

Total No. of Questions : 10]

SEAT No : **P1686****[5058]-306**

[Total No. of Pages : 3

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

- 1) *Answer to the Two sections should be written in separate answer books.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume Suitable data if necessary.*

Q1) Attempt the following:

- a) Explain various points to be considered while selecting triangulation station. **[5]**
- b) Explain with neat sketches working of GPS in association with space, control and user segment. **[5]**

OR

Q2) Attempt the following:

- a) What are the methods of locating Sounding? Explain anyone of them. **[5]**
- b) Explain in detail setting out of a tunnel site. **[5]**

Q3) Attempt the following:

- a) Derive the equation for determination of difference in elevation between two points for angle of elevation. **[5]**
- b) Two Triangulation stations A and B 110 km apart having elevations 125 m and 502 m respectively. The intervening peak C 60 km from A has an elevation of 131 m. Ascertain if point A is visible from B. If necessary find the height of scaffolding at B so that the line of sight has a minimum clearance of 3 m anywhere. **[5]**

OR

Q4) Attempt the following:

- a) Explain with neat sketch the analytical method of solving three points in hydrographic survey. **[5]**

P.T.O.

- b) The following reciprocal observations were made from points A and B
- i) Horizontal distance between A and B = 4950m
 - ii) Angle of Elevation of B at A = $1^{\circ} 05' 20''$
 - iii) Angle of depression of A at B = $1^{\circ} 01' 05''$
 - iv) Height of instrument at A = 1.45m
 - v) Height of instrument at B = 1.55m
 - vi) Height of signal at A = 6.25m
 - vii) Height of signal at B = 6.35m

Find the difference of level between A and B.

Take $R \sin 1'' = 30.88\text{m}$

[5]

Q5) Attempt the following

- a) Describe any two laws of weights of an observation with help of suitable example. [8]
- b) What do you understand by method of correlates? [10]

The angles from triangle ABC were recorded as follows. Calculate the corrected values of angles. Use method of Correlates

A = $77^{\circ} 14' 22''$ Weight - 2

B = $49^{\circ} 40' 31''$ Weight - 1

C = $53^{\circ} 04' 53''$ Weight - 3

OR

Q6) Attempt the following:

- a) Define the terms any four*
 - i) MPV
 - ii) True Value
 - iii) Residual error
 - iv) Weight of an observation
 - v) Independent quantity [8]

- b) Find the most probable values of the angles A, B and C from the following observations at one station:

A = $76^{\circ} 42' 45''$ with weight 4

A + B = $134^{\circ} 36' 34''$ with weight 3

B + C = $185^{\circ} 35' 27''$ with weight 2

A + B + C = $262^{\circ} 18' 11''$ with weight 1

Use method of Normal Equation

[10]

Q7) Attempt the following:

- a) What are the various methods of determining scale of Vertical photograph? [8]
- b) The ground length of a line PQ is known to be 550m and the elevations of P and Q are respectively 500m and 300m above mean sea level. On a vertical photograph taken with a camera having focal length of 20 cm include the images p and q of these points and their photographic co-ordinates are $x_p = + 2.70\text{cm}$, $y_p = +1.38\text{cm}$, $x_q = -1.92\text{cm}$, $y_q = +3.65\text{cm}$. The distance pq scaled directly from photograph 5.221 cm. Calculate the flying height above the mean sea level. [8]

OR

Q8) Attempt the following:

- a) Define parallax of a point and describe the procedure of measuring parallax difference using a parallax bar. [8]
- b) Explain the following terms: [8]
 - i) Crab Drift
 - ii) Tilted and Oblique Photographs

Q9) Attempt the following:

- a) Explain use of remote sensing in Civil Engg. Also Compare Aerial photograph with satellite images. [8]
- b) What is GIS? Explain in detail the component parts of GIS. [8]

OR

Q10) Attempt the following:

- a) Write a note on [8]
 - i) Digital image processing.
 - ii) Active and Passive remote sensing.
- b) Explain in detail applications and limitations of GIS. [8]

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