PDH Academy

Final Exam

Continuing Education Course #397 Concrete Slabs-on-Grade Warehouses II – Slab Design

1. Choose the best answer - In each slab design method, the stiffness of the _____ must be considered.:
- a. Subgrade
- b. Wood pallets
- c. Roof members

2. Choose the best answer- Corners of slab panels act like short _____ supported by the soil?
- a. Unbreakable beams
- b. Cantilevers
- c. Unattached triangles

3. In terms of the square root of the concrete strength, f'c^0.5, concrete rupture strength is in the range of _____.
- a. 0.5 to 1 f'c^0.5
- b. 1 to 2 f'c^0.5
- c. 7.5 to 9 f'c^0.5

4. _____analysis is where the slab stress is limited to the point of incipient local failure of a very small portion of the slab
- a. elastic
- b. plastic or ultimate limit states

5. _____ limit states are those which are based on the post-cracking strength of the slab, or failure that continues beyond the first crack.
- a. elastic
- b. plastic or ultimate limit states

6. Choose the best answer: Adequate _____of the concrete will be required for plastic or ultimate limit state methods.
- a. water content
- b. shrinkage
- c. ductility

7. Choose the best answer: The accumulation of damage from repeated loads below the maximum allowable load is known as _____:
- a. self-healing concrete
- b. fatigue loading
- c. sudden overload failure

8. Choose the best pair of words: Progressive failure for a gradually increasing post load begins when the slab first ____ in the middle, with concave shape up, developing positive moments. Then the slab bends down, or ____, in negative moment (slab in compression on the bottom and tension on top), at a characteristic radius from the load center.

○ a. raises up, sags
○ b. sags, hogs

9. A _____theory method involves an assumed failure shape where the material in question bends to the yield limit along failure lines and then the moment that caused that yielding remains constant through failure. (Choose the best answer):
○ a. abrupt failure
○ b. yield line

10. True or false? To promote the ductile or plastic response of concrete slabs-on-grade when subjected to loading that produces failure, the minimum amount of steel reinforcing recommended is 0.18% by ACI, and 0.13% by the British Standard 8110.
○ a. True
○ b. False

11. Proximity of other loads on a slab in addition to a storage rack post load ____. (Choose the best answer).
○ a. do not matter in the least
○ b. should be checked to see if their magnitude will have an influence on the controlling stresses in the slab
○ c. are never allowed, no matter the distance

12. The Simplified Analytical Method by Shentu, et al, relies on the _____ thrust that develops as the slab is squeezed between the load above and soil below, while being restrained laterally in all directions by the main body of the slab.
○ a. lack of
○ b. vertical
○ c. horizontal

13. Choose the best answer – For shear failure in concrete slabs, PCA recommends assumes an allowable shear of ____ times the modulus of rupture.
○ a. 0.27
○ b. 40.0
○ c. 0.99

14. Choose the best answer - ACI recommends joint spacing between _____ times the slab thickness for unreinforced slabs
○ a. 3 and 5
○ b. 24 and 36
○ c. 93 and 150

15. If the curling stress is high, it _____ the reserve strength near the joint to resist wheel loads.
○ a. increases
○ b. has no impact on
○ c. reduces

16. Choose the best answer – When reviewing the practical lmiits of aggregate interlock, the effectiveness really drops steeply with _____ joint size
○ a. increasing
○ b. decreasing

17. The function of dowels is to allow for joints to continue to move due to _____ while also providing vertical load transfer. (Choose the best answer).
○ a. drying expansion
○ b. drying shrinkage

18. True or false? Joint transfer devices may be strategically located only at areas with the most severe traffic conditions to optimize costs. A well-defined traffic pattern is generally required.

- a. True
- b. False

19. Choose the best answer: – The use of a_____ at joint devices is imperative for the devices to work properly. If there are honeycomb voids, the devices may become loose, or there may be weak sections in the concrete that are subject to higher stresses:

- a. vibrator
- b. compressible joint fill material
- c. caulk gun

20. Choose the best answer: _____at a joint allows for the normal control joint construction while still provding excellent protection against cracking and spalling:

- a. Mineral oil
- b. Joint filler
- c. Steel wool

21. True or false? Joint filler is used in both construction and contraction joints:

- a. True
- b. False

22. Choose the best answer: In _____-traffic patterns, materials handling equipment will move in multiple directions, either randomly, or orthogonally:

- a. Defined
- b. Random

23. Choose the best answer: FF/FL testing is to be performed _____hours after concrete placement:

- a. 0.5 to 1
- b. 24 to 72
- c. 240 to 720

24. Options available for slab finishing include (More than one answer possible):

- a. Silicate sealers
- b. Integral hardeners
- c. Shake-on hardeners
- d. All of the above

25. Choose the best answer: _____ is where all parties come together to discuss how the concrete slab construction will be planned for and executed.

- a. Pre-Construction Meeting
- b. Slab completion celebration luncheon
- c. Post-mortem meeting to discuss how the project went after it was completed