Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **17CE2002** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SURVEYING** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | The following consecutive readings were taken with a levelling instrument at intervals of 20m.  2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255 and 3.630 m.  The instrument was shifted after the fourth and eighth readings. The first reading was taken on a BM of RL 112.620m. Find the RLs of all the points. | CO3 | 15 |
| b. | Explain temporory adjustment of dumpy level with neat sketch. | CO1 | 5 |
| **(OR)** | | | | |
| 2. | a. | A man on the deck of a ship observes a luminous object, which is  50 m above mean sea level. If the man’s eye-level is 10 m above sea level, find the distance between him and the object. | CO3 | 6 |
| b. | Describe the various characteristics of contours with neat sketch. | CO6 | 14 |
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| 3. | a. | An incomplete traverse table is obtained as follows :   |  |  |  | | --- | --- | --- | | Line | Length (m) | Bearing | | AB | 100.0 | ? | | BC | 80.5 | 140°30’ | | CD | 60.0 | 220°30’ | | DA | ? | 310°15’ |   Calculate the length of DA and bearing of AB. | CO5 | 16 |
| b. | State the procedure involved in bringing the bubble to the centre. | CO1 | 2 |
| c. | Define reduced bearing and whole circle bearing. | CO3 | 2 |
| **(OR)** | | | | |
| 4. | a. | Explain the method of measuring horizontal angle by reiteration. | CO2 | 8 |
| b. | A transit theodolite was set up at a point 90 m away from a lightning conductor, and the vertical angles observed to its top and bottom were 9° 18’ and 3° 21’ respectively. Calculate the total height of the lightning conductor. | CO2 | 12 |
|  |  |  |  |  |
| 5. | a. | The following observations were taken with a tachometer fitted with an anallaticlens, the staff being held vertically. The constant of the tachometer is 100 and 0.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Int.  Station | Height of instrument | Staff station | Vertical angle | Staff readings  (m) | Remark | | P | 1.255 | BM | -4°20’ | 1.325, 1.825, 2.325 | RL of BM = 255.750m | | P | 1.255 | A | +6°30’ | 0.850, 1.600, 2.350 | | P | 1.450 | A | -7°24’ | 1.715, 2.315, 2.915 |   Calculate the RL of B and the distance between A and B. | CO2 | 15 |
|  | b. | State the advantages and disadvantages of tangential tacheometry. | CO2 | 3 |
|  | c. | Define analytical lens. | CO2 | 2 |
| **(OR)** | | | | |
| 6. | a. | A tachometer was set at A and the following observations were taken on a vertically held staff at station P. Calculate the horizontal distance of P from A and RL of P. The constant s of the instrument being 100 and 0.250   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Ins.  Stn. | Staff.  Stn. | Hair readings | Vertical angle | Remarks | | A | BM | 2.155 | 0°0’0” | RL of BM =120.000 | | A | P | 1.450,1.650 | +15°30’0” | | CO2 | 12 |
| b. | Explain the sources of errors in tacheometric surveying and explain how those errors are eliminated. | CO2 | 8 |
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| 7. | a. | Two straights meet at an intersection angle of 75°.  Calculate the following elements of the curve.  (i) Tangent length (ii) Length of the curve  (iii) Length of the chord (iv) Apex distance  As the degree of the curve as 6° | CO4 | 10 |
|  | b. | Describe briefly the procedure of setting out simple curve by rankine’s method of deflection angles. Mention the formula used for finding the deflection angles. | CO4 | 10 |
| **(OR)** | | | | |
| 8. |  | A simple circular curve of radius 150m is to be laid between the straights AB and BC at an intersection angle of 132° 50’ the length of the long chord being 120m. Calculate the necessary offsets from long chord at an interval of 15m. Use both exact and approximate formula. | CO4 | 20 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Define EDM. | CO1 | 2 |
| b. | Explain principle and classification of total station. | CO3 | 6 |
| c. | A 20 m steel tape was standardized on flat ground, at a temperature of 20° C and under a pull of 15 kg, the tape was used in caterny at a temperature of 30° C and under a pull of P kg. The cross sectional area of the tape is 0.22 cm2, and its total weight is 400 g. The youngs modulus and coefficient of linear expansion of steel are 2.1 X 106 kg/cm2 and 11 X 10-6per °C respectively. Find the correct horizontal distance if P is equal to 10 kg. | CO6 | 12 |