

***** EXAMINATION *****

SLIDING STABILITY FOR CONCRETE STRUCTURES

1. **An adequate assessment of sliding stability must account for the:**
 - a) basic structural behavior
 - b) transmission of compressive and shearing loads to a foundation
 - c) reaction of the foundation to such loads
 - d) All of the above

2. **The proper design of a structure subject to sliding analysis would**
 - a) include a geotechnical engineer
 - b) include a structural engineer
 - c) include a geologist
 - d) All of the above

3. **An assessment of inhomogeneity is also called:**
 - a) a geologic structural complexity
 - b) a variable structural analysis
 - c) a variable geologic analysis
 - d) a complex geologic analysis

4. **Selecting the type of test for design shear strengths is based**
 - a) upon the probable date of seismic activity
 - b) upon the probable strength of seismic activity
 - c) upon the probable mode of failure
 - d) upon the availability of soil tests

5. **Sliding stability of most concrete structures can be adequately**
 - a) assessed by using a variety of static equations
 - b) assessed by using a limit equilibrium approach
 - c) assessed by using a fixed variable approach
 - d) None of the above

6. **Using the limit equilibrium approach, the shearing force acting:**
 - a) perpendicular to the interface of any two wedges is assumed negligible
 - b) along the interface of any two wedges is assumed negligible
 - c) parallel to the interface of any two wedges is assumed negligible
 - d) None of the above

7. **A potential failure surface is based on:**
 - a) stratification
 - b) location and orientation
 - c) frequency and distribution
 - d) All of the above
8. **The origin of the coordinate system for each wedge is located in:**
 - a) the lower left hand corner of the wedge
 - b) the upper left hand corner of the wedge
 - c) the lower right hand corner of the wedge
 - d) the upper right hand corner of the wedge
9. **The depth of cracking in massive strong rock foundations is assumed to:**
 - a) extend to the top of the structural wedge
 - b) extend to the base of the structural wedge
 - c) extend to the centroid of the structural wedge
 - d) None of the above
10. **Full hydrostatic pressure should be assumed to act at:**
 - a) the top of the crack
 - b) parallel to the crack
 - c) the bottom of the crack
 - d) None of the above
11. **The hydraulic gradient across the base of the structural wedge should:**
 - a) reflect the presence of a crack at the heel of the structural wedge
 - b) reflect the presence of a crack at the top of the structural wedge
 - c) reflect the presence of a crack at the centroid of the structural wedge
 - d) reflect the presence of a crack at the middle of the structural wedge
12. **The effects of seepage forces:**
 - a) should not be included in the sliding analysis
 - b) should be included in the sliding analysis
 - c) are negligible in the sliding analysis
 - d) None of the above
13. **Seepage force analyses should be based on conservative estimates of:**
 - a) downlift
 - b) lateral shear
 - c) torsional shear
 - d) uplift
14. **The approximate head loss at any point due to water flowing through:**
 - a) the medium can be determined by the line-of-seepage method
 - b) the medium can be determined by the head loss method
 - c) the medium can be determined by the length-of-seepage method
 - d) the medium can be determined by the embedded perimeter method

15. **Referring to Figure Ten, the initial total head is the:**
- a) pressure head times the elevation head
 - b) pressure head minus the elevation head
 - c) head differential between headwater and tailwater
 - d) pressure head divided by the elevation head
16. **The elevation head is the vertical distance between the point:**
- a) being considered and the internal groundwater level
 - b) being considered and the tailwater elevation
 - c) at the pressure head and the internal groundwater level
 - d) None of the above
17. **The horizontal earthquake acceleration can be obtained from:**
- a) earthquake maps
 - b) USGS topographic maps
 - c) USGS hydrology maps
 - d) seismic zone maps
18. **The vertical earthquake acceleration is:**
- a) one-third of the horizontal acceleration
 - b) two-thirds of the horizontal acceleration
 - c) the same as the horizontal acceleration
 - d) twice the horizontal acceleration
19. **For dams, the minimum required factor of safety for normal static**
- a) loading conditions is 1.0
 - b) loading conditions is 1.5
 - c) loading conditions is 2.0
 - d) loading conditions is 2.5
20. **The letter c is the symbol for:**
- a) cohesion
 - b) maximum shearing force
 - c) weight per unit volume
 - d) the factor-of-safety

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