

Total No. of Printed Pages:02

S.E. (Mining) (Sem-IV) (Revised Course 2016-2017)  
EXAMINATION Nov/Dec 2019  
Surveying - I

[Total Marks : 100]

[Duration : Three Hours]

Instructions:

- 1) Answer any FIVE questions; **At least TWO from PART - A, TWO from PART-B and ONE from PART-C.**
- 2) Make suitable assumptions whenever required.
- 3) Supplement your answer with neat sketches wherever require.

**PART: A**

1. A. A 30m steel tape was standardized at a temperature of 20<sup>0</sup>C and under a pull of 5 kg. The tape was used in catenary at a temperature of 25<sup>0</sup>C and under pull of P kg. The cross-sectional area of the tape is 0.02 cm<sup>2</sup>, its weight per unit length is 22g/m, young's modulus=2.1x10<sup>6</sup> kg/ cm<sup>2</sup>,  $\alpha$  for steel=11x 10<sup>-6</sup> per <sup>0</sup>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
2. A. Briefly describe the following with neat sketch (i) chain (ii) ranging rod (iii) arrows. 10  
B. Briefly explain the classification of surveying. 10
3. A. A close traverse is conducted with five stations A, B, C, D and E taken in anticlockwise order, in the form of a regular pentagon. If the FB of AB is 30<sup>0</sup>0', find the FB of the other sides. 10  
B. Add a note on fore bearing and back bearing. 5  
C. Explain the concept of whole circle bearing and quadrantal bearing. 5

**PART: B**

4. A. What do you understand by cross-section levelling and profile levelling? 7  
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 respectively. Find the true difference of level between A and B. 8
5. A. The following consecutive readings were taken with dumpy level along a chain line at a common interval of 15m. The first reading was at a chainage of 165m where the RL is 98.085. The instrument was shifted at fourth and ninth readings. 3.150, 2.245, 1.125, 0.860, 3.125, 2.760, 1.835, 1.470, 1.965, 1.225, 2.390 and 3.035m. Find the RL of all the points by rise and fall method. 12  
B. Explain how to determine height of object using trigonometrical levelling when the base of the object is accessible. 8

6. A. What are the uses of contour? 5  
 B. What are the temporary adjustments involve in theodolite. Explain in details. 10  
 C. What are the different fundamental lines of theodolite? 5

**PART:C**

7. A. The fore bearings of the lines AB, BC, CD and DE, are  $45^{\circ}30'$ ,  $120^{\circ}15'$ ,  $200^{\circ}30'$  and  $280^{\circ}45'$  respectively. Find angles B,C and D. 10  
 B. Explain the chain and compass traversing. 5  
 C. Explain the concept of whole circle bearing and quadrantal bearing. 5

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

<b>Distance(m)</b>	<b>0</b>	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>75</b>	<b>90</b>
<b>Offsets(m)</b>	<b>3.45</b>	<b>5.67</b>	<b>2.34</b>	<b>5.67</b>	<b>7.56</b>	<b>5.67</b>	<b>5.89</b>	<b>9.45</b>	<b>2.34</b>

Calculate the area enclosed between the chain line, the irregular boundary line and the first and last offsets by the application

- a) Trapezoidal rule  
 b) Simpson's rule
- B. Write a note on measuring the vertical angle and deflection angle. 10