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15C\'46

Fourth Semester B.E. Degree Examination, **Jan.2020**
Advanced Surveying

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. Define the following terms with a neat sketch
       i) Back Tangent ii) Point of Tangency iii) Compound curve iv) Transition curve.
                                                                                    (08 Marks)
    b. Two tangents AB and BC' interact at point B at chainage 150.50m. Calculate all the
       necessary data for setting out a circular curve of radius 100m and deflection angle of 30° by
       the method of offsets from the longchord.   **(08 Marks)**

OR

2   a. Explain the linear method of setting out simple curve by the method of taking offsets from
       chord produced.   **(08 Marks)**
    b. Explain condition of an ideal transition curve.   **(04 Marks)**
    c. Calculate the length of transition curve required in order to attain a maximum super
       elevation of 15cm. Assuming a rate of super elevation of 3cm/s and speed of vehicle
       50km/h.   **(04 Marks)**

Module-2

3   a. Explain briefly the various types of signals.   **(08 Marks)**
    b. Write short notes on the following :
          i) Field checks in triangulation
          ii) Indivisibility of stations.   **(08 Marks)**

OR

4   a. Define the following terms :
       i) Systematic error   ii) Conditioned quantity iii) Residual error iv) Weight.   **(04 Marks)**
    b. Explain principle of least squares   **(04 Marks)**
    c. Explain laws of accidental errors.   **(08 Marks)**

Module 3

5   a. Define the following terms :
       i) The celestial Horizon   ii) Hour angle
       iii) The Right Ascension iv) The Ecliptic.   **(04 Marks)**
    b. Explain the Horizon system.   **(04 Marks)**
    c. Calculate the distance is kilometers between two points A and B along the parallel of
       Latitude, given that
          (i)   Latitude of A 28°42' N ; longitude of A 31°12' W
                Latitude of B 28°42' N ; longitude of B 47°24' W
          (ii) Latitude of A 12°36'S ; longitude of A 115°6' W
                Latitude of B 12°36'S ; longitude of B 150'24' E   **(08 Marks)**

OR

6   a. Explain Dependent Educational system.   **(04 Marks)**
    b. Explain with a neat sketch zones of the Earth.   **(04 Marks)**
    c. Calculate the Sun's azimuth and hour angle at sunset at a place in latitude 42°30' N, when its
       declination is 22°12' N   **(08 Marks)**

Module-4

7 a. Define the following terms :
   i) Camera axis   ii) Nodart point   iii) Print   iv) Film base.   **(04 Marks)**

   b. Explain camera position by Resection.   **(04 Marks)**

   c. Three point A, B and C were photographed and their coordinates with respect to the lines joining the collimation marks on the photograph are :

Point	X
a	—35.52mm + 21.43mm
b	—8.48mm —16.38 mm
c	+ 48.26mm + 36.72 mm

   The focal length of the lens is 120.80mm determine the azimuths of the lines OB and OC if that of OA is 354°30'. The axis of the camera was level at the time of the exposure at the station 0.   **(08 Marks)**

OR

8 a. Define the following terms :
   Tilted photograph ii) Flight line iii) Ground nadir point iv) Isocentre.   **(04 Marks)**

   b. Explain scale of a vertical photograph.   **(04 Marks;**

   c. Two point A and **B** having elevations of 500m and 300m respectively above datum appear on the vertical photograph having focal length of 20cm and flying altitude of 2500m above datum. Their corrected photographic co-ordinates are as follows :

Point	Photographic Co-ordinate	
	X(cm)	Y(cm)
a		
b	+ 2.65	+ 1.36
	—1.92	+ 3.65

   Determine the length of the ground AB.   **(08 Marks)**

Module 5

9 a. Explain Electromagnetic energy.   **(04 Marks)**

   b. Explain Energy interaction with earth surface features.   **(04 Marks)**

   c. Explain Applications of Remote sensing.   **(08 Marks)**

OR

10 a. Explain components GIS.   **(08 Marks,?,**

   b. Explain the applications of total station.   **(04 Marksr-**

   c. Give a brief description of GPS.   **(04 Marks)**