

FACULTY OF ENGINEERING
B.E. 2/4 (Civil) I Sem. (New) (Main) Examination, January 2012
SURVEYING – I

Time: 3 Hours]

[Max. Marks: 75

Note : Answer all questions from Part A, answer any five questions from Part B.

PART – A

(25 Marks)

1. Find the limiting length of an offset so that the displacement of a point on the paper may not exceed 0.025 cm. The offset was laid 3° out from its true perpendicular direction. Take the scale as 10 m to 1 cm. 3
2. Define and state the conditions to be maintained to divide an area into well condition triangles. 2
3. Define loose needle and fast needle methods of traversing by chain and compass instruments. 2
4. Define Azimuth and true meridian. 2
5. Draw and label component parts of plain alidade and telescopic alidade. 3
6. Define orientation of plane table and state methods of orientation. 2
7. Determine the radius of curvature of the bubble tube if length of one division is 2 mm and angular value of one division is $36''$. 3
8. Compare arithmetic method and mechanical method interpolation of contours. 3
9. Define contour gradient and horizontal equivalent. 2
10. Draw typical diagrams showing graduations pattern in prismatic and surveyor's compass. 3

PART – B

(50 Marks)

11. A line was measured with a steel tape which was exactly 20 m at 25°C , at a pull of 10 kg, the measured length being 175 m. The temperature during measurement was 32°C and the pull applied was 18 kg. Compute the length of the line, if the cross-sectional area of the tape is 0.024 cm^2 . Take, $\alpha = 3.5 \times 10^{-6}$ per 1°C and $E = 2.1 \times 10^6\text{ Kg/cm}^2$ for the material of tape ? 10



12. a) Explain various methods of surveying with a compass. 4
- b) Determine the correct bearings of the lines of the traverse ABCDE from the following data taken from a compass survey? 6

Line	F.B.	B.B.
AB	N 55°00' E	S 54°00' W
BC	S 68°30' E	N 66°30' W
CD	S 24°00' W	N 24°00' E
DE	S 77°00' W	N 75°30' E
EA	N 64°00' W	S 63°30' E

13. a) Describe, with neat sketches, the application of Lehmann's rules in solving three point problem. 8
- b) State the suitability of plane table surveying. 2
14. a) The following figures were extracted from a "level field book", some of the entries being illegible. Insert the missing figures, check your results. 6

Station	BS	IS	FS	Rise	Fall	RL	Remark BM No.
A	1.195					?	
B	0.445		2.375			?	
C	2.150		1.000			?	
D		0.720				?	
E	1.465		0.260			?	
F	2.630		0.905			?	
G	2.140		0.975			?	
H			1.305			95.75	BM

- b) Explain the working procedure of dumpy level with a neat sketch. 4



Code No. : 5329/N

15. In a proposed hydroelectric project a storage reservoir was required to provide a storage of 4.5 million cubic meters between lowest draw down and top water level. The area contained within the stated contours and upstream face of the dam were as follows.

Contour (m)	100	95	90	85	80	75	70	65
Area (hectares)	30	25	23	17	15	13	7	02

If the lowest draw down to be 68, calculate top water level for full storage capacity ? **10**

16. a) Derive the Simpson's rule with usual notations. **4**
b) Describe the plane table contouring by using tangent clinometer. **6**
17. a) Write the working principle of Abney's level, with a neat sketch. **4**
b) Compare prismatic and surveyor's compass. Draw sketches wherever necessary. **6**