19CET302- DESIGN OF RC STRUCTURAL ELEMENT

Question Bank

UNIT – III

1.What is a stair case.

A staircase consists of a number of steps arranged in a series, with landings at appropriate locations, for the purposes of giving access to different floors of a building.

2. Define tread:

Tread: The horizontal portion of a step was the foot rests is referred to, as tread.250 to 300 mm is the typical dimensions of a tread.

3. Define riser

Riser: Riser is the vertical distance between the adjacent treads or the vertical projection of the step with value of 150 to 190 mm depending upon the type of building.

4. Define treadGoing

Going: Going is the horizontal projection of an inclined flight of steps between the first and last riser

5. What are the types of staircases?

They are broadly classified as
i. Straight stair
ii. Quarter turn stair
iii. Half turn stair
iv. Dog legged stair
v. Open newer stair with quarter space landing
vi. Geometrical stairs such as circular stair, spiral stair, etc.

6. What is a flight?

A flight is the length of the staircase situated between two landings. The number of steps in a flight may vary between 3 to 12.

7. What is the minimum rise and tread in residential buildings?

In residential buildings, the rise may vary between 150mm to 180mm tread between 200mm to 250mm.

8. What is the minimum rise and tread in public buildings?

In public buildings, the rise may vary between 120mm to 150mm tread between 200mm to 300mm.

9. Mention the places where the following footings can be used

a). Single flight staircase
b). Quarter turn staircase
c). Dog legged staircase
d). Open well staircase
e). Spiral staircase

Single flight staircase: Single flight staircase is used in cellars or attics where the height between floors is small and the frequency of its use is less.

Quarter turn staircase: Quarter turn staircase flight generally runs adjoining the walls and provides uninterrupted space at the centre of the room. Generally used in domestic houses where floor heights are limited to 3m.

Dog legged staircase: Dog legged staircase is generally adopted in economical utilization of available space.

Open well staircase: Open well staircases are provided in public buildings where large spaces are available.

Spiral staircase: In congested locations, where space availability is small, Spiral stairs are provided.

10. **Lable types of slabs**

1) One-way slabs on beams:
2) One-way joist slab (ribbed slab):
3) Waffle slab (grid slab):
4) Flat plates:
5) Flat slabs:
6) Two-way slabs on beams:
7) Hollow core slab:
8) Hardy slab:
9) Bubble deck slab:
10) Composite slab:
11) Precast slab

11. . **What are the types of staircases?**

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12 .What is slab?

A slab is a horizontal, flat, and usually reinforced structural element in construction. It is used to provide a stable surface for floors, roofs, or ceilings in buildings.

13. Give difference between oneway and two slab

One-Way Slab	**Two-Way Slab**
Primarily designed to distribute loads in one direction (longitudinal or shorter span).	Designed to distribute loads in two directions (both longitudinal and transverse spans).
Main reinforcement bars (rebars) run only in one direction (span) of the slab.	Main reinforcement bars (rebars) are provided in both longitudinal and transverse directions.

Typically supported on two opposite sides, such as beams or walls, to allow load transfer along one axis.	Supported on all four sides, distributing the load in both directions.
Often used in buildings with narrow spans, like corridors or hallways.	Commonly used in larger, more open spaces, like rooms or floor slabs.

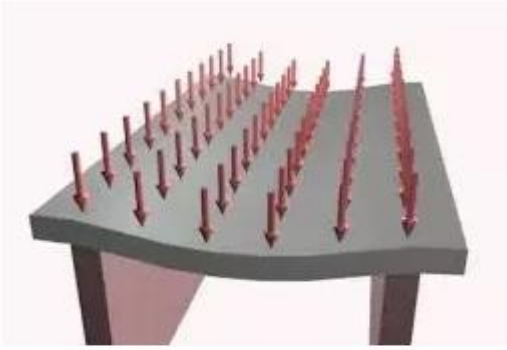
14. Why is secondary/distribution reinforcement provided in one way RC slab?

This secondary reinforcement assists in spreading the load transversely over a larger breadth and avoiding punching of the slab due to point loads. The load distribution caused by the longitudinal bars prevents local effects of load such as plastic shrinkage cracks due to temperature and shrinkage.

15. Why is a main reinforcement provided along the shorter sides of the slab?

To avoid higher bending moment and thereby avoiding heavy reinforcement.

one way slab is the slab in which the l/b ratio is more than two and in this type of slab the support is provided along longer direction as follows;



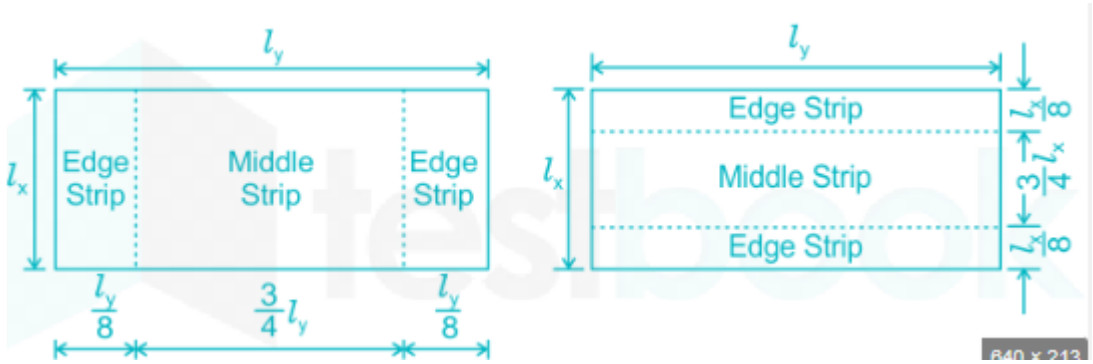
in above figure the slab is suppored on two walls along the length(longer direction) of slab. thus the slab will bend along width (shorter direction). hence the main reinforcement will be provided along shorter direction i.e. width of slab.

16. What is the importance of two way slabs over one way slab?

A one-way slab primarily supports loads in a single direction, while a two-way slab supports loads in both the longitudinal and transverse directions.

17. Why corner reinforcement are provided in a two way slab? And sketch the edge and middle strips of a two way slab.

Corner reinforcement are also called as torsional reinforcement. Torsional reinforcement shall be provided at corner of two way slab. The torsional moment are high near the corner therefore, torsional reinforcement is essential to prevent corner slab from lifting and prevents cracks



18. What is the minimum rise and tread in residential and public building?

The tread depth is typically between 250-300 millimeters (10-12 inches), and the riser height is generally kept between 150-200 millimeters (6-8 inches).

19. What are the advantages of two way slab over one way slab?

A two way slab is in which the load is transferred in both (x and y) directions, so that the maximum load can be withstanded without any deformation. But on the other hand an one way slab is in which the load can be transferred is only one direction and so less load can be transferred.

20. Write any two general features of two way slab

1. Designed to distribute loads in two directions (both longitudinal and transverse spans).
2. Main reinforcement bars (rebars) are provided in both longitudinal and transverse directions.
3. Supported on all four sides, distributing the load in both directions.
4. Commonly used in larger, more open spaces, like rooms or floor slabs.