FAQs

1. **Explain the uses of circular slab.**
    - Roof of a room or hall circular in plan
    - Floor of circular water tanks or towers
    - Roof of pump houses constructed above tube wells
    - Roof of a traffic control post at the intersection of roads
2. **Explain the behavior of circular slab.**
    - Bending takes place in distinctly two perpendicular directions along the two spans.
    - Reinforcement is provided in the form of a mesh of bars having equal area of cross section in both the directions, the area being equal to that required for the bigger of the radial and circumferential moments.
    - However, if the stresses near the edge are not negligible, or if the edge is fixed, radial and circumferential reinforcement near the edge becomes essential.
3. **Give the bending moment details of a simply supported circular slab with UDL.**
    - Circumferential moment at the centre of slab $(M_\theta)_c = + 3/16\ wa^2$
    - Circumferential moment at the edge of slab $(M_\theta)_e = + 2/16\ wa^2$
    - Circumferential moment at any point at 'r' distance from the centre of slab $M_\theta = w/16\ (3a^2 - r^2)$
    - Radial moment at the centre of slab $(M_r)_c = + 3/16\ wa^2$
    - Radial moment at edge $(M_r)_e = 0$
    - Radial moment at any distance 'r' from the centre $(M_r) = + 3/16\ w(a^2-r^2)$
    - Radial shear force at any radius 'r' $F_r = ½\ w.r$ / unit width

    Note: Circumferential shear force is zero at everywhere
4. **Give the bending moment details of a fixed supported circular slab with UDL.**

- Circumferential moment at the centre of slab $(M_\theta)_c = + 1/16\ wa^2$
- Circumferential moment at the edge of slab $(M_\theta)_e = 0$
- Circumferential moment at any point at 'r' distance from the centre of slab $M_\theta = w/16\ (a^2 - r^2)$
- Radial moment at the centre of slab $(M_r)_c = + 1/16\ wa^2$
- Radial moment at edge $(M_r)_e = -2/16\ wa^2$
- Radial moment at any distance 'r' from the centre $(M_r) = + 1/16\ w(a^2-3r^2)$
- Radial shear force at any radius 'r' $F_r = ½\ w.r$ / unit width

Note: In radial moment, the pt of contraflexure occurs at a distance $a/\sqrt{3}$ from the centre of slab.

5. Give the bending moment details of a partially fixed supported circular slab with UDL.

- It is an intermediate case between simply supported and fixed slabs. The moment values are average between these two cases.
- Circumferential moment at the centre of slab $(M_\theta)_c = + 2/16\ wa^2$
- Circumferential moment at the edge of slab $(M_\theta)_e = + 1/16\ wa^2$
- Radial moment at the centre of slab $(M_r)_c = + 2/16\ wa^2$
- Radial moment at edge $(M_r)_e = -1/16\ wa^2$
- Radial shear force at any radius 'r' $F_r = ½\ w.r$ / unit width

Note: In radial moment, the pt of contraflexure occurs at a distance $a\sqrt{2/3}$ from the centre of slab.