

IQRA NATIONAL UNIVERSITY
PESWAR

B.tech	→	civil
BATCH	→	2015
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PAPER	→	Surveying 1
Date		24/6/2020

Final term exam.

Question No 1

part = A

Simpson rule:

$$A = d/3 \left[o_1 + o_n + 4 \left[o_2 + o_4 + \dots \right] + 2 \left[o_3 + o_5 + \dots \right] \right]$$

$$\Rightarrow \frac{10}{3} \left[2.82 + 5.43 + 4 \left[3.37 + 4.26 + 7.90 + 7.42 \right] + 2 \left[5.82 + 6.59 + 8.52 + 5.43 \right] \right]$$

$$\frac{10}{3} \left[2.82 + 5.43 + 91.8 + 52.72 \right]$$

$$= 509.23 \text{ m}^2$$

part B

Trapezoidal rule.

$$A = \frac{d}{2} [2 \cdot 83 + 5 \cdot 43 + 2(3 \cdot 37 + 5 \cdot 82 + 4 \cdot 86 + 6 \cdot 159 + 7 \cdot 90 + 8 \cdot 59 + 7 \cdot 42 + 5 \cdot 43)]$$

$$\frac{10}{2} [2 \cdot 83 + 5 \cdot 43 + 98 \cdot 62]$$

$$= 534.4 \text{ m}^2$$

Question No 2

At station

$$\text{Reading} = 1.476$$

$$\text{angle} = 19^{\circ} 54'$$

At station^B

$$\text{Reading} = 1.362$$

$$AB = 35 \text{ m}$$

$$S = AB \tan \phi + AB \tan \phi'$$

$$\Rightarrow 35 \tan 19^{\circ} 54' + 35 \tan 9^{\circ} 45'$$

$$\Rightarrow 76.68 \text{ m}$$

For elevation use B.m

$$H = 35.150 - 0.755$$

$$\Rightarrow 35.150 - 0.75 (76.68)$$

$$\Rightarrow 32.84 \text{ m}$$

Question No 3

Solution:-

Chain used = 30 m

$$\text{Radius of Curve} = R = \frac{1710}{P} = 344 \text{ m}$$

$$\text{Deflection of angle } \Delta = 180 - 140 = 40^\circ$$

$$\begin{aligned} \text{tangent length} &= R \tan \left(\frac{\Delta}{2} \right) \\ &= 344 \tan 20^\circ = 125.2 \text{ m} \end{aligned}$$

$$\text{Chainage of intersection point B} = 4242 \text{ m}$$

$$\text{Chainage of } T_1 = (4242 - 125.2) = 4116.8 \text{ m}$$

$$\begin{aligned} \text{length of Curve} &= \frac{R \Delta \pi}{180} \\ &\Rightarrow 344 \cdot 18 \text{ m} \end{aligned}$$

$$\begin{aligned} \text{Chainage of } T_2 &= \text{Chainage of } T_1 + \text{length} \\ \text{of Curve} &= 4116.8 + 344 \cdot 18 \\ &= 4356.97 \text{ m} \checkmark \end{aligned}$$

$$\begin{aligned} \text{First Sub-chords } e_1 &= 4140 - 4116.8 = \\ &= 23.2 \text{ m} \end{aligned}$$

$$\begin{aligned} \text{least Sub chords } e_2 &= 4356.96 - 4350 \\ &= 6.96 \text{ m} \end{aligned}$$

Hence Seven unit chords of 30 m length

$$Q_1 = c_1^2 / gR = 23 \cdot 2^2 / 2 \times 344$$

$$Q_n = \frac{c_n (c_{n-1} + c_n)}{gR}$$

$$Q_2 = \frac{30 (23 + 30)}{2} \times 344 = 2.32 \text{ m}$$

$$Q_3 = Q_4 = Q_8 = \frac{302}{344} = 2.62 \text{ m}$$

$$Q_9 = .37 \text{ m}$$

Question 4 part (ii)

Objectives of Hydrographic Surveying:

Hydrographic Surveying are carried out for one or more of the following activities:

1:- Measurement of Holes for Sea Coast work:-

E.g. Construction of sea defence works harbors etc for the establishment of leveling datam and for reducing sounding.

2:- Determination of bed depth by Soundings.

- For navigation
- location of rock sand bars
- Form location of light
- work volume of under

under water evacuation etc

→ In Connection with irrigation and land drainage schemes.

3:- Determination of direction of current in Connection with.

→ The location of Sewer any pipe of channel that carry waste water out falls.

→ Subject to silt and scour the eating of the place.

→ Formication purpose

→ Measurement of quantity of water and flow

of water in connection

of water schemes power scheme and flood controls.

part (ii)

Equipment for making sounding

- 1 → Essential equipment for sounding are.
- 2 → Boat
- 3 → Sound apparatus
- Sound rod
- lead line
- echo sounding machine
- 4 - Instrument for locating sounding.
- Sounding Sextant.

part iii

classification of leveling:-

Cross-sectioning:-

is carried out perpendicular to alignment at an interval of 10, 20, 30, 40 m. The idea is to make an estimate leveling of earthwork.

precise levelling:-

for establishing benchmark for future public use. It is carried out with high degree of accuracy using advanced instrument.

Trigonometric levelling:-

→ In this method vertical distance b/w point are computed by observing horizontal distance and vertical angle b/w points.

Check levelling:-

The kind of levelling is carried out to check the accuracy of work in the form of fly levelling to connect the finishing point and starting point.

profile leveling or L-section.

→ This method is used for taking levels along the centre line of road any alignment like railway canal etc.