| Name:            | |
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## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
### End Semester Examination, May 2022

**Course: Surveying and Geomatics**  **Semester: IV**
**Program: B Tech Civil Engineering**  **Time 03 hrs.**
**Course Code: CIVL 2018**  **Max. Marks: 100**
**Instructions:**

### SECTION A

| S. No. | | Marks | CO |
|--------|---|-------|-----|
| Q 1 | Find the RL if the fall at a certain point is 3.0 mt. and the first RL is 100.65. | 4 | CO1 |
| Q 2 | Name the methods of computation of volumes of solids. | 4 | CO2 |
| Q 3 | Describe the use of upper plate in a theodolite. | 4 | CO3 |
| Q 4 | Find the length of the mid ordinate for a curve of radius 25 mt and a deflection angle of 30°. | 4 | CO4 |
| Q 5 | If the scale of vertical photograph is 1 in 20,000 and the focal length is 6″ find the height of plane above ground. | 4 | CO1 |

### SECTION B

| Q 6 | The following readings are taken with a 4 mt, leveling staff. The instrument was shifted after taking every two readings. Find the RLs if the first RL is 200.00.<br>0.655, 1.345, 2.345, 3.45, 1.655, 3.87 | 10 | CO1 |
|-----|---|----|-----|
| Q 7 | The following perpendicular offsets were taken from a chain line to a barbed wire fence; calculate the area between the chain line, the barbed fence and the end offsets.<br><br>| Chainage (m) | 0 | 20 | 40 | 60 |<br>\|---\|---\|---\|---\|---\|<br>| Offsets (m) | 6.9 | 15.5 | 17.5 | 15.7 |<br><br>| Chainage (m) | 80 | 100 | 120 | 140 |<br>\|---\|---\|---\|---\|---\|<br>| Offsets (m) | 10.7 | 19 | 17 | 18.6 |<br><br>Compare the areas. | 10 | CO2 |
| Q 8 | Describe the procedure of measuring vertical angle with the help of a theodolite. | 10 | CO3 |
| Q9 | Derive length of tangent and mid ordinate of simple circular curve of radius R and deflection angle α.<br>(OR)<br>Describe Rankine's method of curve plotting. | 10 | CO4 |

### SECTION C

| Q 10 | A Highway curve of 30 m radius connects two straights making a deflection angle of 30° the Chainage of the intersection point is 534 m. make out necessary calculations for setting out the curve. The unit chord is 3 m. Draw the curve to scale.<br>(OR)<br>Describe the necessity of proper data acquisition: platforms and sensors in remote | 20 | CO4. CO1 |
|------|---|-----|-----|

sensing.

| Q 11 | a. Find the tachometric constants for the following readings | | | | 15+5 | CO3 |
|---|---|---|---|---|---|---|

| Instrument station | Staff held at | Stadia readings | Distance |
|---|---|---|---|
| P | A | 0.675, 0.685, 0.695 | PA = 4.3 mt |
| P | B | 1.235, 1.255, 1.275 | PB = 6.4 mt |

b. Derive the expression D= ks+c.