Champions School Home Inspection Practice Test (Sample)

Study Guide

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Questions

1. Which type of foundation is most susceptible to settlement cracks?

A. Slab-on-grade foundation.

B. Basement foundation.

C. Stone foundation.

D. Reinforced masonry foundation.

2. What is the most likely explanation for a gurgling sound heard from the tub drain when the toilet is flushed?

A. Water discharging from the toilet is pulling water from the tub trap

B. The tub drain is partially blocked

C. Water discharging from the toilet is pushing air through the tub trap

D. The branch drain is partially blocked downstream from the tub

3. Which of the following is not a sign of water issues in basements?

A. Rust at the base of steel columns

B. Loose floor tiles

C. Basement storage kept off the floor

D. Window wells extending below windows

4. What is a common function of rope wicks in construction?

A. To conduct water away

B. To stabilize roof structures

C. To replace weep holes

D. To provide insulation

5. What would you identify a dirty evaporator coil in a heating system as?

A. A dirty condensing coil

B. An obstructed heat exchanger

C. A dirty evaporator coil

D. A dirty compressor

6. What is often a sign of water damage in structural framing?

A. Visible cracks in the siding

B. Floors that are uneven

C. Discoloration on drywall

D. Sounds of creaking during movement

7. What do horizontal cracks from rusting steel lintels indicate?

A. Insufficient lintel length

B. Moisture problems

C. Structural movement

D. Masonry distress

8. What is the requirement for proper attic ventilation?

A. Vent each enclosed attic and rafter bay

B. 1/8" to mesh screen over openings

C. Net area of openings - Minimum 1/50th of vented area or 1/300th if 50-80% of venting is near the top or vapor barrier

D. All of the above

9. In which situation are you most likely to see settlement cracks?

A. Houses built on reclaimed land

B. Houses built with slab-on-grade construction

C. Houses with stone or brick foundations

D. Houses built in an area with very low water table

10. What are control joints designed to do?

A. Prevent horizontal movement in masonry.

B. Minimize shrinkage in concrete.

C. Support foundation walls.

D. Allow water drainage.

Answers

1. A
2. A
3. D
4. C
5. C
6. B
7. D
8. D
9. A
10. B

Explanations

1. Which type of foundation is most susceptible to settlement cracks?

A. Slab-on-grade foundation.

B. Basement foundation.

C. Stone foundation.

D. Reinforced masonry foundation.

A slab-on-grade foundation is most susceptible to settlement cracks primarily due to its direct connection to the soil beneath. This type of foundation is poured as a single, thick slab of concrete that rests on a bed of crushed rock or gravel. Because the slab is situated directly on the ground, it is highly affected by soil conditions, moisture content, and changes in temperature. When the underlying soil settles or experiences changes in moisture, it can cause the slab to shift or crack. For instance, if the soil beneath the slab becomes too wet or too dry, it can expand or shrink, respectively, leading to uneven settling. As the slab tries to accommodate these changes, cracks may develop in the concrete. In contrast, other types of foundations like basement foundations or reinforced masonry foundations are typically designed with walls that help distribute loads more evenly and provide additional structural support against settlement issues. Stone foundations also tend to have characteristics that mitigate the risk of cracking, as they often use larger, more stable stones and may not be as directly affected by soil changes.

2. What is the most likely explanation for a gurgling sound heard from the tub drain when the toilet is flushed?

A. Water discharging from the toilet is pulling water from the tub trap

B. The tub drain is partially blocked

C. Water discharging from the toilet is pushing air through the tub trap

D. The branch drain is partially blocked downstream from the tub

The most likely explanation for a gurgling sound heard from the tub drain when the toilet is flushed is that water discharging from the toilet is pulling water from the tub trap. When a toilet is flushed, a significant volume of water rushes through the plumbing system. This sudden influx of water can create a partial vacuum in the pipes downstream, which in turn can draw water from traps connected to nearby fixtures, such as the tub. The gurgling sound is an indicator that air is being displaced within the plumbing system as the trap is being affected by the flow of water from the toilet. This phenomenon is common in situations where multiple fixtures share a common drainage line. The other scenarios presented do describe potential plumbing issues, but they do not directly account for the gurgling noise in the context of toilet and tub interaction. A partially blocked tub drain may cause slow drainage but wouldn't necessarily cause gurgling specifically linked to toilet flushing. Similarly, while a blockage downstream could lead to drainage issues, a clearly recognizable gurgling sound is more typically associated with the interaction of varying water levels in traps rather than obstruction alone.

3. Which of the following is not a sign of water issues in basements?

A. Rust at the base of steel columns

B. Loose floor tiles

C. Basement storage kept off the floor

D. Window wells extending below windows

The situation regarding window wells is important to understand in the context of basement water issues. Typically, window wells are designed to direct water away from basement windows, preventing water from entering and causing damage. If the window wells are sloped properly and extend above the level of the window, they assist in safely draining water away from the structure. When window wells extend below the windows, they can create a risk by allowing water to collect around the windows, leading to potential leaks and water intrusion into the basement. However, simply having window wells that are below the windows isn't inherently indicative of existing water issues unless there's evidence of water pooling or leakage. Therefore, among the options provided, this situation does not directly indicate a current or ongoing water problem, whereas the other signs—like rust at steel columns, loose floor tiles, and the need to keep storage off the floor—are clear indicators of past or present water damage or water intrusion.

4. What is a common function of rope wicks in construction?

A. To conduct water away

B. To stabilize roof structures

C. To replace weep holes

D. To provide insulation

Rope wicks are commonly used in construction to replace weep holes, which are openings that allow moisture to escape from walls or other structures. The main function of a rope wick is to facilitate the drainage of water by capillary action. They draw moisture from the wall assembly out to the exterior where it can evaporate, effectively lowering the risk of water damage and mold growth within the structure. This function is critical in maintaining the integrity and longevity of building materials, especially in areas prone to moisture. While weep holes are effective in allowing water to escape, rope wicks can enhance this process by providing an additional means for moisture management. The other functions listed, such as conducting water away, stabilizing roof structures, and providing insulation, do not accurately describe the primary role of rope wicks in a construction context.

5. What would you identify a dirty evaporator coil in a heating system as?

A. A dirty condensing coil

B. An obstructed heat exchanger

C. A dirty evaporator coil

D. A dirty compressor

A dirty evaporator coil is specifically identified for its function within the heating system. In a heating system, the evaporator coil is responsible for absorbing heat, and when it becomes dirty, the efficiency of this heat absorption decreases. Dust, dirt, and other debris can accumulate on the evaporator coil, hampering its ability to transfer heat properly, which can lead to reduced heating performance and increased energy consumption. Recognizing the evaporator coil's condition is crucial for maintenance and system efficiency, as cleaning or replacing it can restore optimal performance. The terminology is important as it directly reflects the component in question, emphasizing the distinction between different components such as the condensing coil and the compressor, which have entirely different roles in heating and cooling systems. This precision ensures clarity when diagnosing issues and planning repairs or maintenance.

6. What is often a sign of water damage in structural framing?

A. Visible cracks in the siding

B. Floors that are uneven

C. Discoloration on drywall

D. Sounds of creaking during movement

Floors that are uneven can be a significant indicator of water damage in structural framing. When water infiltrates building materials, it can lead to wood framing and subflooring swelling, warping, or rotting. This structural deterioration can result in uneven or sagging floors, as the integrity of the support system is compromised. Water damage often affects load-bearing components, and any change in the foundation or support structure can manifest as uneven flooring. If not addressed, this condition can worsen over time, leading to further structural issues and safety concerns. While visible cracks in the siding, discoloration on drywall, and sounds of creaking during movement may suggest other types of building deficiencies or wear, they do not specifically indicate the significant structural changes associated with water damage as clearly as uneven floors do. Discoloration may suggest moisture presence but is less direct in indicating structural impact, and creaking sounds can arise from various causes unrelated to water damage. Thus, uneven floors most directly reflect the consequences of water damage on structural framing.

7. What do horizontal cracks from rusting steel lintels indicate?

A. Insufficient lintel length

B. Moisture problems

C. Structural movement

D. Masonry distress

Horizontal cracks from rusting steel lintels typically indicate masonry distress. When the steel lintels within masonry structures begin to rust, they expand due to oxidation. This expansion can exert pressure on the surrounding masonry, which may lead to cracking. Such horizontal cracks are signs that the integrity of the masonry is compromised, reflecting the distress caused by the expanding rusted steel. While other factors, such as moisture problems and structural movement, can also lead to cracking, the specific context of horizontal cracks associated with rusting lintels points predominantly to issues related to the masonry itself. Understanding this helps inspectors diagnose the underlying issues and recommend appropriate repairs or further evaluations.

8. What is the requirement for proper attic ventilation?

A. Vent each enclosed attic and rafter bay

B. 1/8" to mesh screen over openings

C. Net area of openings - Minimum 1/50th of vented area or 1/300th if 50-80% of venting is near the top or vapor barrier

D. All of the above

For proper attic ventilation, it is essential to consider all the requirements outlined. Venting each enclosed attic and rafter bay is crucial because it allows for adequate airflow, reducing moisture buildup and helping to regulate temperature. This prevents issues such as mold growth, wood rot, and excess heat, which can significantly impact roofing materials and overall home comfort. Having a mesh screen over openings is another key requirement. This mesh serves to keep debree, pests, and critters out while still allowing air to flow freely through the ventilation system. Proper screening supports the longevity and effectiveness of the ventilation systems by preventing obstructions. The specific measurement for the net area of openings is also critical. The guideline of having a minimum of 1/50th of the vented area ensures that there is sufficient inflow and outflow of air in the attic space. The alternative measure of 1/300th comes into play when a significant portion (50-80%) of the ventilation is located near the top or in the presence of a vapor barrier, which helps maintain balanced ventilation throughout the attic. Combining all these elements ensures that the attic is effectively ventilated, promoting a healthy environment and extending the life of the roof. Therefore, acknowledging all aspects of attic ventilation—including

9. In which situation are you most likely to see settlement cracks?

A. Houses built on reclaimed land

B. Houses built with slab-on-grade construction

C. Houses with stone or brick foundations

D. Houses built in an area with very low water table

Settlement cracks are typically observed in houses built on reclaimed land due to the nature of the ground that has undergone substantial changes in moisture levels, density, and stability after being filled. Reclaimed land can have a varied composition and may have gone through extensive processes of compaction, which can lead to uneven settling over time. When structures are built on such land, the soil may continue to settle as it compacts further or if water levels fluctuate, causing stress on the foundation and leading to visible cracks in the walls or foundation. In contrast, slab-on-grade construction (the second option) involves a concrete slab poured directly on the ground, which generally minimizes settlement issues compared to a house that sits on fill. Stone or brick foundations (the third option) are typically more stable and less prone to settlement cracking because of their weight and structure, which helps distribute weight more evenly. Houses built in areas with a very low water table may not experience significant soil movement either, as the ground remains more stable and dry, preventing the formation of settlement cracks. Therefore, the first situation, where houses are built on reclaimed land, is the most likely to see settlement cracks due to the potential for ongoing soil movement and settling.

10. What are control joints designed to do?

A. Prevent horizontal movement in masonry.

B. Minimize shrinkage in concrete.

C. Support foundation walls.

D. Allow water drainage.

Control joints are specifically designed to minimize shrinkage in concrete during the curing process. As concrete dries, it naturally shrinks, which can lead to cracking if the stresses within the material exceed its tensile strength. Control joints are intentionally placed in locations where cracks are most likely to occur. By creating a predetermined path where the concrete can crack, these joints help maintain the integrity of the surface and improve its aesthetic appearance by containing potential cracks within the joint itself rather than allowing them to occur randomly across the slab. This is particularly important in large concrete pours, where temperature changes and moisture loss can cause significant shrinkage and related stresses.