

Total No. of Questions : 10]

SEAT No. :

P2541**[5153]-506**

[Total No. of Pages : 3

T.E. (Civil)**ADVANCED SURVEYING
(2012 Course) (Semester - II)***Time : 2½ Hours]**[Max. Marks : 70**Instructions to the candidates:*

- 1) Solve 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 diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Use of calculator is allowed.
- 5) Assume suitable data, if necessary.

- Q1)** a) Define Geodetic Surveying. What factors are to be considered while selecting a best triangulation figure or system? **[5]**
- b) Describe different types of error in GPS system. **[5]**

OR

- Q2)** a) Elevations of two triangulation stations A and B, 104 Km apart are 130 m and 434m respectively. A peak C, 75 Km from station A, has an elevation of 220 m. Ascertain if station A is visible from B or not. Also find the minimum height of scaffolding at B, so that the line of sight has a minimum 2.5 m clearance anywhere. **[6]**
- b) State advantages of space based positioning systems. **[4]**
- Q3)** a) Explain the three point problem and method of solution of three point problem using Tracing paper method. **[5]**
- b) Explain with sketch axis signal correction. **[5]**

OR

- Q4)** a) The following observations were taken in a trigonometric levelling survey. Angle of depression to P at Q = $1^{\circ}25'22''$ Height of instrument at Q = 1.35 m Height of signal at P = 4.25 m Horizontal distance between P & Q = 6945 m Coefficient of refraction = 0.07 If the R.L. of Q is 455.32 m, calculate R.L. of P. **[6]**
- b) While doing an underground survey describe the transferring the surface alignment through a Shaft? **[4]**

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- Q5) a) Define** **[5]**
- i) Well condition triangle
 - ii) Strength of a figure
 - iii) Accuracy of triangulation
 - iv) Towers
 - v) Station marks
- b) Explain stepwise procedure of computations of sides of a Spherical Triangle by Spherical Trigonometry. **[5]**
- c) The following are three angles P, Q and R observed at a station 'O', closing the horizon. **[8]**
- Angle P = $84^{\circ} 15' 12''$ wt 20
 Angle Q = $125^{\circ} 13' 15''$ wt 15
 Angle R = $150^{\circ} 31' 18''$ wt 12
- Determine the corrected angles. Use method of correction.
- OR
- Q6) a) Explain steps by step procedure for figure adjustment for a geodetic quadrilateral without central station.** **[6]**
- b) What is spherical excess? Explain with sketch. **[4]**
- c) Find the most probable values of the angles A, B and C of a triangle ABC from the following observations (Use method of correlates). **[8]**
- | Angle | Weight |
|---------------------------------|--------|
| Angle A = $65^{\circ} 15' 30''$ | 3 |
| Angle B = $51^{\circ} 11' 25''$ | 2 |
| Angle C = $63^{\circ} 32' 34''$ | 4 |
- Q7) a) Write short notes on:** **[6]**
- i) Crab and Drift
 - ii) Flight planning

- b) What are the different types of aerial photographs? [4]
- c) A section line AB appears to be 10.16 cm on a photograph for which the focal length is 16 cm. The corresponding line measures 2.54 cm on a map which is to a scale 1:50000. The terrain has an avg. elevation of 200 m above Mean Sea Level. Calculate flying height of aircraft, above Mean sea Level, when the photograph was taken. [6]

OR

- Q8)** a) Explain the principal of stereoscopy in details with sketch and give conditions for aerial photography for stereoscopy. [5]
- b) What are the different stereo viewing techniques in digital photogrammetry? [5]
- c) A line AB 2000m long, lying at an elevation of 500 m measures 8.65cm on a vertical photography for which focal length is 20 cm. Determine the scale of the photograph in an area the average elevation of which is about 800m. [6]
- Q9)** a) What is GIS. State various GIS software's and explain how remote sensing and GIS are linked. [8]
- b) What is atmospheric window? Explain its significance. [8]

OR

- Q10)** a) Explain the advantages and disadvantages of the raster and vector data models. [8]
- b) Write a note on applications of remote sensing and explain the applications of GIS in Visibility analysis. [8]

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