SE490

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S.E. (Mining) Semester- IV (Revised Course 2007-08)
EXAMINATION Nov/Dec 2019
Surveying - I

[Duration : Three Hours] **[Total Marks : 100]**

Instructions:

1) Answer any **five** questions selecting at least one question from each module.
2) Make suitable assumptions if required and state them clearly.
3) Supplement your answers with neat sketches wherever required.
4) All symbols and observations have their usual meaning.

MODULE-I

1. A) Suggest and Explain a suitable method of ranging when both the ends of survey lines are not intervisible. **8**

B) What are the various errors in chaining? **7**

C) List out the various parts of transit theodolite. **5**

2. A) A 30m steel tape was standardized at a temperature of 20^0C and under a pull of 5 kg. The tape was used in catenary at a temperature of 25^0C and under a pull of P kg. The cross-sectional area of the tape is 0.02 cm^2, its weight per unit length is 22g/m, young's , modulus=$2.1x10^6$ kg/ cm^2, α for steel=$11x10^{-6}$ per ^{0}C. Find the correct horizontal distance, if P is equal to (i) 5kg and (ii) 11 kg. **12**

B) Briefly explain various steps involve in temporary adjustment of a dumpy level. **8**

MODULE-II

3. A) Write a short note on following (i) true meridian (ii) magnetic meridian(iii) reduce bearing(iv) magnetic declination(v) whole circle bearing **5x2**

B) A traverse ABCDA is made in the form of a square taking in clockwise direction. If the bearing of AB is $120^0$30', find the bearing of the other side. **10**

4. A) Explain the following orientation methods with respect to plane table surveying **2x5**

i) Orientation by magnetic needle

ii) Orientation by backsighting

B) Explain the method of traversing by plane table surveying **10**

MODULE-III

5. A) What do you understand by crossection leveling and profile leveling? **8**

B) Make a note on rise and fall method of reducing of levels. **5**

C)A level is set up at a point 150m from A and 100m from B; the observed staff reading at A and B are 2.525 and 1.755 resp. Find the true difference of level between A and B. **7**

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6. A)The following consecutive readings were taken with a levelling instrument at an interval of 20m. **10**
2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255 and 3.630m
The instrument was shifted after the fourth and eight readings. The last reading was taken on BM of RL 110.200m. Find the RLs of all the points.
B) Brief on fly levelling, check levelling and differential levelling. **10**

MODULE-IV

7. A) What are the methods of contouring? **10**
B) Briefly explain the term contour line, contour interval, horizontal equivalent. **5**
C) What are the different fundamental lines of theodolite? **5**

8. A) The following offsets were taken from a chain line. **10**

Distance(m)	0	10	20	30	40	50	60	75	80
Offsets(m)	3.45	5.67	2.34	5.67	7.56	5.67	5.89	9.45	2.34

Calculate the area enclosed between the chain line, the irregular boundary line and the first and last offsets by the application;
i) trapezoidal rule
ii) simpson's rule
B) Add note on measuring the vertical angle and deflection angle. **10**