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RN-8181

B. E. - II (Sem. IV) (Civil) Examination

May / June - 2010

Advanced Surveying - II

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दर्शाविए निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. - 2 (Sem. 4) (Civil)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Advanced Surveying - 2"/>	<input type="text"/>
Subject Code No. : <input type="text" value="8"/> <input type="text" value="1"/> <input type="text" value="8"/> <input type="text" value="1"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="1&2"/>	<input type="text"/>
	Student's Signature

- (2) Figures to the right indicate full marks.
- (3) Assume missing data suitably with appropriate remarks.
- (4) Draw sketches wherever necessary.

SECTION - I

- 1 (a) Derive the expressions for horizontal and vertical distances in the fixed hair method when the staff is held vertically and the measured angle is that of elevation. **6**
- (b) Describe with a neat sketch the construction and working of the subtense bar. **6**

OR

- (b) What are the sources of error in tacheometry? What are the permissible errors?
- (c) The following observations were taken with a tacheometer fitted with an anallatic lens, the staff being held vertically, the constant of the tacheometer is 100. **6**

Inst. Station	Height of instrument	Staff station	Verticle angle	Staff readings (m)	Remark
P	1.255	BM	$-4^{\circ}20'$	1.325, 1.825, 2.325	RL of
P	1.255	A	$+6^{\circ}30'$	0.850, 1.600, 2.350	BM =
B	1.450	A	$-7^{\circ}24'$	1.715, 2.315, 2.915	255.750 m

Calculate the RL of B and the distance between A and B.

- 2 (a) Write factors affecting selection of triangulation stations. **6**
- (b) Define triangulation. Discuss the uses of triangulation survey. **6**

OR

- (b) What is meant by satellite station? Why it is required?
- (c) There are two stations A and B at elevations of 200 m and 1000 m, respectively. The distance between A and B is 100 km. If the elevation of a peak P at a distance of 40 km from A is 300 m, show that stations A and B are intervisible. **5**
- 3 Write any **three** short notes : **15**
- (i) State the applications of remote sensing in various fields.
- (ii) Write a short note on Global Positioning system.
- (iii) State the uses of GIS in various fields.
- (iv) Write key components of GIS.

SECTION - II

- 4 (a) State the fundamental principles of the method of least squares and derive rules for the following two conditions : **7**
- (i) Direct observation of equal rights.
- (ii) Direct observation of unequal weights.

- (b) Calculate the most probable value and the probable error of the area of rectangle whose sides are as follows :

$$a = 100 \pm 0.02 \text{ m}$$

$$b = 150 \pm 0.01 \text{ metre}$$

- 5 (a) Explain the significance of aerial photogrammetry as well as astronomy to a surveyor. 7
- (b) Explain with necessary sketches the terrestrial latitude and longitude, colatitude and parallel of a latitude. 8

OR

- (b) Develop an expression for displacement due to ground relief in an aerial photograph. Explain why the central portion of an aerial photograph can be treated as a map.
- 6 (a) The scale of an aerial photograph is 1 cm = 100 metre. The photograph size is 20 cm × 20 cm. Determine the number of photographs required to cover an area of 8 km × 12.5 km if the longitudinal lap is 60% and side lap is 30%. 6
- (b) Explain relief displacement for a titled aerial photograph. 7

OR

- (b) 'A total station theodolite is a combination of electronic theodolite and electronic distance meter. Explain the working principles and the various purposes for which a total station theodolite can be used.
- (c) Explain how the position of a celestial body can be described using altitude and azimuth system and using a theodolite. 7