Total No. of Questions : 10]

SEAT No. :

P3340

[Total No. of Pages : 4

[5353]-506

T.E. (Civil)

ADVANCED SURVEYING

(2015 Pattern)

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.No8, 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) Explain with neat sketches, commonly used layouts of triangulation systems? **[5]**

b) What is SBPS? State and explain GAGAN system. **[5]**

OR

Q2) a) Define, **[5]**

i) Well conditioned triangle

ii) Strength of a figure.

iii) Accuracy of Triangulation

iv) Intervisibility of stations

v) Station marks

b) Explain the graphical method of solving three point problem. **[5]**

Q3) a) Explain the term sounding and explain any two methods of locating the sounding positions. **[5]**

b) Differentiate between raster data and vector data with example **[5]**

OR

P.T.O.

Q4) a) What are the different types of errors in GPS observation and explain anyone of them. **[5]**

b) Explain Remote sensing applications in disaster management with suitable example. **[5]**

Q5) a) Define with example : **[6]**

i) Direct and indirect observation

ii) Independent and conditioned quantity

iii) Observation equation and conditioned equation

b) Explain stepwise procedure of computations of sides of spherical triangle by spherical trigonometry. **[4]**

c) The following angles are measured at a station closing the horizon. The values of the angles are : **[8]**

A = 77°14'20" weight 4

B = 49°40'35" weight 3

C = 53°04'52" weight 2

Give the corrected values of the angles. (use method of correlates)

OR

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

i) True error,

ii) Most probable value,

iii) Conditioned Quantity

iv) Residual error,

v) weight of an obeservation

b) What kinds of error in triangulation adjustment? Explain in detail. **[5]**

c) Find the most probable values of the angles A, B and C of a triangle ABC from the following observations (Use method of differences). **[8]**

Angle	Weight
Angle A = 65°15' 30"	3
Angle B = 51° 11' 25"	2
Angle C = 63° 32' 34"	4

Q7) a) Define the following terms with sketch : **[8]**

i) Principal point,

ii) Scale

iii) Air base distance,

iv) Digital elevation model.

b) The scale of aerial photograph is 1: 10000, effective at an average elevation of terrain of 500 m. The size of aerial photograph is 230mm × 230mm. Focal length of camera lens is 20 cm. Speed of aircraft is 180 kmph, longitudinal overlap is 60% and side overlap is 30%. Determine the number of photographs required to cover an area of 30km × 22.5 km. Also determine exposure interval and flying height. **[8]**

OR

Q8) a) Derive an expression for displacement due to ground relief. **[8]**

b) A pair of photograph is taken with a camera having focal length 15 cm. The scale of photography is 1 : 10000 and photo base is 5.65 cm. The measured parallax of a vertical control point having an elevation 140 m is 87.28 mm. Compute the elevation of another point P whose measured parallax is 84.18 mm. **[8]**

Q9) a) Find the difference of levels of the points P and Q and RL of P from the following data : **[10]**

Angle of depression P to Q = 1° 32' 12"

Horizontal dist. Between PQ =7118 m

Height of signal at P = 3.87 m

Height of Instrument at Q = 1.27 m

Coeff. Of refraction = 0.07

RL of Q = 417.860 m

Take Rsin1" = 30.88m

b) While doing an underground survey describe the transferring the surface alignment through a Shaft with the help of neat sketch? **[6]**

OR

Q10)a) Derive the expression for the difference of level between two points A and B a distance D apart, with the vertical angle as the angle of elevation from A to B. The height of the, instrument at A and that of the signal at B are equal. **[10]**

b) Explain stepwise with neat sketch, how determine the location of pier s of bridge. **[6]**