Reg. No.											

INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(Manipal University)

IV SEMESTER B.S. DEGREE EXAMINATION - OCT. / NOV. 2017

SUBJECT: SURVEYING (CE 232)

(BRANCH: CIVIL ENGINEERING)

Friday, 03 November 2017

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

- ✓ **Answer ANY FIVE Questions.**
- ✓ **Missing data if any may be assumed suitably and indicated.**
- ✓ **Draw neat sketches wherever necessary.**

1A. Explain the following:

1. Simple levelling.
2. Differential levelling.
3. Fly levelling.
4. Height of instrument.
5. Back Sight
6. Turning Point.

1B. The following readings were observed successively with a levelling instrument. The instrument was shifted after fifth and eleventh readings.

0.585; 1.010; 1.735; 3.295; 3.775; 0.350; 1.300; 1.795; 2.575; 3.375; 3.895; 1.735; 0.635; 1.605m.

Draw up a page of level book and determine the RL of various points if the RL of the point on which first reading was taken is 136.440. Use rise and fall method.

(8+12)

2A. With the help of neat diagram explain the temporary adjustments of dumpy level provided with three foot screws.

2B. With the help of neat diagram obtain the expressions for the effect of curvature and refraction.

2C. What is sensitiveness of a bubble tube? Obtain an expression for the sensitiveness of a bubble tube.

(10+5+5)

3A. Explain in detail the procedure for measurement of horizontal angle by repetition method using theodolite.

3B. Data below gives the length and bearings of four lines of a closed traverse ABCDE. Determine the length and bearing of the fifth line EA.

LINE	LENGTH	BEARING
AB	194.1m	85°30’
BC	201.2m	15°00’
CD	165.4m	285°30’
DE	172.6m	195°30’
EA	?	?

(10+10)

4A. With the help of neat diagram obtain expressions for the distance and elevation with the staff held vertical using tacheometer having elevated sight.

4B. The following notes refer to reciprocal levels taken with one level.

Instrument at	Staff readings on P	Staff readings on Q	Remarks
P	1.825	2.745	Distance PQ = 1010m
Q	0.925	1.605	RL of P = 126.385m

Find (a) the true RL of Q (b) The combined correction for curvature and refraction.

(12+8)

5A. Explain the procedure for determination of multiplying and additive constants of tacheometer.

5B. Explain, (1) Tangential system

(2)Subtense bar system of tacheometric measurements.

5C. A tacheometer was set up at an intermediate point on the traverse course PQ and the following observations were made on a vertically held staff. The instrument is fitted with anallactic lens with constant k as 100. Compute the length PQ and reduced level of Q, if the RL of P is 321.500m.

Staff station	Vertical angle	Staff intercept	Axial hair reading
P	+8°36’	2.350m	2.105m
Q	+6°06’	2.055m	1.895m

(6+4+10)

6A. With the help of neat diagrams explain the characteristics of contour.

6B. What considerations would you have while selecting the contour interval?.

6C. With the help of neat diagrams explain the method of traversing by

(i) Direct observation angles.
(ii) By deflection angles. **(5+5+10)**

7A. With the help of neat diagram explain the procedure for setting out a simple curve by Rankine’s tangential angle method.

7B. Two tangents intersect at the chainage of 1190m, the deflection angle being 36°. Calculate all the data necessary for setting out a simple curve with radius of 300m by deflection angle method. The peg interval is 30m. **(8+12)**

8A. Two straights AB and BC are intersected by a common tangent D_1D_2. The angles BD_1D_2 and BD_2D_1 are 50°30’ and 46°34’ respectively. The radius of the first arc is 540m and that of second arc is 910m. if the chainage of intersection point B is 6424.75m, find the chainages of the tangent points and the point of compound curvature.

8B. Explain the following:

(1)Transition curve. (2) Bernoulli’s Lemniscate. (3)Vertical curves.

(10+10)