

Total No. of Questions : 10]

SEAT No. :

P3469

[5560]-106

[Total No. of Pages : 3

T.E. (Civil) - II

ADVANCED SURVEYING

(2012 Course) (Semester-II) (301007)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.*
- 2) *Neat sketches must be drawn wherever necessary.*
- 3) *Figures to right indicate full marks.*
- 4) *Assume suitable data, if necessary.*

Q1) a) Elevations of two triangulation stations A and B, 90 km apart are 418.85m and 702.63 m respectively. A peak C, 66 km from A, has an elevation of 524.6 m. Ascertain the intervisibility from A to B. Also find the minimum height of signal at B, so that the line must be pass at least 3 m clearance anywhere. **[6]**

b) State the advantages of space based positioning system. **[4]**

OR

Q2) a) Explain in brief classification of triangulation system. **[5]**

b) Write a short note on segments of GPS. **[5]**

Q3) a) Define tide and enlist the different types of tidal gauges. **[5]**

b) Define Hydrographic surveying and enlist the various objectives of hydrographic surveying. **[5]**

OR

Q4) a) Define the term Sounding. Describe any two methods of locating sounding. **[5]**

b) Explain with neat sketch how alignment of tunnel is transferred from surface to underground. **[5]**

P.T.O.

Q5) a) Define the following terms: True error, Most probable value, Residual Error, Most probable error, Conditional quantity. **[5]**

b) What is spherical excess? What are the methods of computing the sides of a spherical triangle? Explain any one method. **[5]**

c) The angles of triangle ABC were recorded as follows: **[8]**

$$A = 77^{\circ}14'20'' \text{ Weight 4}$$

$$B = 49^{\circ}40'35'' \text{ Weight 3}$$

$$C = 53^{\circ}04'52'' \text{ Weight 2}$$

Find the most probable values of angle A, B, C. Use method of correlates.

OR

Q6) a) Define with example: **[5]**

i) Observation equation and Conditioned equation

ii) Direct observation and Indirect observation

b) What do you understand by setting out works? What important factors are considered while setting out? **[5]**

c) Angles were measured on a station and the observations were recorded as follows: **[8]**

$$A = 45^{\circ}30'10'' \text{ Weight 2}$$

$$B = 40^{\circ}20'20'' \text{ Weight 3}$$

$$A + B = 85^{\circ}50'10'' \text{ Weight 1}$$

Find the most probable values of the angles A and B. Use Normal Equation method.

- Q7) a)** What are the different types of Aerial photographs? [4]
- b)** Write a short note on Crab and Drift. [4]
- c)** A scale of aerial photograph is 1:10000, effective at an average elevation of terrain of 500m. The size of aerial photograph is 230 mm × 230 mm. Focal Length of camera is 20 cm. Speed of aircraft is 180 kmph, longitudinal overlap is 60% and side overlap is 30%. Determine the number of photographs required for the area of 30 km × 22.5 km. Also determine the exposure interval and flying height. [8]

OR

- Q8) a)** Define the following terms: Air base distance, Exposure station, Principal point, Flying height. [8]
- b)** A line is measured 11 cm on a photograph taken with a camera having focal length of 21.5 cm. The same line is measured 3 cm on a map drawn to the scale 1:45000. Calculate the flying height of the aircraft, if the average altitude is 425 m. [8]

- Q9) a)** Write a note on Active and Passive remote sensing. [5]
- b)** Give the application of remote sensing with respect to natural hazards and that of archaeology. [5]
- c)** What are the components of GIS? [6]

OR

- Q10) a)** Write a note on application of remote sensing. [5]
- b)** Describe the application of GIS. [5]
- c)** Explain the advantages and disadvantages of Raster data and Vector data. [6]

