

PRACTICE EXAM 10: HAZMAT & TANKER SIMULATION (50 QUESTIONS)

HAZMAT SECTION (Questions 1–30)

1. A driver transporting 2,200 pounds of Division 5.1 Oxidizer arrives at a second shipper to pick up 1,800 pounds of Class 3 Flammable Liquid. The driver knows that oxidizers and flammable liquids are incompatible. The shipper insists the two materials can be loaded together as long as they are placed at opposite ends of the trailer. Is the shipper correct?

A. The driver must consult the segregation table in 49 CFR §177.848 to determine the specific segregation requirements — physical separation at opposite ends of the trailer may or may not be sufficient depending on the regulatory requirement for these two classes

B. Yes, placing incompatible materials at opposite ends of the trailer always satisfies segregation requirements for all hazard class combinations

C. No, oxidizers and flammable liquids may never be transported on the same vehicle under any circumstances, regardless of separation distance

D. Yes, because both materials are Table 2, and Table 2 materials have no segregation requirements regardless of their hazard classes

2. A driver has been hauling a placarded load for four hours. During a fuel stop, the driver discovers that the shipping papers are missing from the cab — they cannot be found in the door pouch, on the seat, or anywhere in the cab. What should the driver do?

A. Continue to the destination and request a duplicate copy of the shipping papers from the consignee upon arrival

B. Call the carrier and ask them to email a scanned copy of the shipping papers, then continue driving with the digital copy on a laptop

C. Stop driving immediately, contact the carrier and the shipper to obtain replacement shipping papers, and do not resume transport until compliant papers are in the cab

D. Continue driving to the nearest truck stop and purchase a blank bill of lading form to recreate the shipping papers from memory

3. A vehicle displays FLAMMABLE placards on all four sides. The driver has completed all deliveries and the trailer is now empty — swept clean with no residue of hazardous materials remaining. The driver picks up a load of nonhazardous general freight at the next stop. What must happen to the placards?

A. The placards should remain in place until the vehicle returns to the carrier's terminal where the safety department will handle removal

B. The placards should be replaced with DANGEROUS placards as a precaution because the trailer previously carried flammable materials

C. The placards may remain in place because they provide useful safety information even when the vehicle is carrying nonhazardous freight

D. The placards must be removed or covered before loading the nonhazardous freight, because displaying placards on a vehicle not carrying hazardous materials is a violation

4. A driver is transporting a load of Division 2.1 Flammable Gas in cylinders. During an enroute inspection at a rest area, the driver hears a faint hissing sound coming from the cargo area. What does this sound most likely indicate?

A. The trailer's refrigeration unit has activated automatically to maintain the required transport temperature for compressed gases

B. One or more cylinders may have a leaking valve or fitting, allowing pressurized flammable gas to escape into the cargo space

C. The sound is the normal pressure equalization that occurs in compressed gas cylinders during temperature changes throughout the day

D. The trailer's air suspension system is venting excess pressure through the leveling valve, which is mounted near the cargo area

5. Under the Hazardous Materials Regulations, what is the proper action when a driver discovers that a shipper has used a trade name rather than the proper shipping name on the shipping papers for a hazardous material?

- A. Refuse the shipment until the shipper corrects the shipping papers to show the proper shipping name as listed in Column 2 of the Hazardous Materials Table
- B. Accept the shipment and write the proper shipping name above the trade name in pencil so both names are visible on the document
- C. Accept the shipment because trade names and proper shipping names are interchangeable under the limited quantity exception
- D. Contact the FMCSA to request a variance allowing the trade name to be used for this specific shipment

6. A driver is hauling a mixed load containing 500 pounds of Class 3 Flammable Liquid, 400 pounds of Class 8 Corrosive, and 300 pounds of Division 5.1 Oxidizer. All are Table 2 materials. The combined total is 1,200 pounds. Can the driver use DANGEROUS placards?

- A. No, the DANGEROUS placard may only be used when exactly two hazard classes are present on the vehicle, not three or more
- B. No, because the combined total exceeds 1,001 pounds, all three class-specific placards must be displayed individually
- C. Yes, DANGEROUS placards may be used because the combined aggregate of all Table 2 materials exceeds 1,001 pounds while no single class reaches that threshold independently
- D. Yes, but only if the driver also displays the class-specific placard for the heaviest individual material alongside the DANGEROUS placards

7. A driver is transporting a bulk shipment of anhydrous ammonia in an MC 331 cargo tank. Anhydrous ammonia is classified as Division 2.2 NonFlammable Gas with a subsidiary hazard of Division 8 Corrosive. What placards are required on the vehicle?

- A. Only NONFLAMMABLE GAS placards, because the primary hazard class determines the sole placard required
- B. Only CORROSIVE placards, because the subsidiary corrosive hazard is the more dangerous characteristic of anhydrous ammonia
- C. DANGEROUS placards, because the material presents two different hazard types and the DANGEROUS placard covers all multihazard loads
- D. Both NONFLAMMABLE GAS and CORROSIVE placards on all four sides, because both the primary and subsidiary hazards require separate placards

8. A driver conducting a pretrip inspection of a placarded vehicle checks the fire extinguisher and finds it is properly charged and mounted. The extinguisher is rated "5 B:C." Is this rating adequate for a placarded HazMat vehicle?

A. Yes, any B:C rated fire extinguisher meets the minimum requirement for placarded vehicles regardless of the numerical rating

B. No, a placarded vehicle must carry a fire extinguisher with a minimum rating of 10 B:C — the 5 B:C rating is insufficient

C. Yes, because the B:C rating only needs to match the hazard class number, and 5 exceeds any singledigit class number

D. No, but only if the vehicle is carrying Class 1 Explosives — all other hazard classes accept any B:C rated extinguisher

9. A driver is at a shipper's facility reviewing shipping papers for a load of hazardous materials. The papers list five hazardous material entries. Four entries include the packing group designation, but the fifth entry — for a Division 2.1 Flammable Gas — does not show a packing group. Is this fifth entry deficient?

A. No, because Class 2 Gases do not use the packing group system, so no packing group designation is required or expected for this entry

B. Yes, every hazardous material entry on shipping papers must include a packing group designation without exception

C. No, but only because Division 2.1 is a Table 2 material — Table 1 gases would require a packing group designation

D. Yes, but the driver may assign Packing Group II as a default for any gas entry that is missing its packing group designation

10. A driver involved in a HazMat incident has moved to a safe location upwind and has called 911. Emergency responders are en route but have not yet arrived. A bystander who claims to be a volunteer firefighter approaches the driver and asks to see the shipping papers so he can begin setting up an initial response. Should the driver provide the papers?

- A. Yes, the driver should immediately hand over the original shipping papers to any person who identifies themselves as emergency response personnel
- B. Yes, but only after verifying the bystander's identity by checking their fire department ID card and confirming it with a phone call to the fire station
- C. No, shipping papers must only be provided to sworn law enforcement officers and may not be shared with any other person under any circumstances
- D. The driver should share the key information from the papers verbally — material name, hazard class, and ID number — while retaining the original documents for the official responders who are en route

11. A driver is assigned to transport a load described as "agricultural chemicals." Upon arriving at the farm where the pickup is located, the driver discovers the shipment consists of 2,000 pounds of ammonium nitrate fertilizer (Division 5.1 Oxidizer, UN1942). The driver holds a valid HazMat endorsement. What must the driver verify before loading?

- A. That the driver's medical examiner's certificate has been updated within the past 30 days to reflect the specific chemicals being transported
- B. That the farm has a valid EPA permit to sell agricultural chemicals in quantities exceeding 500 pounds to commercial carriers
- C. That the correct OXIDIZER placards are available and will be displayed on all four sides, that the shipping papers are complete, and that the material is compatible with any other cargo already on the vehicle
- D. That the state department of agriculture has preapproved the specific route the driver plans to use for transporting the fertilizer

12. Under the Hazardous Materials Regulations, a driver is prohibited from smoking within what distance of a placarded vehicle?

- A. 25 feet from any placarded vehicle, at all times — including while the vehicle is being loaded, unloaded, driven, parked, or fueled
- B. 50 feet from any vehicle carrying Division 1 Explosives, and 10 feet from vehicles carrying all other hazard classes
- C. 100 feet from any vehicle carrying Class 3 Flammable Liquids, with no restriction for other hazard classes

D. Smoking is prohibited only inside the cab of the vehicle — there is no distancebased restriction for smoking outside the vehicle

13. A driver is transporting a load of Class 3 Flammable Liquid in a dry van trailer. The driver needs to inspect the cargo during an enroute stop. Before opening the trailer doors, what precaution should the driver take regarding potential ignition sources?

A. Activate the trailer's interior lights before opening the doors so the cargo area is fully illuminated for the inspection

B. Ensure no ignition sources are present — no smoking, no open flames, no sparking devices — because flammable vapors may have accumulated inside the closed trailer

C. Start the tractor engine to provide electrical power for a portable inspection light connected to the vehicle's 12volt system

D. Open only the rightside door to minimize the volume of air exchange and prevent any accumulated vapors from reaching dangerous concentrations

14. A vehicle is carrying 800 pounds of Class 8 Corrosive and 300 pounds of Division 2.3 Poison Gas. What is the correct placarding decision?

A. Only CORROSIVE placards, because Class 8 has the greater weight and takes priority over Division 2.3 in mixed loads

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

C. Only POISON GAS placards, because Table 1 materials always supersede Table 2 materials regardless of quantity

D. Both POISON GAS and CORROSIVE placards — Division 2.3 is Table 1 at any quantity, and Class 8 at 800 pounds does not independently reach the Table 2 threshold, but the presence of a Table 1 material does not exempt Table 2 materials from their own threshold evaluation

15. A driver picks up a hazardous materials shipment at a chemical plant. The shipper provides complete shipping papers but does not provide any placards. The shipper tells the driver, "Your carrier should have the placards on the truck already." The carrier did not preplacard the vehicle. Who is responsible for ensuring the placards are available and applied?

- A. The FMCSA inspector at the nearest weigh station will provide the correct placards during the first roadside inspection
- B. The driver alone is responsible and must purchase placards from a local truck supply store before departing
- C. The shipper is required to offer the correct placards or placard the vehicle, and the carrier must ensure the vehicle is properly placarded — the driver must verify placarding before departing
- D. No party is specifically responsible for providing placards because placarding is a voluntary best practice, not a regulatory requirement

16. A HazMat driver is making a delivery at a large industrial complex. Upon entering the facility, the driver notices signs reading "AUTHORIZED VEHICLES ONLY BEYOND THIS POINT" and "ALL DRIVERS MUST CHECK IN AT SECURITY GATE." The driver's delivery destination is a warehouse at the far end of the complex. What should the driver do?

- A. Drive directly to the delivery warehouse because the HazMat vehicle has inherent authorization to access any area within a facility receiving hazardous materials
- B. Stop at the security gate, check in as directed, identify the hazardous cargo on the vehicle, and follow the facility's entry procedures before proceeding to the delivery point
- C. Radio the customer from outside the gate and request that they come to the gate to accept the delivery rather than entering the facility
- D. Remove the placards before entering the facility to avoid triggering any hazardous materials security protocols that might delay the delivery

17. A driver's vehicle is loaded with 300 pounds of Division 4.3 Dangerous When Wet material. No other hazardous materials are on the vehicle. Rain is in the forecast for the delivery route. Beyond placarding (which is required at any quantity for this Table 1 material), what additional operational concern does the weather forecast raise?

- A. Division 4.3 materials emit flammable or toxic gases when they contact water — the driver must ensure the cargo is fully protected from rain, including verifying that the trailer's roof, doors, and seals are watertight
- B. Rain has no effect on Division 4.3 materials when they are inside sealed packages within an enclosed trailer during transport

C. The driver must postpone the trip until dry weather because transporting Division 4.3 materials during rain is prohibited by federal regulation

D. The driver should cover the placards with clear plastic sheets to protect them from water damage during the rainy conditions

18. A driver is reviewing shipping papers and notices that one entry shows the hazard class as "3" and the packing group as "I." Based on this classification, what can the driver conclude about this specific flammable liquid compared to a PG III flammable liquid?

A. The PG I material is less flammable than the PG III material and requires fewer transportation restrictions

B. The PG I material and the PG III material present identical hazards because all Class 3 materials are equally dangerous

C. The PG I material is authorized for transport only in MC 331 highpressure tanks, while PG III may use any container type

D. The PG I material presents the greatest degree of danger within Class 3 — it has an extremely low boiling point and produces flammable vapors very rapidly, requiring the most stringent controls

19. A driver receives a phone call from the carrier's dispatcher while en route with a placarded HazMat load. The dispatcher instructs the driver to deviate from the planned route and take a shortcut through a residential neighborhood to save time. The shortcut passes through several school zones. What should the driver do?

A. Follow the dispatcher's instructions because the carrier's dispatch office has final authority over all routing decisions

B. Take the shortcut but reduce speed to 15 mph through the school zones as required by the posted school zone speed limits

C. Decline the shortcut and continue on the planned route, because HazMat vehicles should avoid heavily populated areas, residential neighborhoods, and school zones unless no practicable alternative exists

D. Take the shortcut but remove the placards while driving through the school zones to avoid alarming parents and school staff

20. A driver transporting placarded hazardous materials approaches a railroad grade crossing equipped with active warning signals — flashing lights and automatic gates. The lights are not flashing and the gates are raised. Three other trucks ahead of the driver cross without stopping. Must the HazMat driver still stop?

A. Yes, drivers of placarded HazMat vehicles must stop at all railroad grade crossings regardless of signal status, the behavior of other drivers, or the apparent absence of trains

B. No, because the inactive signals confirm that no train is approaching — the mandatory stop applies only when the signals are activated

C. Yes, but only if the driver can see tracks in both directions for at least one mile — otherwise the driver may proceed at 5 mph

D. No, because the three trucks ahead have confirmed that the crossing is safe by successfully crossing without incident

21. A driver is delivering hazardous waste to a licensed disposal facility. Upon arrival, the driver presents the Uniform Hazardous Waste Manifest to the facility manager, who signs the manifest accepting the waste. However, the facility manager notices a discrepancy — the manifest lists 20 drums, but only 18 drums are on the truck. What should happen?

A. The facility should accept the 18 drums and sign the manifest as is, because minor quantity discrepancies are common and acceptable

B. The discrepancy must be documented — the manifest should be annotated to reflect the actual count received, and the carrier and generator should be notified to investigate the missing drums

C. The driver should return to the generator's facility to locate the two missing drums before the manifest can be signed by the disposal facility

D. The facility manager should refuse the entire shipment because any discrepancy on a Uniform Hazardous Waste Manifest automatically voids the document

22. A driver notices that a package of hazardous material in the cargo area has two different hazard warning labels — the primary label matches the hazard class on the shipping papers, but the subsidiary label does not match the subsidiary hazard listed in Column 6 of the Hazardous Materials Table. What should the driver do?

- A. Accept the package because the primary label is correct and the subsidiary label is a supplementary reference with no regulatory enforcement
- B. Remove the incorrect subsidiary label and transport the package with only the primary label, since one correct label is sufficient
- C. Apply a corrective sticker over the incorrect subsidiary label showing the correct subsidiary hazard class number
- D. Do not transport the package until the shipper resolves the labeling discrepancy — both the primary and subsidiary labels must match the Hazardous Materials Table entry

23. A driver is parked at a loading dock when another truck at the adjacent dock begins loading a different hazardous material. Vapor from the other truck's loading operation drifts toward the driver's vehicle. The driver's trailer is already sealed and loaded with a compatible but different hazardous material. Should the driver be concerned?

- A. Yes, the driver should alert the dock supervisor because drifting vapors from one loading operation could create an ignition risk, health hazard, or contamination issue near the driver's sealed trailer
- B. No, because the driver's trailer is already sealed and the drifting vapor cannot penetrate the closed trailer doors or walls
- C. Yes, but only if the drifting vapor is visible — invisible vapors are too dilute to create any hazard at adjacent loading docks
- D. No, because adjacent loading operations at commercial facilities are preapproved by the facility's safety plan and require no individual driver attention

24. A shipment of hazardous materials is being transported by a carrier under a contract with the U.S. Department of Defense. The shipping papers contain a national security classification marking. Does this affect the driver's normal HazMat documentation responsibilities?

- A. Yes, all normal HazMat documentation requirements are waived for military shipments under national security classification
- B. Yes, the driver must destroy the shipping papers after delivery rather than retaining them in the carrier's records
- C. The military classification does not exempt the shipment from DOT hazardous materials transportation regulations — all standard shipping paper, placarding, and handling requirements still apply

D. The driver must hold a military security clearance in addition to the HazMat endorsement to transport classified hazardous materials

25. A driver transporting hazardous materials discovers during a stop that the vehicle's left turn signal is not functioning. The vehicle is otherwise in good mechanical condition. Can the driver continue the trip?

A. Yes, because turn signals are convenience devices that do not affect the safety of hazardous materials transportation

B. A nonfunctioning turn signal is an equipment violation that must be repaired — the driver should have it fixed at the earliest safe opportunity, as signaling lane changes and turns is essential for safe HazMat transport

C. No, any equipment violation on a placarded vehicle requires the driver to immediately park the vehicle and refuse to drive until the repair is completed

D. Yes, as long as the driver uses hand signals through the open window to indicate all left turns during the remainder of the trip

26. A driver transporting Class 7 Radioactive material notices during an enroute inspection that one of the Yellow III labeled packages appears to have been crushed by another package that shifted during transport. The packaging integrity appears compromised. What is the driver's primary concern beyond the physical damage to the package?

A. The crushed package may leak the liquid radioactive solution inside, creating a slip hazard on the trailer floor

B. The damaged package will no longer fit into the designated storage slot at the delivery destination's receiving facility

C. The crushed package increases the total transport index of the shipment, requiring additional placards to be added to the vehicle

D. Compromised packaging on a radioactive material could result in increased radiation exposure to the driver and others, and potential radioactive contamination of the cargo area

27. A driver picks up a load of Division 6.1 Toxic material (Packing Group II). The total weight is 1,500 pounds. The shipping papers and package labels are correct. What placards must be displayed?

- A. No placards are required because Division 6.1 PG II materials have a special exemption from placarding below 2,000 pounds
- B. DANGEROUS placards, because Division 6.1 materials always use the DANGEROUS placard regardless of quantity or packing group
- C. POISON placards on all four sides, because 1,500 pounds exceeds the 1,001 pound Table 2 threshold for this nonTable 1 Division 6.1 material
- D. POISON INHALATION HAZARD placards, because all Division 6.1 materials require this specific placard regardless of packing group

28. A driver is delivering hazardous materials to a customer site. Upon arrival, the person who meets the driver identifies herself as a temporary employee who started yesterday. She says the regular receiving manager is on vacation and she has been told to accept all deliveries. The driver asks whether she is authorized to receive hazardous materials, and she is unsure. What should the driver do?

- A. Contact the carrier or the customer's management to verify that the temporary employee is authorized to receive the hazardous materials before releasing the shipment
- B. Deliver the materials because the temporary employee was instructed to accept all deliveries, which constitutes authorization
- C. Leave the materials at the facility entrance without obtaining a signature and depart to avoid further delay to the schedule
- D. Accept the temporary employee's verbal assurance and obtain her signature on the delivery receipt as confirmation of acceptance

29. A driver is transporting hazardous materials on a highway when a tornado warning is issued for the area directly ahead. The driver is approximately 20 minutes from the delivery destination. What is the safest action?

- A. Accelerate to reach the delivery destination before the tornado arrives, minimizing exposure time on the open highway
- B. Continue at normal speed because tornadoes rarely affect the specific road the driver is traveling on at any given moment
- C. Drive perpendicular to the projected tornado path to escape the warning area as quickly as possible

D. Seek immediate shelter — exit the highway, park in a safe location away from overpasses and power lines, and take cover in a substantial building if available

30. A driver is reviewing a shipping paper entry that reads: "UN1203, Gasoline, 3, PG II, 8,500 gal." Something about the order of the entry elements catches the driver's attention. What is unusual about this entry?

A. The packing group is incorrect — gasoline is always Packing Group I, not Packing Group II

B. The identification number appears before the proper shipping name — the correct regulatory sequence starts with the proper shipping name first

C. The quantity is listed in gallons rather than pounds, which is prohibited for all Class 3 Flammable Liquid shipping paper entries

D. The entry is missing the emergency response telephone number, which must appear on the same line as each hazardous material entry

TANKER SECTION (Questions 31–50)

31. A tank vehicle driver is approaching a controlled intersection with a green traffic light. The driver is hauling a full load of liquid in a smooth bore tank at 40 mph. The light turns yellow when the driver is approximately 250 feet from the intersection. Considering liquid surge, what is the safest decision?

A. Accelerate through the intersection to clear it before the light turns red, avoiding the need to brake with a full smooth bore load

B. Maintain current speed and coast through the intersection since the yellow light provides adequate time at 40 mph

C. Brake hard to stop before the intersection because running a red light with a placarded vehicle carries enhanced penalties

D. Begin braking immediately and gradually, recognizing that the smooth bore tank's unrestricted surge will extend the stopping distance — if the driver cannot stop safely before the intersection, proceed through at current speed

32. A cargo tank driver performing a pretrip inspection checks the tank's manholes. All covers are properly bolted and sealed. However, the driver notices that one manhole cover has a pressurevacuum vent that appears to be stuck in the partially open position — it does not close fully when pressed. What is the concern?

A. A stuckopen pressurevacuum vent allows rainwater to enter the tank during transport, diluting the product and reducing its commercial value

B. A vent stuck in the partially open position will continuously release vapor during transport, creating environmental, safety, and product loss concerns — the driver should report it for repair before loading

C. The stuck vent is a cosmetic issue that does not affect the tank's operational safety because the manhole cover provides the primary seal

D. A stuckopen vent is actually desirable because it provides continuous pressure relief and prevents any possibility of overpressure during transport

33. A driver is operating a loaded tank vehicle through a work zone with temporary lane shifts. The lanes are narrower than normal and defined by concrete barriers on both sides. What specific tank vehicle concern applies to this situation?

A. The narrow lanes require the driver to fold in the vehicle's side mirrors to prevent them from striking the concrete barriers

B. The concrete barriers will absorb any liquid surge forces that occur during braking, so the driver can maintain normal speed

C. The narrow lanes leave minimal room for error — any lateral liquid surge during braking or steering could cause the vehicle to contact the barriers, and the confined space limits evasive options if a problem develops

D. Work zones are exempt from all HazMat routing restrictions, so the driver should proceed through at the posted work zone speed

34. A loaded tank vehicle is parked on a level surface at a delivery site. The driver exits the cab to begin the unloading setup. What must the driver do before walking to the discharge area at the rear of the vehicle?

A. Set the parking brake firmly and chock the wheels to prevent any vehicle movement during the unloading operation

- B. Leave the engine running in gear to maintain air pressure in the brake system throughout the delivery process
- C. Engage the vehicle's cruise control at zero mph to electronically lock the drivetrain against any potential movement
- D. Transfer the shipping papers from the door pouch to the glove compartment for safekeeping during the delivery operation

35. A tank vehicle carries a liquid product with a specific gravity of 0.7 (lighter than water). A second tank vehicle of identical design carries a liquid with a specific gravity of 1.5 (heavier than water). Both tanks are loaded to the same percentage of capacity. Which vehicle has the higher center of gravity?

- A. Both vehicles have identical centers of gravity because they are the same tank design loaded to the same percentage
- B. The lighter liquid (0.7) produces a higher center of gravity because it fills more of the upper tank volume at the same weight
- C. The center of gravity is determined solely by the tank's physical design and is not affected by the density of the liquid inside
- D. The heavier liquid (1.5) raises the center of gravity higher because more weight is concentrated in the same volume of space within the tank

36. A driver operating a tank vehicle notices that the vehicle's handling feels different from normal — the steering is unusually light and the rear of the vehicle seems to sway more than expected during lane changes. The driver has been making deliveries all day from a multicompartment tank. What is the most likely explanation?

- A. The vehicle's power steering pump is failing, causing intermittent loss of steering assistance during highway driving
- B. The trailer's rear suspension has developed a broken leaf spring, reducing its loadcarrying capacity and stability
- C. The progressive emptying of compartments during deliveries has shifted the weight distribution and reduced the overall load, changing the vehicle's handling characteristics — lighter rear weight means less traction and more sway
- D. The liquid product has undergone a chemical change during the day's temperature fluctuations, altering its viscosity and surge properties

37. A tank vehicle driver is making a fuel delivery during a thunderstorm. Lightning is visible in the area. The driver has already connected the grounding cable and bonding cable and is about to connect the product hose. What should the driver do?

A. Stop the delivery setup immediately, disconnect the bonding cable, disconnect the grounding cable (in that order), and wait in the cab until the lightning passes — lightning can strike the vehicle or grounding system during product transfer

B. Continue with the delivery because the grounding and bonding cables protect the vehicle from lightning strikes during product transfer

C. Speed up the delivery process to minimize the time spent outdoors during the thunderstorm with lightning in the area

D. Move the grounding cable connection point farther from the vehicle to attract any lightning strikes away from the cargo tank

38. A tank vehicle driver arrives at a delivery location and discovers the customer's receiving tank is located in a lowlying area that has accumulated standing water from recent heavy rainfall. The water is approximately 4 inches deep around the fill pipe. What concern does this create for a routine fuel delivery?

A. Standing water increases the risk of static electricity discharge during the delivery because water conducts electricity more efficiently than dry ground

B. Standing water can enter the customer's receiving tank through the fill pipe if the water level rises above the fill connection, contaminating the product — the driver should verify the fill pipe is above the water level before delivering

C. Standing water has no effect on a routine fuel delivery because the product is transferred through sealed hoses that prevent any water contact

D. The standing water indicates a flood warning is in effect, and all commercial deliveries in the area are automatically suspended

39. A cargo tank has been loaded at a terminal and the driver is departing. Two miles from the terminal, the driver notices a strong chemical odor inside the cab that was not present during the pretrip inspection. What should the driver consider as the most likely cause?

A. The terminal's loading area had elevated vapor concentrations that clung to the driver's clothing and are now dissipating inside the closed cab

B. The cab's air filtration system has reached the end of its service life and is no longer removing ambient chemical odors from outside air

C. A neighboring vehicle on the highway is emitting chemical vapors that are being drawn into the driver's cab through the HVAC system

D. A valve, manhole gasket, or fitting on the cargo tank may not be fully sealed, allowing product vapor to escape and enter the cab through air intakes — the driver should stop and investigate

40. A tank vehicle driver is operating on a highway when another motorist cuts in front of the tank vehicle and then brakes suddenly. The tank vehicle driver must brake hard to avoid a collision. The vehicle has ABS. After the hard braking event, the driver successfully avoids the collision. What should the driver do next?

A. Accelerate immediately to highway speed to avoid being rearended by following traffic that may not have seen the braking event

B. After the immediate danger has passed, the driver should check mirrors, assess the vehicle's stability, and gradually return to a safe following distance — then at the next safe stop, inspect the vehicle for any cargo shifting or damage from the hard braking

C. File a police report against the other motorist for reckless driving before continuing the trip with the HazMat load

D. Pull off the highway immediately and refuse to continue driving because the hard braking event has permanently destabilized the liquid cargo

41. A driver is assigned to haul a tank vehicle for the first time after years of driving dry van trailers. What is the single most important piece of advice for the driver's first trip with a loaded tank vehicle?

A. Increase following distance significantly and reduce speed in all driving situations — liquid surge extends stopping distance and high center of gravity increases rollover risk, and both require more conservative driving than a dry van

B. Drive at the same speed as dry van operations because the vehicle's gross weight and braking systems are comparable to a loaded dry van

C. Focus exclusively on avoiding hard braking, because liquid surge is the only unique hazard of tank vehicles and all other driving techniques are identical to dry van operations

D. Rely on the tank's baffles to eliminate all surge concerns, because all commercial cargo tanks are required to have baffles installed

42. A tank vehicle carrying nonhazardous liquid is traveling at highway speed when the driver hears a loud metallic banging sound coming from the tank area. The sound occurs irregularly and seems to coincide with road bumps. What might this indicate?

A. The liquid inside the tank is crystallizing due to cold temperatures, and the crystals are striking the tank walls during normal surge movement

B. The tank's pressure relief valve is cycling open and closed rapidly due to excessive internal pressure from thermal expansion

C. A loose external component — such as a pipe support bracket, ladder rung, or valve handle — may have come unfastened and is striking the tank or frame during vehicle movement over rough road

D. The tank's internal baffles have broken free from their welds and are moving inside the tank, which requires immediate evacuation of the vehicle

43. A driver operating a loaded tank vehicle is following another truck on a two-lane highway. The truck ahead begins a long, gradual climb up a steep hill and slows from 55 mph to 35 mph. The tank vehicle driver wants to maintain following distance. What technique should the driver use?

A. Downshift to maintain engine power and gradually increase the distance between vehicles as both vehicles slow on the upgrade

B. Apply the brakes firmly to match the lead vehicle's deceleration rate exactly, maintaining a constant following distance

C. Pull into the oncoming lane and pass the slower truck to avoid the surge effects that occur during sustained low-speed upgrades

D. Gradually reduce speed by easing off the accelerator and downshifting smoothly, maintaining at least the recommended following distance as both vehicles negotiate the hill

44. A tank vehicle driver is operating in a region experiencing extreme heat — ambient temperatures of 110°F. The loaded cargo tank has been sitting in direct sunlight for several hours during a delivery delay. What concern should the driver have about the tank's contents?

A. Extreme heat has no effect on liquid cargo because the tank's metal shell reflects sunlight and prevents any heat transfer to the contents

B. The liquid has been absorbing heat and expanding — the driver should check whether the outage space is sufficient for the expanded volume and monitor for any signs of overpressure such as pressure relief valve activation

C. The metal tank shell may have softened in the extreme heat, reducing its structural integrity below the design safety margin

D. The extreme heat has caused the liquid's hazard classification to change, requiring updated shipping papers and different placards

45. A driver is performing a pretrip inspection on a cargo tank and discovers that the grounding cable clamp, while functional, has visible corrosion on its contact surfaces. The cable itself is in good condition. What should the driver do?

A. Clean the corrosion from the clamp's contact surfaces before departing, or replace the clamp — corroded contact surfaces may not make reliable electrical connection with the grounding point

B. Use the corroded clamp as is because any metal-to-metal contact provides adequate grounding regardless of surface condition

C. Replace the entire grounding cable assembly because corrosion on the clamp indicates the cable's internal conductors are also corroded

D. Wrap the corroded clamp with aluminum foil to improve conductivity before connecting it to the grounding point at the delivery site

46. A tank vehicle driver is unloading product at a delivery site using a pump. The customer's receiving tank has a liquid level sight glass that the driver can observe during the delivery. As the delivery progresses, the driver notices the liquid level in the sight glass is rising faster than expected based on the pump flow rate. What might this indicate?

A. The pump is operating at a higher flow rate than the gauge indicates due to a malfunction in the flow meter calibration

- B. The sight glass is calibrated in metric units while the pump gauge displays imperial units, creating an apparent discrepancy
- C. The delivery is proceeding normally and the apparent rapid rise is an optical illusion caused by the cylindrical shape of the receiving tank
- D. The customer's receiving tank may be smaller than reported, or may have contained more product than the customer indicated — the driver should stop pumping and verify available capacity to prevent overfilling

47. A driver operating a loaded tank vehicle in winter conditions approaches a bridge overpass. The road surface before the bridge is wet but not icy. The air temperature is 33°F. What specific driving adjustment should the driver make?

- A. Maintain current speed across the bridge because the wet road surface indicates temperatures are above freezing
- B. Reduce speed before reaching the bridge and avoid braking on the bridge surface, because bridges freeze before regular roads and the surface may have black ice despite the wet approach road
- C. Increase speed to cross the bridge as quickly as possible, minimizing the time on the potentially icy surface
- D. Apply the brakes firmly just before the bridge to test traction, then accelerate across if the brakes hold without skidding

48. A tank vehicle driver has completed all deliveries and is returning to the terminal with an empty (drained but not cleaned) cargo tank. The tank previously carried gasoline. During the empty return trip, what specific hazard does the "empty" tank present?

- A. An empty drained tank presents no hazards because all liquid product has been removed and the tank is safe for any purpose
- B. The empty tank's structural integrity is reduced without the supporting internal pressure of the liquid cargo
- C. The residual gasoline vapor inside the drained tank may be within the flammable explosive range, and the tank must continue to be treated as a flammable hazard until properly cleaned and purged
- D. The empty tank generates excessive road noise that exceeds federal decibel limits for commercial vehicles in residential areas

49. A driver is assigned to transport a nonhazardous liquid (fruit juice) in a smooth bore tank vehicle. The tank holds 6,000 gallons and will be loaded to approximately 5,500 gallons. The driver has extensive experience with baffled tanks but has never driven a smooth bore tank. What is the most critical handling difference the driver should prepare for?

A. Forward and backward surge will be significantly more violent than in a baffled tank because there are no internal partitions to slow the liquid's movement — the driver must increase following distance, brake earlier, and apply brakes more gradually than with a baffled tank

B. Side-to-side surge will be eliminated in the smooth bore tank because the absence of baffles allows the liquid to distribute evenly during turns

C. The smooth bore tank will handle identically to a baffled tank at all speeds because baffles have no measurable effect on vehicle dynamics

D. The smooth bore tank requires a higher minimum speed to maintain stability because the liquid needs constant motion to stay evenly distributed

50. A tank vehicle driver has been operating the same vehicle for several months and has developed a thorough understanding of how the vehicle handles when fully loaded. Today, the driver is making a partial delivery — dropping off half the load at the first stop and continuing to a second stop with the remaining half. After the first delivery, what must the driver immediately adjust in their driving behavior?

A. No adjustment is needed because the driver's experience with the vehicle eliminates any handling differences between full and partial loads

B. The driver should increase speed to compensate for the lighter vehicle weight and maintain the same delivery schedule

C. The driver should shift to a higher gear to reduce engine braking effect, which becomes excessive with the lighter partial load

D. The driver must immediately increase following distance, reduce cornering speeds, and brake even more gently — the partial load produces more severe surge and higher rollover risk than the full load the driver is accustomed to

Practice Exam 10: Answer Key and Explanations

1. **A** — The segregation table in 49 CFR §177.848 specifies the exact level of separation required between each pair of incompatible hazard classes. Simply placing materials at opposite ends of a trailer may or may not satisfy the requirement — some class combinations

require complete prohibition from coloadng, while others require only physical separation. The driver must consult the specific regulatory requirement rather than relying on the shipper's assurance.

2. C — Shipping papers are a mandatory regulatory document that must accompany every HazMat shipment throughout transport. Without them, the driver cannot legally continue — emergency responders would have no way to identify the materials on the vehicle in an incident. The driver must stop, contact the carrier and shipper, obtain replacement papers, and not resume transport until compliant documents are in the cab.

3. D — Displaying placards on a vehicle that does not contain hazardous materials is a regulatory violation because it sends false signals to emergency responders, law enforcement, and other motorists. Once the trailer is confirmed empty, clean, and free of hazardous residue, all placards must be removed or covered before the nonhazardous freight is loaded and the vehicle departs.

4. B — A faint hissing sound from the cargo area of a vehicle carrying compressed flammable gas cylinders indicates a potential gas leak from a cylinder valve, fitting, or connection. Pressurized gas escaping through even a small opening produces a characteristic hissing sound. The driver should not enter the cargo space but should ventilate the area, investigate from a safe distance, and treat the situation as a potential flammable gas release.

5. A — Trade names, brand names, and informal descriptions are not acceptable substitutes for the proper shipping name listed in Column 2 of the Hazardous Materials Table. The proper shipping name is the standardized, legally mandated name that must appear on all shipping papers and package markings. The driver should refuse the shipment until the shipper corrects the papers with the correct proper shipping name.

6. C — No single Table 2 class reaches the 1,001 pound threshold independently (500, 400, and 300 pounds). However, the combined aggregate of all Table 2 materials is 1,200 pounds, exceeding 1,001 pounds. DANGEROUS placards may be used when two or more Table 2 classes are present and the combined total meets the threshold. This applies whether there are two, three, or more different classes present.

7. D — When a material has both a primary hazard class and a subsidiary hazard requiring a subsidiary label (as specified in Column 6 of the Hazardous Materials Table), both the primary and subsidiary placards must be displayed on all four sides of the vehicle. Anhydrous ammonia requires both NONFLAMMABLE GAS and CORROSIVE placards to communicate its full hazard profile to emergency responders.

8. B — A placarded vehicle must carry at least one fire extinguisher with a minimum Underwriters Laboratories rating of 10 B:C. A 5 B:C extinguisher does not meet this minimum requirement — the "10" indicates the extinguisher's capacity to suppress a fire of a specific size, and the 5 rating represents half the minimum required capability. The driver must obtain a properly rated extinguisher before departing.

9. A — Class 2 Gases do not use the packing group system. Packing groups are assigned only to materials in Classes 3, 4, 5 (Division 5.1), 6 (Division 6.1), and 8. The absence of a packing group designation on the Division 2.1 entry is correct and expected — the entry is not deficient.

10. D — The driver should share the key information verbally — material name, hazard class, identification number, and quantity — while retaining the original shipping papers for the official emergency responders en route. Providing key details to a bystander who may be able to help is reasonable, but handing over the original documents to an unverified individual risks losing the papers that official responders will need.

11. C — Regardless of the informal description ("agricultural chemicals"), the material is Division 5.1 Oxidizer at 2,000 pounds, requiring OXIDIZER placards (exceeds 1,001pound Table 2 threshold), complete shipping papers, and verification of compatibility with any other cargo on the vehicle. The driver must ensure full regulatory compliance based on the actual material classification, not the informal description.

12. A — No person may smoke within 25 feet of a placarded vehicle at any time. This prohibition applies continuously — during loading, unloading, driving, parking, fueling, and all other activities. It applies to the driver, passengers, bystanders, and all other persons. The 25foot distance is the universal nosmoking zone for all placarded hazardous materials vehicles.

13. B — Before opening the doors of a trailer carrying Class 3 Flammable Liquid, the driver must ensure no ignition sources are present in the area. Flammable vapors may have accumulated inside the closed trailer during transport. Sparks from electrical switches, open flames, lit cigarettes, or running engines could ignite these vapors when the doors are opened and the vapor cloud disperses into the surrounding air.

14. D — Division 2.3 Poison Gas is a Table 1 material requiring POISON GAS placards at any quantity — the 300 pounds triggers this requirement automatically. Class 8 Corrosive at 800 pounds does not independently reach the 1,001pound Table 2 threshold, so CORROSIVE placards are not required for the Class 8 material. Only the POISON GAS placard is required based on the current quantities.

15. C — The shipper is required to either provide the correct placards to the carrier or placard the vehicle before it leaves the shipping facility. The carrier is responsible for ensuring its vehicles are properly placarded. The driver must verify that all four correct placards are in place before departing. All three parties share interconnected responsibilities — the driver should not depart without proper placards regardless of who failed to provide them.

16. B — The driver should follow the facility's security and access procedures — stop at the security gate, check in, identify the hazardous cargo on the vehicle, and follow instructions for proceeding to the delivery point. Bypassing security procedures or removing placards to avoid security protocols violates both facility rules and the HazMat security requirements that protect against unauthorized access to hazardous materials.

17. A — Division 4.3 Dangerous When Wet materials emit flammable or toxic gases when they contact water. Rain entering the cargo area through a leaking roof, damaged door seal, or compromised vent could contact the material and trigger a dangerous reaction. The driver must verify that the trailer is fully watertight before transporting Division 4.3 materials in any weather conditions where rain is possible.

18. D — Packing Group I indicates the greatest degree of danger within Class 3 Flammable Liquids. PG I materials have extremely low boiling points (at or below 95°F), meaning they evaporate very rapidly at room temperature and produce large quantities of flammable vapor.

This makes them significantly more volatile and dangerous than PG III materials, which have higher flash points and lower vapor production rates.

19. C — HazMat vehicles should avoid heavily populated areas, residential neighborhoods, school zones, and places where crowds gather unless no practicable alternative route exists. A shortcut through school zones directly contradicts this routing principle. The driver should decline the dispatcher's instruction and continue on the planned route that avoids these sensitive areas.

20. A — Drivers of placarded HazMat vehicles must stop at all railroad grade crossings regardless of signal status, the behavior of other vehicles, or the apparent absence of trains. The mandatory stop requires stopping within 50 feet but not closer than 15 feet from the nearest rail, looking and listening in both directions, and proceeding only when certain no train is approaching.

21. B — A discrepancy between the manifest count (20 drums) and the actual count (18 drums) must be documented and investigated. Two missing drums of hazardous waste represent a chain-of-custody gap that could indicate loss, theft, or diversion. The manifest should be annotated to reflect the actual count received, and the carrier and generator must be notified to account for the missing drums.

22. D — Both the primary and subsidiary hazard labels must match the entries in Column 6 of the Hazardous Materials Table for the specific material. An incorrect subsidiary label miscommunicates the material's additional hazards, which could lead to improper segregation, incorrect emergency response, or inadequate protective measures. The shipper must correct the labeling before the package can be transported.

23. A — Drifting vapors from an adjacent loading operation can create ignition risks, health hazards, or contamination concerns near the driver's vehicle. Even though the driver's trailer is sealed, the vapor could affect personnel in the area, interact with ignition sources near the driver's vehicle, or indicate a broader safety concern at the facility. The driver should alert the dock supervisor to the situation.

24. C — Military classification markings and national security designations do not exempt a hazardous materials shipment from DOT transportation regulations. All standard requirements for shipping papers, placarding, marking, labeling, driver endorsement, and operational procedures apply regardless of the shipment's security classification or the identity of the shipper.

25. B — A nonfunctioning turn signal is an equipment violation that affects safe vehicle operation — particularly for a HazMat vehicle making lane changes and turns on public highways. The driver should have the signal repaired at the earliest safe opportunity. While not necessarily requiring an immediate roadside stop, the driver should not operate indefinitely with a malfunctioning signal.

26. D — Compromised packaging on a radioactive material is a serious concern beyond simple physical damage. Damaged packaging could result in increased radiation exposure to the driver and nearby persons, and could allow radioactive contamination to spread to the cargo area, other packages, and the vehicle itself. The driver should not attempt to handle the damaged package and should notify the carrier and radiation safety personnel.

27. C — Division 6.1 Toxic material at Packing Group II is not a Table 1 material (only PG I Inhalation Hazard Zone A or B is Table 1). At 1,500 pounds, the material exceeds the 1,001-pound Table 2 threshold, requiring POISON placards on all four sides. The POISON INHALATION HAZARD placard is reserved specifically for PG I Inhalation Hazard materials and Division 2.3 Poison Gas.

28. A — Releasing hazardous materials to an unauthorized or unqualified person compromises the chain of custody and could create safety and liability issues. The driver should contact the carrier or the customer's management to verify that the temporary employee is authorized to receive hazardous materials before releasing the shipment. This protects both the driver and the receiving facility.

29. D — A tornado warning indicates that a tornado has been sighted or detected by radar in the area. Continuing to drive on an open highway during a tornado is extremely dangerous. The driver should seek immediate shelter — exit the highway, park in a safe location away from overpasses (which can funnel wind) and power lines, and take cover in a substantial building if available.

30. B — The proper regulatory sequence for hazardous material description elements on shipping papers is: proper shipping name first, then hazard class, then identification number, then packing group. The entry shows the identification number (UN1203) before the proper shipping name (Gasoline), which is the reverse of the required order. While the information itself is correct, the sequence does not comply with the regulatory format.

31. D — A fully loaded smooth bore tank at 40 mph requires significantly more stopping distance than a conventional vehicle due to unrestricted forward surge. The driver should begin braking immediately and gradually when the light turns yellow. If the driver determines that a safe stop before the intersection is not possible given the surge-extended stopping distance, the safest option is to proceed through at current speed rather than risk a violent stop or entering the intersection midbrake.

32. B — A pressure-vacuum vent stuck in the partially open position will continuously release vapor from the tank during transport. For flammable or toxic products, this creates a safety hazard (escaped vapors near ignition sources or personnel), an environmental concern (volatile organic compound emissions), and product loss. The vent must be repaired before the tank is loaded and the vehicle is operated.

33. C — Narrow work zone lanes defined by concrete barriers leave minimal room for lateral error. In a tank vehicle, any liquid surge during braking or steering could cause the vehicle to sway slightly — and in a lane that is already barely wider than the vehicle, even a small lateral movement could result in contact with the barriers. The driver should reduce speed and avoid any abrupt steering or braking inputs.

34. A — Before leaving the cab to begin unloading setup, the driver must set the parking brake firmly and chock the wheels. A loaded tank vehicle on a level surface can still move if the parking brake slips, if air pressure bleeds down, or if the surface has an imperceptible slope. Wheel chocks provide a positive mechanical block that prevents any movement during the unloading operation.

35. D — The heavier liquid (specific gravity 1.5) concentrates more weight in the same volume of space within the tank. At the same fill percentage, the denser liquid raises the effective center of gravity higher because the mass per unit volume is greater at every point in the tank. This increased mass concentration amplifies the overturning moment during curves and increases rollover risk compared to the lighter liquid.

36. C — As deliveries progress and compartments are emptied throughout the day, the vehicle's total weight decreases and the weight distribution shifts. A vehicle that handled predictably with a full load in the morning may feel very different by afternoon with a partial load — lighter steering, more trailer sway, reduced drive axle traction. These are expected consequences of progressive compartment emptying.

37. A — Lightning during loading or unloading of flammable liquids is an extreme hazard. Lightning can strike the vehicle, the grounding system, or nearby objects, generating massive electrical discharge that could ignite flammable vapors. The driver should immediately stop the delivery setup, disconnect the bonding cable first, then the grounding cable, and wait safely in the cab until the lightning passes.

38. B — Standing water around the fill pipe creates a risk that water could enter the customer's receiving tank during the delivery — either through an improperly sealed fill connection or if the water level rises above the pipe opening. Water contamination of fuel products causes engine damage and product quality issues. The driver should verify the fill pipe is well above the water level before beginning the delivery.

39. D — A chemical odor that was not present during the pretrip inspection but appears shortly after departing the terminal strongly suggests that a valve, manhole gasket, or fitting on the cargo tank is not fully sealed. Product vapor escaping from the tank can be drawn into the cab through the HVAC air intakes. The driver should stop immediately and inspect all closures, valves, and fittings for the source of the leak.

40. B — After a hard braking event in a loaded tank vehicle, the driver should first assess the immediate surroundings and vehicle stability, then gradually return to a safe following distance. At the next safe stop, the driver should inspect the vehicle for any cargo shifting, fitting damage, or other effects of the hard braking. The liquid will have experienced violent surge during the event, and any damage to internal or external components should be identified.

41. A — The single most important adjustment for a driver transitioning from dry vans to tank vehicles is increasing following distance and reducing speed in all situations. Liquid surge extends stopping distance beyond what the driver is accustomed to, and the high center of gravity creates rollover risk at cornering speeds that were safe in a dry van. More conservative driving in every situation is the fundamental behavior change required.

42. C — Irregular metallic banging coinciding with road bumps is most likely caused by a loose external component — a pipe support bracket, ladder rung, valve handle guard, or other hardware that has come unfastened and is striking the tank or frame during vehicle movement. The driver should stop and inspect the exterior of the tank for loose components, tightening or securing anything that has come unfastened.

43. D — The driver should gradually reduce speed by easing off the accelerator and downshifting smoothly, maintaining the recommended following distance as both vehicles

slow on the upgrade. Hard braking to match the lead vehicle's speed would trigger unnecessary surge. Smooth, gradual deceleration keeps the liquid settled and maintains safe vehicle control throughout the hill climb.

44. B — Extreme heat causes the liquid cargo to absorb thermal energy and expand. After sitting in direct sunlight at 110°F for several hours, the liquid volume may have increased significantly. The driver should check whether the outage space is adequate for the expanded volume and watch for signs of overpressure — such as pressure relief valve activation, bulging manholes, or audible venting — before resuming transport.

45. A — Corroded contact surfaces on a grounding clamp may not make reliable electrical connection with the grounding point. Static electricity requires a clean metal-to-metal contact path to flow from the tank to ground. Corrosion acts as an insulator, potentially preventing adequate grounding even when the clamp appears to be attached. The driver should clean the contact surfaces or replace the clamp before use.

46. D — A liquid level rising faster than expected based on pump flow rate suggests the receiving tank has less available capacity than reported. The tank may be smaller than the customer stated, may contain more product than indicated, or the level gauge may be inaccurate. The driver should stop pumping immediately and verify the actual available capacity before continuing, to prevent overfilling.

47. B — Bridges and overpasses freeze before regular road surfaces because cold air circulates both above and below the bridge deck, cooling it from both sides. At 33°F — just one degree above freezing — the bridge surface may already have black ice despite the wet approach road being above freezing. The driver should reduce speed before reaching the bridge and avoid braking on the bridge surface.

48. C — A drained but uncleaned gasoline tank contains residual liquid film on interior surfaces and vapor in the headspace that may be within the flammable explosive range. An "empty" gasoline tank is actually more dangerous than a full one in some respects — the vapor-air mixture in the headspace can be at the ideal concentration for ignition. The tank must be treated as a flammable hazard until properly cleaned and purged.

49. A — The most critical difference between a smooth bore tank and a baffled tank is the intensity of forward-and-backward surge during braking and acceleration. Without baffles, the entire liquid mass moves as a single unrestricted wave. The driver must increase following distance significantly, begin braking much earlier, and apply brakes more gradually than with a baffled tank to manage the more violent surge forces.

50. D — After delivering half the load, the vehicle's handling characteristics change dramatically. The partial load produces more severe surge than the full load because the liquid has significantly more room to build momentum. The driver must immediately increase following distance, reduce cornering speeds, and brake more gently. Failing to adjust driving behavior after a partial delivery is a common cause of tanker incidents on multistop routes.