USN					



# Internal Assessment Test II New 2017

Internal Assessment Test II –Nov 2017										
Sub:	BUILDING CO	BUILDING CONSTRUCTION MATERIALS SOLUTIONS					15CV36	Branch:	CIV	7
Date:	09/11/17	Duration:	90 min's	Max Marks:	50	Sem / Sec:	3(A) & 3(B)		OBE	
Answer all Questions. Draw sketches wherever necessary.								MARKS	CO	RBT
1 (a) List various functions of foundations.							[05]	CO2	L2	
	Reduction of	f load intensit	tv							

## Reduction of load intensity

To distribute the total load coming on the structure on a larger area so that intensity of load at its base does not exceed safe bearing capacity of subsoil.

#### Even distribution of load

It distributes the non uniform load of superstructure evenly to the subsoil.

### Lateral stability

To give enough lateral stability to the structures against various disturbing forces, such as wind and rain.

#### Provision of Level surface

Provide a level and hard surface over which the superstructure can be built.

Protection against soil movements

To prevent or minimize cracks due to moisture movement because of expansion and contraction of subsoil.

Safety against undermining

To provide structural safety against undermining or scouring due to animals, flood water etc

(b) Explain the requirements of good stairs.

### 14.3. REQUIREMENTS OF A GOOD STAIR

Stair is the means of vertical transportation between the floors. It should, therefore, be designed so as to provide easy, quick and safe mode of communication between the floors. Following are the general requirements which a stair should fulfill.

- 1. Location: (i) It should be so located as to provide easy access to the occupants of the building. (ii) It should be so located that its well lighted and ventilated directly from the exterior. (iii) It should be so located as to have approaches convenient and spacious.
- 2. Width of stair: It should be wide enough to carry the user without much crowd or inconvenience. Width of stairs depends upto its location in the building and the type of the building itself.

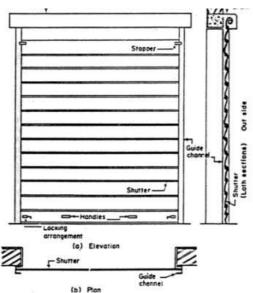
If a domestic building, a 90 cm wide stair is sufficient while in public building, 1.5 to 1.8 m width may be required.

- 3. Length of flight: From comfort point view, the number of steps are not more than 12 and not less than 3.
- 4. Pitch of stair : The pitch of the stairs should match with the French theory: 'the labour of moving vertically is about twice that of moving horizontally, if the average human stride is taken as 23 inches. If the rise and going are measured in inch units, the best pitch of the stairs is that inclination which by twicing the rise and adding the going equals 23. When measured in cm units, a comfortable slope is achieved when twice rise plus going is equal to 60 approximately. Pitch should however, be limited to 30° to 45°.
  - 5. Head Room: The clear distance between the tread and

soffit of the flight immediately above it should not be less than 2.1 to 2.3 m, so that even a tall person can use the stair with some luggage on its head.

[05] CO4 L2

i) This is the horizontal platform provided at the head of series of steps .it is used as a resting place during use of stairs .it facilitates change of direction of flight.  ii) It is the projecting part of tread beyond the face of riser.it is usually rounded to give pleasing effect to tread and make staircase convinient and easy to use.  iii) total length of stairs in horizontal plain including length of landings iv) Vertical member which is provided at the end of flight  The inside dimensions of a stair case in a residential building are 2m X 4m. The height of floor including the roof slab is 3.42m. Design a proper layout of stairs for this building.  • Adopt a dog legged stsir. • Take rise as 180mm. • Number of rises = Total height of floor//height of rise 3420/180 = 19, Provide 12 rises in the first flight and 7 rises in the second flight.  • Assume a tread of 230mm • Number of treads in the first flight will be 11 • Width left for landing = 46000 – 11X230 = 2070mm • This width will be adequate.	CO1	L2
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4m		
(b) Explain the following with neat sketches i) Rolling shutter ii) Bay window [06]	CO5	L2
i) Rolling shutter		
These are commonly used for shops, godowns, stores etc.  The door shutter acts like a curtain and thus provides adequate protection and safety against fire and thefts.  The shutter is made up of thin steel slabs called laths or slates about 1.25 mm thick interlocked to each other and coiled upon specially designed pipe shaft called drum mounted at the top.  The shutter moves in two vertical steel guide channels installed at their ends.  The channel is made up of steel sheets and deep enough to accommodate the shutter and to keep it in position.  A horizontal shaft and spring in the drum which allow the shutter to coiled in or out.  These may be manually operated for smaller openings (upto 10 sq.m.). Above 10 sq. m., they may be operated manually/motorized.		



ii) Bay window

The window projecting outward from the external walls.

- ☐ Wide and decoratively impressive allow for 180° view.
- $\Box$  A multi-panel window, with at least three panels set at different angles to create an extension from the wall line.
- $\Box$  it is commonly used in cold country where snow often falls.
- ☐ They may be triangular, circular, rectangular or polygonal in plan.



- (c) What are the factors to be considered while locating doors and windows in a room?
  - The number should be kept as minimum.
  - It should meet the functional requirement.
  - It should preferably be located at the corner of the room, nearly 20 cm from corner.
  - If in a room, more than 2 doors are there, they shall be located facing each other.

[04]

3 (a) Mention the characteristics of Ideal paint.

[05]

- Form hard and durable surface
- Give attractive appearance
- Cheap and readily available
- Applied easily to the surfaces
- Good spreading quality
- Should dry in reasonable time

CO5 L2

CO5 L2

[04+04] CO5 L2 (b) Describe the methods of application of painting on old and new metal surfaces. Painting new iron and steel work The surface is cleaned off scale and rust by scrapping or brushing with steel wire brushes, oil, and greases by washing the surface with petrol, benzene. • The cleaned surface is treated with film of phosphoric acid. This film protests the surface from rusting and provides better adhesive surface for the paint. • First coat consist of 3kg red lead in 1 litre of boiled linseed oil. • After first coat, two or more under coats are applied with brush or spray • Then final coat is applied. Repainting new iron and steel work Old surfaces are cleaned by application of soap water or otherwise flat oxy –acetylene flame is passes over the metal, burning off old paint and loosening rust. The surface is scrapped with wire brush and washed with solution of caustic soda and slaked lime. After that surface is thus prepared, painting is carried out as for the new surface. [04] CO5 L2 (c) Write short notes on effects of Dampness. It is the cause of pathogenic bacteria as well as fungal colony and gives rise to the breeding of the mosquitoes causing unhealthy living conditions. • Unsightly patches are found due to travel of water through walls and ceilings causing defacing of the walls through destruction of the designs and plastering. • Also it causes softening and crumbling of plaster especially lime plaster in the old buildings. • The spalling of concrete as well as lost decoration is a costly affair to recover. • Also spalling off of the concrete from the roof ceiling endangers the safety of users. Continuous presence of moisture may cause efflorescence resulting in disintegration of bricks, stones, tiles etc., and consequent reduction in strength. This may result in eccentric loading due to load imbalancing during load transfer which may cause tension cracks in the structure. Due to reduction in the adhesive force due to presence of water caused by dampness, the flooring gets loosened up. Timber fittings like doors and windows etc. get deteriorated due to wrapping, dry rotting and buckling due to the dampness. Also the joints

get tightened up and may result in misplacement of the elements due to

Electrical fitting due to deterioration, possesses a threat of leakage of

electricity consequently causing the danger of short circuit.

swelling, bulging etc.

Floor coverings get damaged.