[5460]-106

T.E.
(CIVIL)
Advanced Surveying
(2012 Pattern) (Semester-II) (301007)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1) *Answer Q.No. 1 or Q. No. 2, Q.No. 3 or Q. No. 4, Q.No. 5 or Q. No. 6, Q.No. 7 or Q. No. 8, Q.No. 9 or Q. No. 10.*
2) *Neat diagrams must be drawn whenever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data, if necessary.*

Q1) a) Define,

      i)   Well conditioned triangle

      ii)   Strength of a figure

      iii)   Accuracy of triangulation

      iv)   Geodetic Surveying

      v)   Indivisibility of stations   **[5]**

  b) Define triangulation, state the object of triangulation and state its applications.   **[5]**

OR

Q2) a) Describe briefly various applications of Global Positioning System. **[5]**

  b) State any five advantages of space based positioning systems.   **[5]**

Q3) a) Describe in brief how location survey for pier of a bridge is carried out at site.   **[5]**

  b) Explain the three point problem and method of solution of three point problem using any one graphical method.   **[5]**

OR

Q4) a) State various methods of locating the position of boat in hydrographical surveying and explain briefly.   **[5]**

      i)   location by two angles from Boat.

      ii)   location by one angle from shore and the other from the Boat.

  b) Describe the procedure for setting out a tunnel, explain with a sketch.**[5]**

P.T.O.

Q5) a) What do you mean by a spherical excess and how do you find out the Area of a spherical triangle? **[5]**

b) Define the following terms. **[5]**
   - i) Mistake
   - ii) True error
   - iii) Most probable value
   - iv) Conditioned equation
   - v) Weight of an observation

c) Following observation were recorded for an angle under identical condition. **[8]**

| 162° 20' 00" | 162° 21' 20" | 162° 21' 40" |
| 162° 20' 40" | 162° 19' 40" | 162° 21' 20" |

Calculate
   a) the most probable error of single observation,
   b) the most probable error of mean,
   c) the most probable value of the angles

OR

Q6) a) Explain laws of weight. **[5]**

b) Explain step by step procedure for figure adjustment for a geodetic quadrilateral without central station. **[5]**

c) Neglecting the spherical excess, adjust the angle of triangle of which observed values are **[8]**

Angle	Weight
Angle A = 48° 18' 22"	3
Angle B = 76° 32' 47.2"	1
Angle C = 55° 08' 53.8"	3

Q7) a) Write a stepwise procedure of determine air base distance using mirror stereoscope. **[5]**

b) Write short notes on: Crab and Drift **[5]**

c) The scale of aerial photograph is 1 : 12000. The size of aerial photograph is 250 mm x 250 mm. The longitudinal overlap is 60% and side overlap is 30%. Determine the number of photographs required to cover an area of 250 sq.km. **[6]**

OR

Q8) a) Define the following terms.

    1) Air base distance.

    2) Relief displacement.

    3) Oblique photograph.

    4) Principal point.

    5) Mosaic. **[5]**

    b) Define Ground Control Points, state their role in photogrammetry and bring out difference between pre marked and post marked Ground Control Points (GCP). **[5]**

    c) Find the number of photographs (size 250 x 250mm) require to cover an area of 20 km x 16 km if the longitude overlap is 60% and the side overlap is 30%. Scale of photograph is 1cm; 150m. **[6]**

Q9) a) What are the components of a GIS? **[5]**

    b) Explain the applications of GIS in Visibility analysis and slope analysis. **[5]**

    c) What is GIS? State various GIS software's and explains how remote sensing and GIS are linked? **[6]**

OR

Q10) a) Define remote sensing. State importance of digital image processing. **[5]**

    b) Discuss in brief the various data sources to build GIS for civil engineering applications such as watershed development. **[5]**

    c) Enlist advantages and limitations of remote sensing. **[6]**

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