**PVP 20**

Code: 20CE3302

**II B.Tech - I Semester – Regular Examinations - FEBRUARY 2022**

# SURVEYING
## (CIVIL ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

## UNIT – I

1. a) List out the instruments used in chain surveying. How is a chain survey executed in the field? 7 M

   b) Differentiate between
   (i) Surveyor's compass and Prismatic compass
   (ii) Meridian and Bearing 7 M

OR

2. a) What are the possible errors in chaining? 6 M

   b) In passing an obstacle in the form of a pond, stations A and D on the main line were taken on the opposite sides of the pond. On the left of AD a line AB, 245 m long was laid down and a second line AC, 295m long was ranged on the right of AD, the points B, D and C being in the same straight line. BD and DC were then chained and found to be 145m and 157m respectively. Find the length of AD. 8 M

## UNIT – II

3. a) Discuss the advantages and disadvantages of plane table surveying over other methods. 7 M

   b) What are the different sources of errors in plane tabling? How are they eliminated? 7 M

OR

4. a) Explain briefly about fly leveling. 6 M

   b) The following readings were taken with a level in sequence as follows: 1.585, 1.315, 2.305, 1.225, 1.325, 1.065, 1.815 and 2.325. The level was shifted after the third and sixth readings. The second change point was a bench mark of elevation 160.375m. Find the reduced levels of the remaining stations. Use rise and fall method. 8 M

## UNIT-III

5. a) Name the two methods of measuring horizontal angles using a theodolite. Discuss any method in detail. 7 M

   b) What are face left and face right observations? Why is it necessary to take both these observations? 7 M

OR

6. a) Classify tachometric methods. Describe its applications. 6 M

   b) A tacheometer was set up at station P and observations were made to two stations Q and R the vertical angles to Q and R were $5^0$ 30’ and 10°8’ respectively. The cross hair readings at Q were 2.102, 2.47 and 2.835 and those at R were 2.215, 2.56 and 2.905. The staff was held vertical in both cases. The instrument constants were 100 and 0.3. The reading from P to a BM of RL

285.35m was 2.255. The horizontal angle QPR measured was 58°30'. Find the distance Q to R, the gradient from Q to R and the RLs of Q and R. 8 M

## UNIT – IV

7. A rectangular plot ABCD forms the plane of a pit excavated for road work. E is point of intersection of the diagonals. Calculate the volume of the excavation in cubic meters from the following data:

| Point | A | B | C | D | E |
|---|---|---|---|---|---|
| Original Level | 46.2 | 48.8 | 50.2 | 48.2 | 52.0 |
| Final level | 39.6 | 40.8 | 48.6 | 42.8 | 43.5 |

Length of AB=50m and BC=80m. 14 M

OR

8. a) Derive the expressions for the elements of a simple curve using Rankine's method. 7 M

   b) Explain briefly about different types of curves with neat sketches. 7 M

## UNIT – V

9. a) Determine the distance and elevation formulae for an inclined line of sight with an angle of elevation and an angle of depression when the staff held normal. 7 M

   b) Explain the principle and working of EDM 7 M

OR

10. a) Derive the expressions for horizontal and vertical distance by the tangential method when both the angles measured are those of depression. 7 M

    b) Explain the functional components of GPS. 7 M