[4858] - 102

T.E. (Civil Engg) (Semester - I)
ADVANCED SURVEYING
(2008 Pattern)

Time : 3 Hours]   *[Max. Marks : 100*

Instructions to the candidates:

1) *Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6from section I and Q. 7or Q.8, Q.9 or Q.10, Q.11 or Q.12from section II.*
2) *Answers to the two sections should be written in separate answer books.*
3) *Figures to the right indicate full marks.*

SECTION - I

Q1) a) What is meant by side equation? State the equations of condition which must be satisfied in the adjustment of a geodetic quadrilateral without central station. **[8]**

b) What is GPS? State and explain various components of GPS. **[5]**

c) What are the various points to be considered for selection of a triangulation station? **[5]**

OR

Q2) a) The elevations of two triangulation stations A and B, 120 km apart, are 200m and 1000m above m.s.1. The elevations of two peaks C and D on the profile between them are, respectively, 290m and 540m. the distance AC=50km and AD=80km. design a suitable signal required at B, so that it is visible from the ground station A. **[8]**

b) What are the various potential error sources that affect the GPS signal or result? **[5]**

c) Differentiate between Absolute positioning and Relative positioning. **[5]**

Q3) a) Explain the following terms: **[5]**

i) True Value, True error

ii) Most probable value, Residual error

iii) Conditioned equation,

b) Explain with neat sketch, spherical excess. **[5]**

c) Angles were measured on a station and the observations were recorded as follows: **[6]**

A = 45°30' 10" weight 2

B = 40° 20' 20" weight 3

A + B = 85° 50' 10"weight 1

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

<div align="center">OR</div>

Q4) a) What do you mean by weight of an observation? State the rules of assigning weight to the field observations. **[5]**

b) Explain the following terms: **[5]**

i) Independent quantity   ii) Direct observation

iii) Indirect observation   iv) Weight of an observation

iv) Mistake

c) Define Geodetic Quadrilateral and describe methods of adjustment. **[6]**

Q5) 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 with a neat sketch how the alignment of tunnel is transferred from surface to the underground. **[6]**

<div align="center">OR</div>

Q6) 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) Describe in brief the location survey of a long bridge. **[6]**

<div align="center">**SECTION - II**</div>

Q7) a) Describe with sketches the field work of a survey with a phototheodolite.

Explain, how you would plot the survey? **[12]**

b) Explain with a sketch flight planning in aerial photogrammetry. **[6]**

Q8) a) Two points A and B having elevations of 500m and 300m respectively above datum appear on the vertical photograph having focal length of 20cm and flying altitude of 2500m above datum. The corrected photographic coordinates are as follows; Determine the length of the ground line AB **[12]**

Point	Photographic	Coordinates
	X(cm)	Y(cm)
a	+2.65	+1.36
b	-1.92	+3.65

b) Write a note on digital photogrammetry **[6]**

Q9) a) Explain with the help of a neat sketch, an idealized remote sensing system. **[8]**

b) What do you understand by GIS and what are the essentials of a Geographical Information System? **[8]**

OR

Q10)a) Write a detailed note on applications of remote sensing. **[8]**

b) Write a note on linkage of GIS to remote sensing. **[8]**

Q11)a) Explain how will you plan and execute the shore line survey for stretch of 30 Km. **[8]**

b) Explain three point problem and its applicability in hydrographic surveying. **[8]**

OR

Q12)a) State various sounding equipment's and explain any three in detail. **[8]**

b) State step by step procedure to determine mean sea level (MSL) **[8]**

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