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NCE-303

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2289546 Roll No. | | | | | | | | | | |

B.TECH.

Regular Theory Examination (Odd Sem - III),2016-17

SURVEYING - I

Time : 3 Hours *Max. Marks : 100*

Section - A

Attempt all parts. Each part carries equal marks. (10×2=20)

1. Correction due to refraction is given by
   a) $0.0112\ D^2$ b) $0.0673\ D^2$
   c) $0.0785\ D^2$ d) $0.0012\ D^2$
2. What do you mean by working from 'Whole to part'?
3. What is levelling and why it is important in survey work?
4. Write relationship between level line and horizontal line.
5. For an open traverse, which is correct -
   a) Σ latitude = 0 b) Both (i) & (ii)
   c) Σ departure = 0 d) none of the above

6. What is magnetic declination?
7. What is the basic importance of provision of curves in highway?
8. Explain the elements of simple curve, with neat sketch.
9. What is triangulation?
10. What is resection?

Section - B

Attempt any three questions. **(3×10=30)**

1. The distance measured between two points on a sloping ground is 450 m. Find the correction to be applied and horizontal distance if -
   a) The angle of slope is 10°
   b) The slope is in 1 in 5
   c) The difference in elevation between two point is 45 m.
2. A closed traverse has the following lengths and bearings :

Line	Length (M)	Bearing
AB	200.0	ROUGHLY EAST
BC	98.0	178°
CD	NOT REQUIRED	270°
DA	86.4	1°

The length CD could not be measured due to some obstruction to chaining. The bearing of AB could not be taken, as station A is badly affected by local attraction find the exact bearing of the side AB and calculate length C?

3. Explain the two point problem of plane tabling with a neat sketch?
4. A road 8 m wide is to deflect through an angle of 60° with the centre line radius of 300 m, the chainage of intersection points being 3605.0 m. a transition curve is to be used at each end of circular curve of such a length that rate of gain of radial acceleration is 0.5 m/s^3. When speed is 50 kmph. Find out
   a) Length of transition curve.
   b) Superelevation.
   c) Chainage of all junction points.
5. A 30 m long steel tape is supported at the ends. Find the normal tension for the tape with the following details :

   Cross section of the tape = 4 mm^2, unit weight of the tape material = 78600 n/m^3, E = 2×10^{11} n/m^2, the pull which the tape is standardized is 100 n?

Section - C

Attempt any five questions. **(5×10=50)**

1. Explain curvature and refraction correction is in levelling, the eye of an observer is 7.5 m above sea level and he was able to see a light house 50 m high just above the horizontal. Find the distance between observer and lighthouse?

2. Define a contour. Discuss the method of contouring. What are the various method of interpolating contour? State the stability of each one of them.

3. What are the different check inclosed traverse and open traverse?

4. State the 3-point problem, explain how it is solved by the graphical method?

5. What are the essential requirements of a transition curve, derive an expression for an ideal transition curve?

6. The apex distance of a 3° circular curve is 82.45 m determine the deflection angle, tangent length and length of long chord?

7. Explain the indirect method of contouring, what are the advantages and disadvantages of these method?