Chettinad
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Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai.

Department of Civil Engineering

CE8491 & Soil Mechanics

Unit III - MCQ Bank

1. The stresses due to self-weight of the soil are known as _____

   a) geostatic stresses

   b) boundary stresses

   c) external stresses

   d) boundary strain

   Answer: a

2. If XY pane is considered to be ground surface and the z-axis as depth, then this condition

   is known as _____

   a) semi-infinite

   b) infinite

   c) finite

   d) semi- finite

   Answer: a

3. When there is no eternal loading, the principal is _____

   a) 5m below ground plane

   b) ground plane

   c) 10m below ground plane

   d) at infinity

   Answer: b

4. From the symmetry and orthogonality of principal planes _____

   a) both horizontal and vertical planes will be devoid of shear stress

   b) both horizontal and vertical planes will have shear stress

   c) only vertical plane has shear stress

   Answer: a

5. The vertical stress at a point within soil mass at a depth z is _____

    a) $\sigma_z = \gamma + z$

    b) $\sigma_z = \gamma - z$

    c) $\sigma_z = \gamma / z$

    d) $\sigma_z = \gamma z$

Answer: d

6. At a certain point within soil mass, the stresses are caused only because of surface loadings.

    a) True

    b) False

Answer: b

7. The problems due to stress distribution in soils due to a concentrated load was studied by _____

    a) G.B Airy

    b) Terzaghi

    c) Darcy

    d) Boussinesq

Answer: d

8. The assumption made by Boussinesq in the solutions is by the _____

    a) theory of plasticity

    b) theory of elasticity

    c) yield point

    d) failure point

Answer: b

9. The assumption of Boussinesq equation is that the soil is _____

    a) elastic

    b) semi-elastic

    c) plastic

    d) semi-plastic

Answer: a

10. The Boussinesq equation representing the polar radial stress is _____

   a) $\sigma_R = 3Q/2 \cos\beta/R^2$

   b) $\sigma_R = 3Q/2\pi \cos\beta/R^2$

   c) $\sigma_R = 3Q/2\pi \cos\beta/R$

   d) $\sigma_R = 3Q/2\pi \cos\beta/R^3$

   Answer: b

11. _____ is not the vertical pressure distribution diagram, which can be prepared by Boussinesq's theory.

   a) stress isobars

   b) vertical pressure distribution on a horizontal plane

   c) horizontal pressure distribution on a horizontal plane

   d) vertical pressure distribution on a vertical plane

   Answer: c

12. An isobar is a curve connecting all points of _____ below the ground.

   a) equal vertical pressure

   b) unequal vertical pressure

   c) equal horizontal pressure

   d) unequal horizontal pressure

   Answer: a

13. An isobar is a curve connecting all points of _____ below the ground.

   a) equal vertical pressure

   b) unequal vertical pressure

   c) equal horizontal pressure

   d) unequal horizontal pressure

   Answer: a

14. An isobar is a curved surface of the shape of _____

   a) circular

   b) rectangle

   c) bulb

   Answer: c

15. The zone of soil in isobar is called _____

    a) stress diagram

    b) contour

    c) pressure bulb

    d) isotherm

    Answer: c

16. An isobar diagram consists of _____

    a) family of isobars of various intensities

    b) single isobar only

    c) two isobars only

    d) isobars of same intensities

    Answer: a

17. The vertical stress distribution diagram on a horizontal plane due to a concentrated load is known as the influence diagram if the load is _____

    a) zero

    b) unity

    b) two units

    c) three units

    Answer: b

18. In Terzaghi's Theory of one dimensional consolidation, load is applied in _____

    a) one direction only

    b) two directions only

    c) three directions only

    d) none of the direction

    Answer: a

19. In Terzaghi's Theory of one dimensional consolidation, the deformation occurs in _____

    a) one direction only

    b) two directions only

    Answer: a

20. In Terzaghi's Theory of one dimensional consolidation, soil is restrained against lateral deformation.

a) True

b) False

Answer: a

21. In Terzaghi's Theory of one dimensional consolidation, excess pore water drains out in _____

a) horizontal direction only

b) tangential direction only

c) vertical direction only

d) both horizontal and vertical direction

Answer: c

22. In Terzaghi's Theory of one dimensional consolidation, the boundary is considered to be _____

a) free surface offering resistance to flow of water

b) free surface offering no resistance to flow of water

c) fixed surface offering resistance to flow of water

d) curved surface offering resistance to water flow

Answer: b

23. When the maximum vertical stress is 0.235 kN/m^2 at a radial distance of 4m from the point load is _____ kN.

a) 42.34

b) 10.56

Answer: a

24. The maximum value of σ_z on vertical line is obtained at the point of intersection of vertical plane with radial line at the angle of _____

a) 39°30'

b) 39°15'

Answer: b

25. The vertical stress distribution diagram on a horizontal plane due to a concentrated load is known as the influence diagram if the load is _____

a) zero

b) unity

b) two units

c) three units

Answer: b