

- * Explain concrete and concrete mix?
- Ans: Concrete
- Concrete, an artificial stone-like mass, is the composite material which is created by mixing building material (cement or lime) along with the aggregate (sand, gravel, stone, brick chips etc), water, admixtures etc in specific proportions.
 - The Strength and quality are dependent on the mixing proportions.
 - Concrete = Binding material + Fine & coarse + Aggregate + water + Admixture (optional).

Ans: Concrete mix:

- A concrete mix is a combination of five major elements in various proportions: cement, water, coarse aggregates, fine aggregates (i.e sand), and air.
- Additional elements such as pozzolanic materials and chemical admixtures can be also incorporated into the mix to give it certain desirable properties.
- While at ready mix concrete design is a process of selecting ingredients for a concrete mixture and deciding on their proportions.
- Concrete mix design:**
- Concrete mix design is often mistakenly referred to as "cement mix design." However cement is simply one of the ingredients, cement is simply one of the ingredients of concrete.
- It is binding substance that allows concrete to set, harden, and adhere to other materials.
- Therefore it cannot and should not be used interchangeably with concrete mix design.

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- * Why is proper drainage required in construction?
- Ans: Drainage:
- Proper drainage is artificial or natural removal of surface water and sub-surface water from an area.
 - Ans: Why proper drainage is required in construction or building and needs of drainage.
 - To protect site.
 - It is needed for controlling of falling water get to many ways from the building (e.g. roof).
 - Protect ponding that can affect landscaping.
 - If there is not good drainage then the water get collected and since water will the soil below the foundation of building the building may get cracks & may fail.
 - Because water destroys everything. It's insidious.
 - We need water management every where in our home. It need to be directed and allowed proper water drainage.
 - Drainage is also important to a healthy living environment.
 - Explain water flow principle?**
 - The main principle of water flow is Bernoulli's principle: within a horizontal flow of fluid, points of higher fluid speed will have less pressure than points of slower fluid speed.
 - which is based on the principle of conservation of energy. This is state that a steady fluid the sum of all forms of energy in fluid along a stream line is the same at all points on that stream line particles are subjected only to pressure due to their own weight.

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Ques: Define bearing capacity of soil? Explain the bearing capacity of soil in failure of foundation?

Ans: Bearing capacity of soil.

- Bearing capacity of soil in failure of foundation.
- The bearing capacity of soil provide support strength to the foundation and take all load coming on the foundation.
- Bearing capacity of soil providing stability of structures.
- Unequal settlement of sub-soil.
- Unnatural earth movement.
- Reduction of water content.
- Atmospheric action.
- Unusual load distribution.
- Reflex pressure.

Ques: What are the objectives in soil mechanics?

- To determine bearing capacity of soil.
- To know the depth of water table.
- To know the soil consolidation models.
- To know that net flow for seepage.
- To derive the relationship among soil properties.
- To describe the nature of soil and behaviour of soil.
- To have an understanding of soil as engineering material.
- Have an understanding of the soil importance of water in soil and effective stress principle etc.

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- Ques: The following reading are successively taken with an instrument by leveling week 0.385, 0.695, 0.559, 1.715, 1.835, 2.250, 0.582, 0.425, 0.860, 1.400. The position of the instrument was changed after taking 3rd and 6th reading. Calculate the RL of all other point if the RL of first point is 130m. Also apply regular check.
- Note: Since the Instrument is moved after 3rd and 6th reading?

station	B.S	I.S.W	F.S (m)	R.F.P	RL (ft)	RL (m)	Remark
2	0.385					130	
2		0.695			0.33	129.69	
3	1.715		0.559	0.136		129.816	90
4	1.835				0.06	129.766	
5	2.250				0.415	129.359	120
6	0.582				0.360	130.508	
					1.400	130.023	
						129.533	
Total S.F.P = 4.000 ft (P.F. = 1.000 ft/m)							

$$\text{check: } \textcircled{1} \quad E.P.S - E.P.F = 1.400 - 1.000 = 0.400 \\ \textcircled{2} \quad E.P.F - E.P.F = 1.000 - 1.000 = 0 \\ \textcircled{3} \quad E.P.F - E.P.F = 1.000 - 1.000 = 0 \\ \therefore -0.400 = -0.400 = -0.400$$

- * What is opening in civil construction? what are the materials used for their construction?
- Ans: opening in civil construction
- The space provided for opening provided in a construction (i.e. wall) is called opening in civil construction.
 - The opening materials in building
 - A door may be defined as a frame work of wood, steel, aluminium iron etc. so combination of these materials required in an opening left in wall for providing access to the user to the structure.
 - 1) Lintel:** A structure of horizontal block support or timber, stone, concrete or steel across the top of a door or window, its horizontal block hold the space or opening between two vertical supports.
 - 2) Sill:** A window sill is the surface at the bottom of windows or the lowest member of frame work and supporting structure windows holds pieces in place and stops down water to drain water.
 - 3) Window:** Window may be defined as an opening made in a wall for the purpose of providing day light vision and ventilation over of floor area in a room is required for ventilation.
 - They are made of the window made of the many materials such as glass, wood, steel & other metals and their combination.

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$$\text{True distance chain } 1150 \text{ m (L)} = \frac{1}{1.000} \times 1150 \\ = \frac{130.00}{30} \times 1150 \\ = 1152.3 \text{ m}$$

$$\therefore \text{True distance} = T_1 + T_2 \\ = 136.7 + 1152.3 \\ = 1289.5 \text{ m}$$

* The length of a Survey line measured with a 30m chain was found to be 130.3m when the chain was compared with a standard chain. It was found to be 0.3m too long. Find the true length of the survey line.

$$\text{Length of a Survey line (L)} = 30 \text{ m} \\ \text{Measured length of Survey line (L')} = 130.3 \text{ m} \\ \text{Scale factor} = \frac{30}{130.3} \\ = 0.2306$$

$$\text{Measured length of Survey line (L')} = 633.5 \text{ m} \\ \text{True length of chain (L')} = 30 \times 0.2306 \\ = 30.180 \text{ m}$$

$$\therefore \text{True length of the Survey line (L')} = \frac{1}{1.000} \times 633.5 \\ = \frac{130.10}{30} \times 633.5 \\ = 633.605 \text{ m Ans}$$

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Conversion.

case	Int-C.B	Role for S.B	Quadrant
1	0° 90°	1.L.C.B	N.E
2.	90° 180°	180° 1.L.C.B	S.E
3.	180° 270°	1.L.C.B - 180°	S.W
4.	270° 360°	360° 1.L.C.B	N.W
5.	0°	N	
6	90°	E 90°	
7	180°	S	
8	270°	W 90°	

$$\begin{aligned} Q.B &= W.C.B \\ N.E &= W.C.B \\ S.E &= W.C.B - 180 \\ S.W &= 180 + W.C.B \\ N.W &= 360 - W.C.B \end{aligned}$$