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320353(20)

**B. E. (Third Semester) Examination,
Nov.-Dec. 2021**

(New Scheme)

(Civil Engg. Branch)

SURVEYING-I

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

*Note : Part (a) of each question is compulsory
carries 02 marks. Attempt any **two** parts from
each question from (b), (c) or (d) carries 07
marks.*

Unit-I

1. (a) If R. L. of a B.M. is 100·00 m, the back-sight is
    1·215 m and foresight is 1·870 m, the R.L. of the
    forward station is :   2

    (i) 99·345 m

(ii) 100·345 m

(iii) 100·655 m

(iv) 101·870 m

(b) Explain the effects of curvature and refraction in leveling.　　7

(c) An observer standing on the deck of a ship just sees a light house. The top of the light house is 43 meters above the sea level and the height of the observer's eye is 7 meter above the sea level. Find the distance of the observer from light house.　　7

(d) Write short note on (any **two**) :　　7

(i) Reciprocal levelling

(ii) Fly levelling

(iii) Profile levelling

Unit-II

2. (a) In the method of contouring, the process of locating or identifying points lying on a contour is called :　　2

(i) Ranging

(ii) Centering

(iii) Horizontal control

(iv) Vertical control

(b) What is interpolation of contours? Explain any one method of contour interpolation.　　7

(c) What are the various application/uses of contour map? Explain in brief.　　7

(d) Explain in brief with neat sketch (any **two**) :　　7

(i) Box Sextant

(ii) Planimeter

(iii) Abney Level

Unit-III

3. (a) The angle between the prolongation of the preceding line and the forward line of a traverse is called :　　2

(i) Deflection angle

(ii) Included angle

(iii) Direct angle

(iv) None of these

(b) Explain various sources of errors in Theodolite.　　7

(c) Explain how to measure a horizontal angle by repetition method.　　7

(d) Write short note on : 7

   (i) Face right and face left observation

   (ii) Transiting the telescope

   (iii) Swinging the telescope

Unit-IV

4. (a) Which of the following methods of plane table surveying is used to locate the position of an inaccessible point? 2

   (i) Radiation

   (ii) Intersection

   (iii) Traversing

   (iv) Resection

  (b) Define the three point problem in Plane Tabling and explain the same by Bessel's method. 7

  (c) The following traverse has been run off located a point F midway between A and E. If the coordinates of A are (500, 500), compute 7

   (i) The length and bearing of CF

   (ii) The independent coordinate of C, E and F

Side	Length	Bearing
AB	400	300°00'
BC	350	0°00'
CD	350	31°11'
DE	400	319°31'

(d) A closed traverse ABCDE was made. Due to obstruction it was not possible to observe the length of line DE and EA, find out missing lengths. 7

Line	Length (m)	Bearing
AB	500	98°30'
BC	620	30°20'
CD	468	298°30'
DE	?	230°00'
EA	?	150°10'

Unit-V

5. (a) The length of the long cord of a simple circular curve of radius R and angle of deflection Δ is given by : 2

(i) $R\cos\left(\Delta/2\right)$

(ii) $2R\cos\left(\Delta/2\right)$

(iii) $2R\sin\left(\Delta/2\right)$

(iv) $R\sin\left(\Delta/2\right)$

(b) What are the characteristics of a transition curve?   7

(c) Explain the 'Rankine' method of deflection angle for setting out simple curve.   7

(d) Two tangents AB and BC intersect at B. Another line DE intersects AB and BC at D and E such that angle $ADE = 150°$ and angle $DEC = 140°$. The radius of the first curve is 200 m and that of the second is 300 m. The chainage of B is 950 m. Calculate all data necessary for setting out the compound curve.   7