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Section B

Paper Adv Engineering Surveying

Qno1:

Answer: Transition curve:

A curve of constantly changing radius used to connect to a circular arc to a straight line or to an arc of different curvature.

1). A track transition curve or spiral easement is a mathematically calculated curve on a section of highway or railroad track, in which a straight section changes into a curve.

2). It is a curve in plan which is provided to change the horizontal alignment from straight to circular curve gradually means the radius of transition curve varies b/w infinity to R to R to infinity.

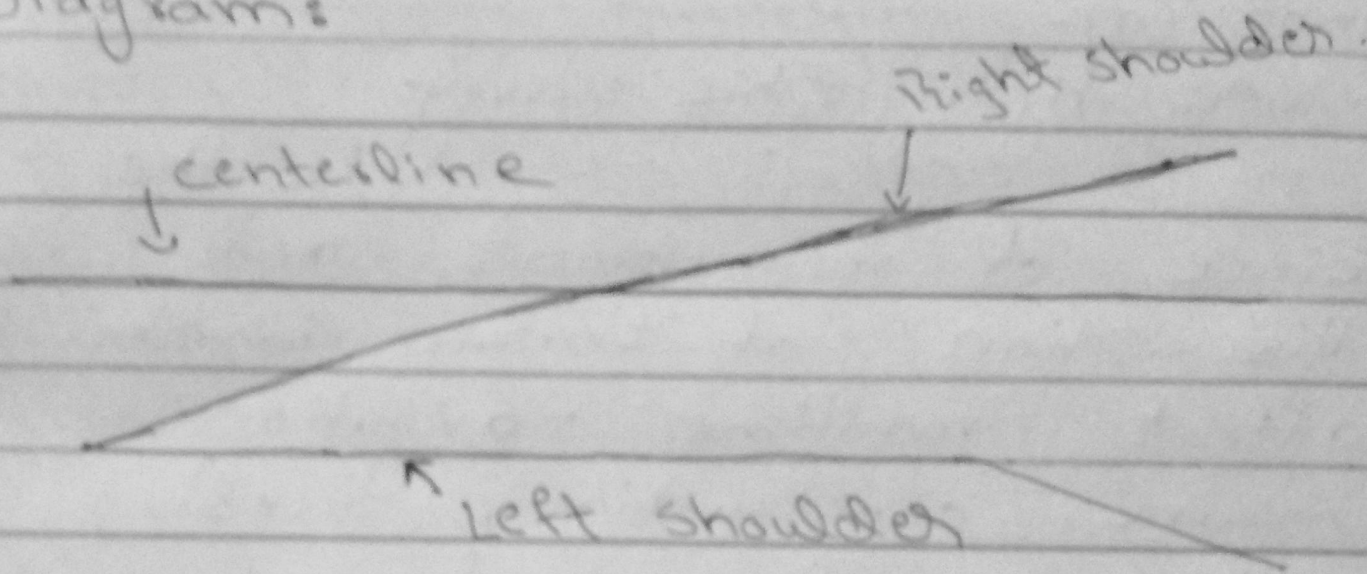
Effects:

Super elevation is the transverse slope provided to counteract ~~an~~ the effect of centrifugal forces and reduce the tendency of vehicle to overturn and to skid laterally outwards by raising the pavement outer edge with respect to inner edge.

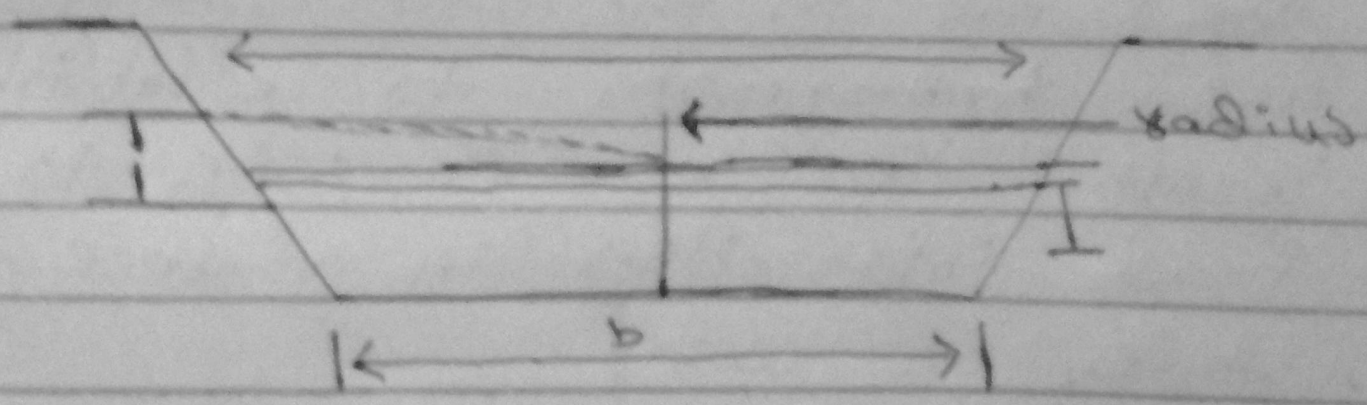
$$h = \frac{Bv^2}{gR}$$

*) - For the safety of people super elevation is provided because the roads in between mountains are zig-zag and if super elevation is not provided it may be danger.

Diagrams



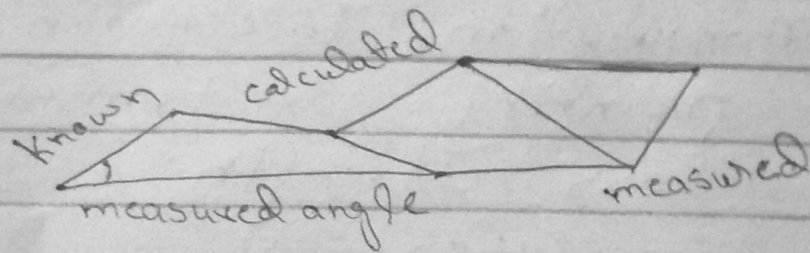
Super elevation of water surface:



Qno 3:

Answer: Triangulation:

We work with angles as illustrated in the following.



Position of points are computed based on measured angle and two known points from these angles. These distances are computed which are in turn used to calculate co-ordinate for the tangent.

Trilateration:

In Trilateration we work those distances you computed the angle once computed you can use them in conjunction with distances to get position of target points.

Triangulation: angles.

Trilateration: Distances.

Principal:

Triangulation is the process of determining the location of a point by measuring angle while in Trilateration distance measures. For position determination of Triangulation, Trilateration and finger printing, a transmitted signal loss strength as one meter increases.

Qno 3: (a)-

Answer: Hydrographic survey: is the science of measurement and description of feature which affect maritime navigation, marine construction, dredging, off shore oil exploration and related activities.

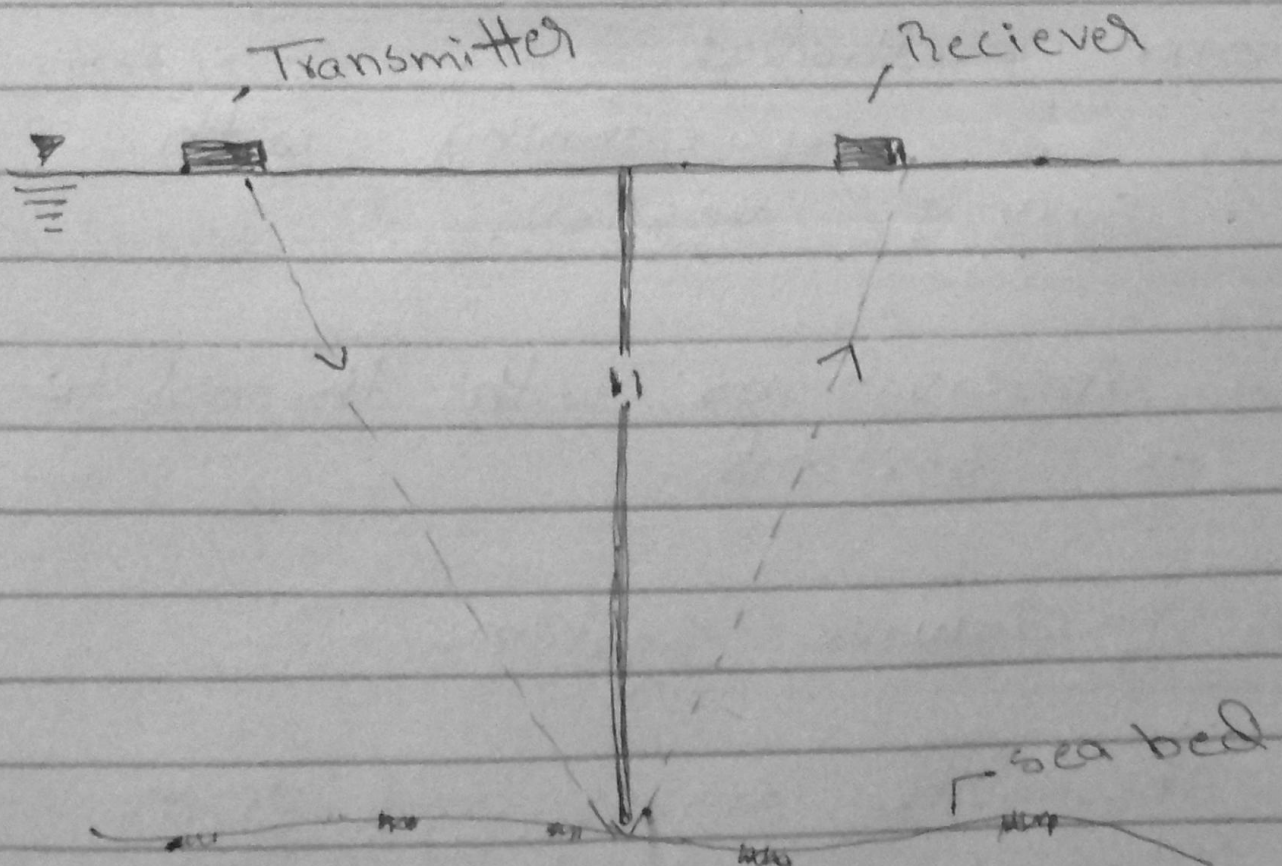
1)- The main Purpose is navigation. When ships or fishing boats are out on the water, they use hydrographs to establish whether an area is safe, to head into either in advance or while on water.

2)- Hydrography not only includes bathymetry but also the shape and features of the shoreline.

1) - Hydrographic surveying is the survey of physical features present under water. It is the science of measuring all factors beneath water that affect all the marine activities.

Importance:

We use hydrograph to establish whether an area is safe to head into either in advance or while on the water.



Qno 3:

(b) -

Answer: Sounding:

Sounding is the measurement of depth below the water surface.

Sounding is important for any water body to improve its navigable properties.

→) - Soundings are located by the observations made from the boat or from both.

Four methods:

→) - Conning with survey vessel.

→) - observations with theodolite or sextant.

→) - microwave system.

→) - Theodolite angles and EDM distances from the shore.

Equipments:

GPS (Global positioning system).

Built-in radio.

Omnidirectional antenna.

Dual frequency depth sounder.

Plotter,

computer.

Hydrographic system.

software for collecting data.

Qno 4: (a) -

Answer: Aerial Photogrammetry is the taking of photographs from an aircraft or other flying object. Platforms for aerial photogrammetry include fixed-wing aircraft, helicopters, unmanned aerial vehicles, balloons, blimps, and dirigibles, rockets, pigeons, kites, parachutes, stand alone telescoping and vehicle mounted poles.

→ A highly accurate camera is used.

It give the birds eye view of the terrain. They enable to observe the objects in their spacial context.

spatial relationship present among the features which is not commonly seen b/w the objects can be seen in the photographs.

Purpose:

It remains an important application of remote sensing with a sophisticated range of cameras being used to collect information on Geology, land-use, agricultural management, forestry, water pollution, natural disasters, urban planning, wildlife management. etc.

Qno 4:

(b) -

Answer:

Procedure of aerial survey.

- + Reconnaissance.
- + Ground control.
- + Flight planning.
- + Photography
- + Computing
- + plotting.

Ground controls:

- *) - Obtain sets of points of known position.
- *) - Minimum three points.
- *) - Triangulation.
- *) - Precise surveying.

Flight plans:

- *) - Altitude.
- *) - Speed of aircraft.
- *) - No of flights.
- *) - No of exposure
- *) - Scale of photograph.

Purpose:

It remains an important application of remote sensing with a sophisticated range of cameras being used to collect information on Geology, land-use, agricultural management, forestry, water pollution, natural disasters, urban planning, wildlife management. etc.