercial vehicles

B. Yes, but only if the crack does not distort the image enough to affect the driver's ability to judge distances accurately during lane changes

C. A cracked mirror should be repaired or replaced at the earliest safe opportunity — while it may still function, a crack can worsen, create blind spots, or distort reflections, all of which impair the precise vehicle awareness needed for safe HazMat transport

D. No, any cracked mirror automatically places the vehicle out of service under federal motor carrier safety regulations

30. A driver is at a shipping facility loading a mixed load. The shipper has loaded 800 pounds of Class 3 Flammable Liquid and then asks the driver to also accept 300 pounds of Division 6.1 Toxic material that will go to a different customer. The driver checks the segregation table and confirms the two classes may be loaded together with proper separation. After loading both materials, the total Table 2 weight on the vehicle is 1,100 pounds. What placard options are available?

A. DANGEROUS placards may be used because two Table 2 classes are present and the combined total exceeds 1,001 pounds while neither class individually reaches the threshold

B. No placards are required because neither class independently reaches 1,001 pounds and the DANGEROUS placard requires three or more classes

C. Both FLAMMABLE and POISON placards must be displayed because both materials are present on the vehicle

D. Only FLAMMABLE placards are required because Class 3 has the higher individual weight

TANKER SECTION (Questions 31–50)

31. A tank vehicle driver is hauling a full load of diesel fuel in a baffled DOT 406 cargo tank at 50 mph on a twolane highway. A vehicle ahead suddenly brakes hard. The driver applies the brakes firmly. During braking, the driver feels distinct rhythmic pulses through the pedal as the liquid masses between each baffle sequentially surge against the baffles. The vehicle slows but takes noticeably longer to stop than the driver expected. What has occurred?

A. The baffles have broken free from their welds and are slamming against the tank heads, creating the pulsing sensation

B. The vehicle's ABS system has failed, causing the wheels to lock and unlock in rapid succession during the hard braking event

C. The rhythmic pulses are from the trailer's suspension bouncing on uneven pavement, not from liquid surge

D. The liquid surge in a baffled tank creates sequential impacts against each baffle during hard braking — while baffles reduce surge compared to smooth bore, significant forward force still pushes the vehicle beyond its normal mechanical stopping distance

32. A driver operating an empty (cleaned and purged) DOT 407 cargo tank on a windy day is traveling across a long, open bridge. Strong crosswinds are gusting to 45 mph. What is the primary handling concern?

A. The cleaned tank contains residual chemical vapors that could ignite if the crosswind forces air through the pressurevacuum vent at high velocity

B. The empty tank's large surface area acts as a sail while the reduced weight provides less tire traction to resist lateral wind forces — the vehicle is at significant risk of being pushed sideways or even overturning in severe crosswind gusts

C. The crosswind will create a vacuum effect on the leeward side of the tank, potentially collapsing the tank shell inward

D. The bridge's expansion joints will amplify the crosswind effect by bouncing the lightweight empty vehicle higher than normal with each joint

33. A tank vehicle carrying 6,000 gallons of liquid in a 9,000gallon smooth bore tank approaches a 90degree right turn at an intersection. The driver reduces speed to 10 mph before entering the turn. Despite the low speed, the driver feels the vehicle lean noticeably to the left as the liquid surges to the outside of the turn. Why does this lean occur even at such a low speed?

A. The vehicle's tires have lost traction on a patch of oil at the intersection, causing the vehicle to slide sideways regardless of speed

B. The 3,000 gallons of empty space allows the liquid to shift laterally with essentially no resistance in the smooth bore tank — even at low speeds, 6,000 gallons of liquid (approximately 50,000 pounds) shifting to one side produces substantial overturning force

C. The vehicle's suspension has failed on the left side, causing the tank to tilt independently of the liquid movement inside

D. At 10 mph, the liquid has frozen in place due to insufficient kinetic energy to overcome surface tension with the tank walls

34. A driver is loading a multicompartment petroleum tank at a fuel terminal. The terminal operator asks the driver which compartment should be loaded first. The driver knows the delivery route requires the first customer to receive diesel from compartment 5 (rear), and the last customer needs regular gasoline from compartment 1 (front). What loading principle should guide the compartment loading sequence?

A. Always load the front compartment first regardless of delivery order, because frontloaded weight provides better steering response

B. Load compartments in random order because the sequence has no effect on weight distribution or vehicle handling

C. Always load the rear compartment first because petroleum products are denser when cold and should be at the lowest point

D. Load compartments to maintain balanced weight distribution across all axle groups at every stage — including after each delivery — which means the driver must plan the sequence around both loading balance and delivery order

35. A cargo tank driver is making a delivery of unleaded gasoline to a retail gas station. Before connecting the delivery hose to the station's underground tank fill pipe, the driver must verify that the correct underground tank is being connected. How does the driver typically verify the correct tank?

A. By measuring the diameter of the fill pipe, which is standardized at different sizes for different fuel grades

B. By checking the color of the paint on the fill pipe cap, which indicates the product grade in all jurisdictions

C. By checking the product identification markings on or near the fill pipe, verifying they match the product being delivered — and by confirming with the station operator which fill pipe corresponds to which underground tank

D. By pumping a small test quantity and checking the dispensed product's color at the nearest fuel pump

36. A loaded tank vehicle is parked at a delivery site on a hot day. The driver notices that the pressure gauge on the cargo tank shows a reading slightly higher than it was when the tank was loaded in the cool morning hours. Is this pressure increase expected?

A. No, any pressure increase during the day indicates a malfunction in the pressure relief system that requires immediate attention

B. Yes, as the ambient temperature increases throughout the day, the liquid expands and the vapor pressure in the headspace increases — the pressure gauge reflects this normal thermal effect

C. No, the pressure should decrease during the day because the sun's heat causes the liquid to evaporate, reducing the overall mass inside the tank

D. Yes, but only if the tank is more than 90 percent full — tanks loaded below 90 percent do not experience thermal pressure increases

37. A driver operating a smooth bore tank vehicle at highway speed needs to exit the highway via an offramp. The ramp curves to the right with an advisory speed of 30 mph. The driver reduces speed to 20 mph before entering the ramp. Halfway through the ramp, a vehicle ahead on the ramp brakes suddenly. The driver must brake in the curve. What makes this situation especially dangerous?

A. Braking in a curve in a smooth bore tank produces simultaneous forward surge and lateral surge — the liquid pushes forward against the front head while also pressing against the outside wall, creating a diagonal force that maximizes rollover risk

B. The ramp's banked surface becomes inverted during braking, pushing the vehicle toward the outside guard rail

C. The smooth bore tank's lack of baffles causes the liquid to rotate in a circular motion during combined braking and turning

D. The ABS system is designed to function only on straight roads and automatically deactivates during any turning maneuver

38. A cargo tank that was loaded at a terminal 200 miles ago has been traveling through progressively warmer climate zones. The driver notices the pressurevacuum vent on the manhole cover has been releasing small puffs of vapor more frequently than earlier in the trip. What is happening?

A. The vent is malfunctioning because it should never activate during highway transport under any conditions

B. The tank's structural integrity has been compromised during the trip, allowing internal pressure to exceed design limits

C. As the liquid warms in the progressively hotter climate, it expands and produces more vapor, gradually increasing headspace pressure — the vent is functioning correctly by releasing pressure in small increments to prevent overpressure

D. The puffs of vapor indicate the liquid level is dropping due to evaporation, and the vent is admitting air to prevent a vacuum

39. A tank vehicle driver is delivering product to a commercial facility. The delivery requires the driver to use a product hose that runs across a driveway where other vehicles occasionally pass. What hazard does this hose placement create?

A. The hose across the driveway creates a trip hazard for pedestrians but poses no risk to the product transfer operation

B. A vehicle driving over the pressurized hose could crush or rupture it, causing a sudden product release — the driver should place hose ramps over the hose, use traffic cones to redirect vehicles, or coordinate with facility personnel to block the driveway during the delivery

C. The hose across the driveway will become contaminated by tire rubber, which degrades the product quality

D. Vehicles driving over the hose will generate static electricity through friction, creating an ignition risk near the product

40. A loaded tank vehicle approaches a sharp curve where the driver can see that the road surface has a negative superelevation — the pavement slopes away from the inside of the curve rather than toward it. What effect does this road geometry have on the vehicle's rollover risk?

A. Negative superelevation improves stability because gravity pulls the vehicle toward the inside of the curve, counteracting centrifugal force

B. Negative superelevation has no measurable effect on rollover risk because the road banking angle is too small to influence a heavy vehicle

C. Negative superelevation eliminates the need for speed reduction on curves because the road geometry naturally compensates for centrifugal force

D. Negative superelevation increases rollover risk because gravity pulls the vehicle toward the outside of the curve, adding to the centrifugal force and liquid surge that are already pushing the vehicle outward

41. A driver is performing a pretrip inspection on a cargo tank and discovers that the specification plate is partially obscured by dried mud and road grime. The information on the plate is unreadable without cleaning. Should the driver clean the plate?

A. Yes, the specification plate must be legible for inspection purposes — the driver should clean it so that the tank specification, MAWP, testing dates, and other critical information can be read and verified

B. No, the specification plate is only checked during the tank's fiveyear requalification test, and cleaning it during a pretrip is unnecessary

C. Yes, but only if the driver is operating in a state that specifically requires specification plate legibility during roadside inspections

D. No, because cleaning the plate with water could cause corrosion on the stamped metal surface, damaging the permanent markings

42. A tank vehicle is being loaded with a chemical product. The loading facility operator tells the driver the product is "mildly corrosive — pH of 5.5." The cargo tank is a DOT 406 aluminum tank normally used for petroleum products. What should the driver be concerned about?

A. Products with a pH of 5.5 are technically acidic, but at this mild level they typically do not aggressively attack aluminum

B. Any product with a pH below 7.0 is classified as a strong acid that will rapidly dissolve aluminum within minutes of contact

C. Even mildly acidic products can corrode aluminum over time — the driver should verify with the carrier that the DOT 406 aluminum tank is authorized and compatible with this specific chemical before loading

D. pH levels only affect stainless steel tanks and have no interaction with aluminum construction materials

43. A tank vehicle driver completes a delivery and the cargo tank is now empty. While stowing the delivery hose, the driver notices a small amount of product has dripped onto the ground beneath the discharge valve area — approximately one cup of liquid. What should the driver do?

A. Ignore the drip because such small quantities occur during every delivery and are commercially insignificant

B. Clean up the drip using absorbent material carried on the vehicle, verify the discharge valve is fully closed and capped, and check for any ongoing drip before departing

C. Call the National Response Center to report the drip as a hazardous materials release requiring federal notification

D. Photograph the drip and email the photo to the carrier's environmental compliance department for evaluation within 30 days

44. A loaded tank vehicle has been parked overnight in a cold climate. The morning temperature is 15°F. The driver performs a pretrip inspection and notices that the pressure gauge on the cargo tank reads lower than normal — significantly lower than the reading when the tank was loaded the previous afternoon. Is this normal?

A. No, any pressure change overnight indicates a leak in the tank or a malfunction of the pressure relief system

B. No, tank pressure should always increase overnight because the product continues to vaporize even in cold temperatures

C. Yes, but only if the product is a cryogenic liquid — conventional liquid products do not experience pressure changes from temperature

D. Yes, as the liquid cools overnight in cold temperatures, it contracts and produces less vapor, reducing the headspace pressure — the lower gauge reading is a normal thermal effect and should increase as the day warms

45. A tank vehicle driver is making a residential heating oil delivery in a neighborhood with narrow streets. The driver must back the vehicle down a deadend street to reach the customer's fill pipe. The tank is approximately 70 percent full. What surge effect should the driver anticipate during the backing maneuver?

A. Each brake application during backing causes the liquid to surge forward, and each release followed by reverse acceleration sends it backward — the driver must use gentle inputs to manage the rocking effect

B. No surge occurs during backing because the vehicle's reverse gear mechanically stabilizes the liquid inside the tank

C. Surge during lowspeed backing is exclusively lateral, pushing the liquid to whichever side the driver is steering toward

D. The 70 percent fill level eliminates all surge because the liquid has insufficient room to build momentum in any direction

46. A driver operating a loaded tank vehicle is traveling on a highway when a construction sign appears reading "BUMP AHEAD." Why is this warning particularly important for a tank vehicle driver?

A. The bump will cause the trailer's air suspension to bottom out, potentially cracking the tank shell from the impact force

B. The bump will trigger the vehicle's ABS system, which may apply the brakes unexpectedly and cause a loss of control

C. A bump at highway speed causes the liquid cargo to momentarily become weightless as the vehicle crests the bump, then slam downward as it descends — this vertical surge can stress tank fittings, damage manhole gaskets, and contribute to cargo securement failure

D. Bumps at highway speed are not a concern for tank vehicles because the liquid cargo absorbs all vertical impact forces

47. A driver is backing a loaded tank vehicle into a tight delivery bay when the left rear corner of the trailer makes light contact with a steel bollard (protective post) near the delivery entrance. The contact is minor — a small scrape on the trailer's corner. However, the corner of the trailer is near the cargo tank's rear head. What should the driver check after this contact?

A. Only the trailer's exterior paint needs to be checked for cosmetic damage from the bollard contact

B. The driver should inspect the cargo tank's rear head area for any dent, crack, or distortion caused by the impact, and check all nearby fittings, piping, and the rear discharge valve for damage or misalignment

C. The bollard contact only affects the trailer frame and cannot impact the cargo tank's structural components

D. The driver should check the bollard for damage and report it to the facility manager, but no inspection of the tank is necessary

48. A tank vehicle equipped with a multicompartment tank is fully loaded. Each of the five compartments is filled to the correct level with the appropriate outage. During the trip, the driver passes through a region experiencing unusually high temperatures — 110°F. The driver notices the pressurevacuum vents on several compartments are venting more frequently than normal. What should the driver understand about this situation?

A. The frequent venting indicates the outage was insufficient for the actual temperature conditions — while the vents are preventing overpressure (which is their function), the driver should monitor the situation and consider stopping in a shaded area if venting becomes continuous

B. Frequent venting is a sign of imminent tank failure that requires the driver to evacuate immediately

C. The venting is caused by the vibration of highway driving and is unrelated to the high temperature conditions

D. The vents are releasing product rather than vapor, which means the tanks are overfilled and the driver must offload product immediately

49. A driver operating a loaded tank vehicle exits the highway onto a surface street and approaches a traffic circle (roundabout). The tank is a smooth bore design carrying a lowviscosity liquid at approximately 65 percent capacity. What makes this roundabout particularly challenging for this vehicle configuration?

A. The continuous curve of the roundabout creates sustained lateral surge in the smooth bore tank — the lowviscosity liquid shifts aggressively to the outside of the curve and remains there for the entire duration of the roundabout, maintaining an elevated center of gravity throughout the maneuver

B. The roundabout's center island blocks the driver's forward view, creating a visibility hazard specific to highprofile tank vehicles

C. The roundabout's entry angle requires a sharp right turn that exceeds the tank vehicle's maximum steering lock

D. Traffic circles are prohibited for all tank vehicles under federal HazMat routing regulations

50. A tank vehicle driver has been driving the same route daily for three years without incident. Today, while taking a familiar highway exit ramp at the same speed as always, the driver feels

the vehicle lean more than usual. The load, speed, and ramp geometry are the same as every other day. What could explain the increased lean?

A. The driver's perception has changed due to fatigue, and the lean is actually identical to every other day

B. The ramp's pavement has deteriorated since the last trip, changing the road surface geometry and reducing the effective superelevation

C. The increased lean is caused by a change in atmospheric pressure that affects the liquid's density and surge behavior

D. Multiple factors could explain the change — wet or debriscovered pavement reducing traction, different product density than usual, different fill level, worn tires with less grip, or suspension wear — the driver should not dismiss the unusual lean and should investigate the cause

Practice Exam 14: Answer Key and Explanations

1. A — Oxidizers intensify combustion of flammable materials by supplying oxygen. Bringing an oxidizer into a space with residual gasoline vapors creates a heightened fire risk because the oxidizer would dramatically accelerate any ignition event. The driver should verify the warehouse is fully ventilated and free of detectable flammable vapors before unloading the oxidizer into the space.

2. C — The "RQ" designation triggers mandatory notification to the National Response Center if the material is released during transport in a quantity meeting or exceeding its reportable quantity. The "n.o.s." proper shipping name requires the technical name of the specific material — in this case "lead compounds" — to appear in parentheses immediately after the proper shipping name for precise identification.

3. B — HazMat vehicles must obey all traffic control directions, including those from school crossing guards. The driver must stop and wait until the crossing guard signals it is safe to proceed. The presence of hazardous materials does not exempt the driver from any standard traffic law or traffic control authority, and children's safety takes absolute priority.

4. D — Overpacking — placing multiple hazardous materials packages inside a single outer container — is permitted under specific regulatory conditions. The materials must be compatible, the overpack must be marked with the word "OVERPACK," and all required markings and labels from the inner packages must either be visible through the outer packaging or reproduced on its exterior.

5. C — Division 2.1 Flammable Gas cylinders are sealed, highpressure vessels constructed of steel or alloy metals designed to withstand outdoor weather conditions. Rain exposure does not

affect the structural integrity of the cylinders, compromise the valve seals, or react with the contents. The cylinders are engineered for outdoor use and routine weather exposure.

6. A — An acetylene cutting torch produces open flame and intense heat 150 feet from a vehicle carrying Division 1.1 Explosives — well within the 300foot minimum distance from open fire. The driver should communicate this concern to construction zone personnel and, if possible, request an alternate traffic routing through the zone that maintains adequate distance from the torch operation.

7. D — Division 2.3 Poison Gas is a Table 1 material requiring POISON GAS placards at any quantity — the 100 pounds triggers this automatically. Class 3 Flammable Liquid at 500 pounds does not independently reach the 1,001pound Table 2 threshold, so no FLAMMABLE placard is required. Only the POISON GAS placard is mandated based on the current quantities.

8. B — The driver should ask the shipper to identify which placards from the box match the specific hazard class listed on the shipping papers. After the shipper selects the appropriate placards, the driver should verify the selection by comparing the placard's hazard class number, color, and symbol against the hazard class shown on the shipping papers before applying them to the vehicle.

9. C — A vehicle is considered attended when the driver is in the cab and awake, or within 100 feet with the vehicle in clear view. Sleeping or napping in the cab — even with a reclined seat — does not satisfy the "awake" component of the attendance requirement. The driver must be conscious and able to respond immediately to an emergency or move the vehicle if needed.

10. A — Corrosive liquid drums must be loaded upright with closures facing up. When loaded on their sides, the liquid presses against the bung closure seal from the inside with hydraulic pressure. These closures are designed to resist gravity pressing down from above, not sustained lateral hydraulic pressure, which significantly increases the risk of seal failure and leakage during transport.

11. C — A fire 250 feet from the fuel pumps is within the 300foot minimum clearance distance required for placarded vehicles. The driver should not enter the truck stop. Fire situations are dynamic and can escalate unpredictably — spreading to other vehicles, producing windborne embers, or generating radiant heat that could affect the HazMat vehicle even at the current distance.

12. B — Hazardous waste may only be delivered to the specific facility identified on the Uniform Hazardous Waste Manifest. The manifest lists "123 Industrial Drive" as the designated disposal facility, and the driver must deliver to that exact address. Delivering to a different address — even one with the same business name — violates the RCRA chainofcustody requirements.

13. D — No person may smoke within 25 feet of a placarded vehicle at any time. The driver is physically inside the vehicle — which is zero feet from the placarded vehicle — making the smoking a clear violation regardless of whether the windows are closed or the cab is separated from the cargo. The 25foot rule applies to all persons, including the driver.

14. A — The Hazardous Materials Regulations do not use "title and subtitle" formatting for shipping paper entries. The regulations specify required data elements — proper shipping name, hazard class, identification number, packing group, and total quantity — that must appear in a prescribed sequence. There is no character count limit imposed on individual entries.

15. B — The driver must override the GPS and follow the route that complies with all posted HazMat restrictions. GPS systems — even commercial truck models — may not incorporate all current HazMat restrictions, local ordinances, or temporary prohibitions. Posted regulatory signs on the roadway always supersede electronic navigation instructions.

16. D — Division 6.1 Toxic material powder from a crushed package is a potential poisoning hazard through skin contact, inhalation, or ingestion. The driver should not touch the powder or the damaged package without proper protective equipment. The correct response is to move away, close the trailer doors if safe, and contact the carrier and emergency services for professional guidance.

17. C — Division 2.2 NonFlammable Gas at 1,500 pounds exceeds the 1,001pound Table 2 threshold, requiring NONFLAMMABLE GAS placards. Division 5.1 Oxidizer at 800 pounds does not independently reach the threshold. Each hazard class is evaluated separately — one class exceeding its threshold does not trigger placarding for another class that falls below it.

18. A — HazMat transport demands constant vigilance because the consequences of a distractionrelated error are amplified by the hazardous cargo. A momentary glance at a text message means the driver's eyes are off the road for seconds during which hazard conditions can develop — a curve approached too fast, a vehicle braking ahead, or a lane departure — any of which could result in a HazMat release.

19. D — Many corrosive materials — including certain concentrations of sulfuric acid, hydrochloric acid, phosphoric acid, and sodium hydroxide solutions — can appear clear and colorless with little or no detectable odor. Visual appearance alone cannot determine whether a liquid is water or a corrosive. The driver should treat any unidentified liquid near a corrosive cargo tank as potentially hazardous.

20. B — The shipping papers should use the exact proper shipping name as listed in the Hazardous Materials Table. While "Sulphuric" is an accepted international spelling variant, the U.S. table lists "Sulfuric acid" as the proper shipping name. The driver should flag the discrepancy with the shipper to ensure the papers reflect the precise regulatory entry and avoid any ambiguity during inspections.

21. B — After delivering the Class 3 material, the FLAMMABLE placards should be removed since no flammable material remains. The remaining Class 8 (600 lbs) and Division 5.1 (500 lbs) do not individually reach 1,001 pounds, but their combined total of 1,100 pounds exceeds the threshold. DANGEROUS placards may be used for these two Table 2 classes whose combined weight meets the requirement.

22. D — The driver should inform the police officer that the vehicle is carrying hazardous materials. HazMat vehicles should avoid places where crowds gather unless no practicable alternative exists. The officer, once informed of the hazardous cargo, can make an informed

decision about whether to allow the vehicle through or redirect it around the festival area for public safety.

23. A — Special provisions in Column 7 of the Hazardous Materials Table modify, supplement, or create exceptions to the standard regulatory requirements for specific materials. They may authorize less restrictive transportation conditions, impose additional requirements beyond the standard rules, or provide clarifications about whether specific formulations qualify as regulated hazardous materials.

24. C — Division 4.3 Dangerous When Wet materials emit flammable or toxic gases when they contact water. A deteriorated door seal that allows rain to enter the trailer creates a direct pathway for water to reach the packages. Even small amounts of water contacting Division 4.3 materials can trigger a dangerous gasgenerating reaction inside the enclosed trailer space.

25. D — A nonfunctioning horn is a vehicle equipment violation that should be repaired at the earliest safe opportunity. While the horn has no HazMatspecific regulatory function, it is an essential safety device for warning other motorists and pedestrians. During a HazMat emergency, the horn could be critical for alerting bystanders to evacuate the area around the vehicle.

26. A — Federal regulations require shipping papers to be in physical paper form. The papers must be placeable in the driver's door pouch or on the driver's seat — positions standardized for emergency responder access. A digital display on a tablet does not satisfy these physical accessibility requirements and cannot be handed to a responder at the scene of an incident.

27. B — The EXPLOSIVES 1.4 placards remain in place for the 1,200pound load that exceeds the 1,001pound Table 2 threshold. The Class 9 material at 300 pounds does not independently reach the 1,001pound threshold and does not require its own placard. The existing placarding status does not change with the addition of a subthreshold quantity of a second Table 2 class.

28. D — Multiple simultaneous dashboard warning lights warrant prompt investigation but do not necessarily indicate immediate catastrophic failure. The driver should continue driving cautiously to the nearest safe stop while closely monitoring vehicle performance — acceleration, shifting, engine temperature, and braking response. With a HazMat load, maintaining controlled vehicle operation is paramount.

29. C — A cracked mirror should be repaired or replaced at the earliest safe opportunity. While the mirror may still provide a usable reflection, the crack can worsen from road vibration, potentially shattering or creating distorted areas that produce blind spots. Safe HazMat transport requires the best possible awareness of surrounding traffic during lane changes, turns, and backing maneuvers.

30. A — Neither Class 3 (800 lbs) nor Division 6.1 (300 lbs) individually reaches the 1,001pound Table 2 threshold. However, the combined aggregate of both Table 2 classes is 1,100 pounds, which exceeds 1,001 pounds. DANGEROUS placards may be used when two or more Table 2 classes are present and the combined total meets the threshold while no single class reaches it independently.

31. D — In a baffled tank during hard braking, the liquid masses between baffles surge forward sequentially — each mass hits the baffle ahead and transmits force through the openings. While

baffles significantly reduce surge compared to a smooth bore tank, substantial forward force still pushes the vehicle forward during hard braking, extending the stopping distance beyond the normal mechanical limit.

32. B — An empty cargo tank retains its large cylindrical surface area but has lost nearly all of its cargo weight. On an open bridge with 45 mph crosswind gusts, the tank acts as a sail while the reduced weight provides minimal tire traction to resist the lateral wind force. The vehicle is at significant risk of being pushed sideways, and in severe gusts, could overturn.

33. B — A smooth bore tank at approximately 67 percent capacity has 3,000 gallons of empty space allowing completely unrestricted lateral liquid movement. Even at 10 mph, 6,000 gallons of liquid (approximately 50,000 pounds depending on product density) shifting to one side of the tank produces a substantial overturning force. The absence of baffles means nothing slows or restricts this lateral shift.

34. D — The compartment loading sequence must balance two competing requirements: maintaining legal and safe axle weights at every stage (during loading, during transit, and after each delivery) and accommodating the delivery order. The driver must plan the sequence so that weight remains distributed across all axle groups throughout the entire route, not just at departure.

35. C — The most reliable method for verifying the correct underground tank is checking product identification markings on or near the fill pipe and confirming with the station operator. Fill pipe color coding is not universally standardized across all jurisdictions. Crossdelivery — pumping the wrong product into the wrong underground tank — is a serious and costly error that proper verification prevents.

36. B — As ambient temperature increases during the day, the liquid cargo absorbs heat and expands. This expansion increases the liquid volume (reducing the outage space) and increases the vapor pressure in the headspace above the liquid. The pressure gauge reflects this normal thermal effect. As long as the pressure remains within the MAWP, the increase is expected behavior.

37. A — Braking in a curve with a smooth bore tank creates the most dangerous surge condition — the liquid simultaneously surges forward (from braking deceleration) and to the outside of the curve (from centrifugal force). These forces combine into a diagonal vector aimed at the upper outside corner of the tank, maximizing the overturning moment at the worst possible point.

38. C — As the tank travels through progressively warmer climate zones, the liquid absorbs heat and expands, producing more vapor in the headspace. This increased vapor production gradually raises the headspace pressure. The pressurevacuum vent responds by releasing small puffs of vapor more frequently to prevent overpressure — this is the device performing its designed safety function correctly.

39. B — A pressurized product hose lying across a driveway where vehicles pass creates a serious rupture risk. A vehicle's weight crossing the hose can crush or pinch it, potentially causing a sudden failure that releases product under pressure. The driver should protect the hose with hose ramps, redirect traffic with cones, or block the driveway during the delivery.

40. D — Negative superelevation (the road sloping away from the inside of the curve) means gravity pulls the vehicle toward the outside of the turn — the same direction as centrifugal force and lateral liquid surge. All three forces work together to push the vehicle outward and upward, dramatically increasing rollover risk compared to a properly banked curve at the same speed.

41. A — The specification plate must be legible so the driver can verify the tank specification, MAWP, testing dates, and other critical information during the pretrip inspection. A plate obscured by mud cannot be read, which means the driver cannot confirm the tank's authorization or testing currency. Cleaning the plate is a simple step that enables proper pretrip verification.

42. C — While a pH of 5.5 is only mildly acidic, even mildly acidic products can corrode aluminum over time through sustained chemical attack during transport. The driver should verify with the carrier that the DOT 406 aluminum tank is specifically authorized and tested for compatibility with this chemical product before allowing it to be loaded.

43. B — A small drip of approximately one cup during hose disconnection is a common occurrence that the driver should clean up using absorbent material. The driver should then verify the discharge valve is fully closed and capped, and check for any ongoing drip before departing. Responsible cleanup of minor operational drips prevents environmental contamination and demonstrates professional diligence.

44. D — As liquid cools overnight in cold temperatures, it contracts (occupying less volume) and produces less vapor in the headspace. Both effects reduce the internal pressure, resulting in a lower gauge reading. This is a normal thermal effect — the reverse of the daytime warming that increases pressure. The reading should rise again as temperatures increase throughout the day.

45. A — During backing maneuvers, each brake application sends the liquid surging forward, and each release followed by reverse acceleration sends it backward. At 70 percent capacity, the liquid has moderate room to build momentum with each direction change. The driver must use gentle, gradual brake and throttle inputs to minimize the amplitude of the rocking motion during repeated forwardreverse adjustments.

46. C — A bump at highway speed launches the liquid cargo momentarily as the vehicle crests the bump. When the vehicle descends the far side, the liquid slams downward with significant force. This vertical surge stresses tank fittings, manhole cover gaskets, and mounting hardware. The driver should reduce speed before the bump to minimize the vertical force of the liquid's impact.

47. B — Even light contact between the trailer corner and a bollard near the cargo tank's rear head can transmit force to the tank structure. The driver should carefully inspect the rear head area for any dent, crack, or distortion, and check all nearby fittings, piping, and the rear discharge valve for damage or misalignment. Seemingly minor contact can cause damage that leads to leaks during transport.

48. A — The frequent venting indicates the outage space is being consumed by thermal expansion faster than anticipated for the extreme temperature conditions. While the vents are performing their safety function by preventing overpressure, the situation warrants monitoring.

If venting becomes continuous, the driver should consider stopping in a shaded area to slow the heating rate.

49. A — A roundabout creates a sustained continuous curve. In a smooth bore tank at 65 percent capacity with a lowviscosity liquid, the cargo shifts aggressively to the outside and remains displaced for the entire duration of the roundabout. Unlike a simple turn where the surge is momentary, the continuous curve maintains the elevated center of gravity throughout the maneuver, creating persistent rollover risk.

50. D — An unusual increase in vehicle lean on a familiar ramp that the driver has negotiated hundreds of times before indicates something has changed. Multiple factors could be responsible — wet or debriscovered pavement, a different product density, a different fill level than usual, worn tires, or deteriorated suspension components. The driver should not dismiss the unusual behavior and should investigate the cause.