Scheme of marking and Numerical Solutions.

Q.1 | a

Both angles are angle of Elevation.

- Neat figure.
± m.
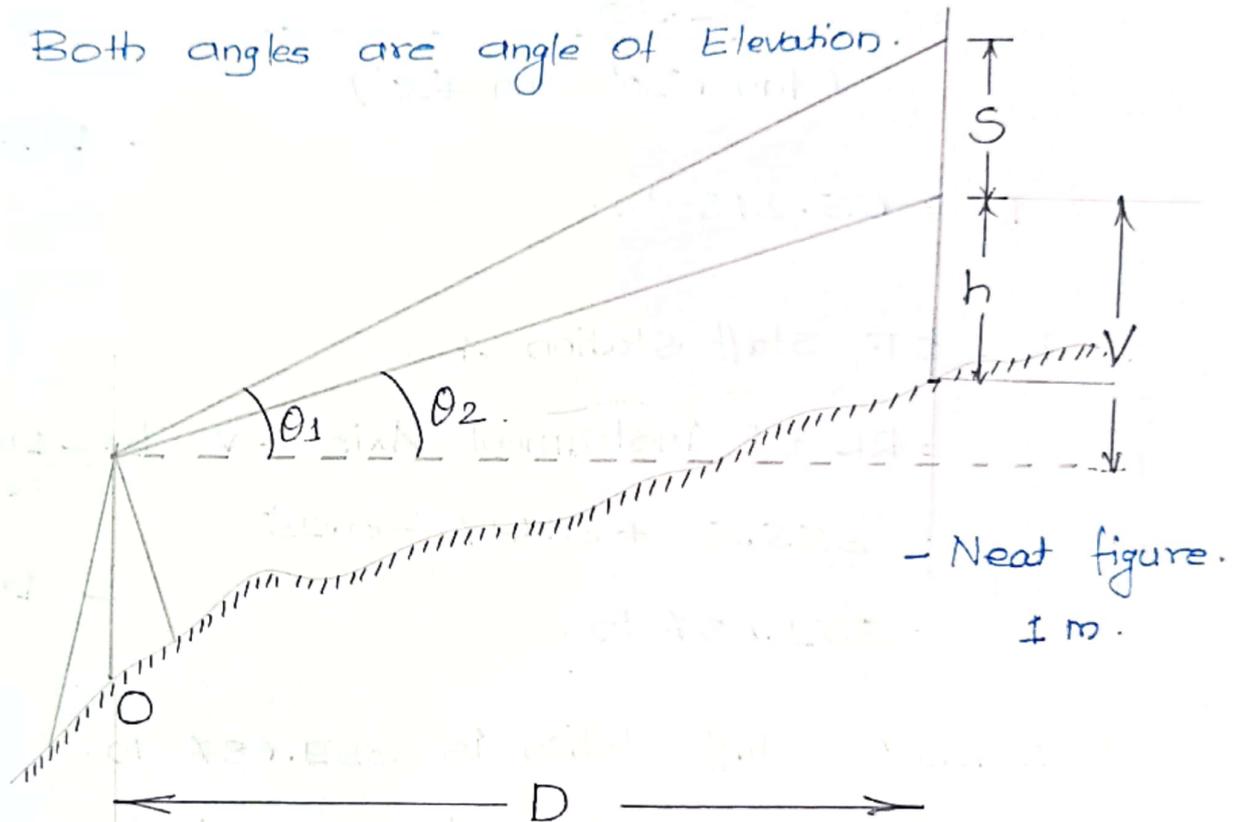
$B_1 = 3.25$ $\theta_1 = 6°30'$

$B_2 = 0.95$ $\theta_2 = 4°30'$

∴ Staff intercept $(s) = B_1 - B_2$

$$= 3.25 - 0.95$$

$$= 2.30 \text{ m.}$$ — 1 m.

$$V = \frac{s \cdot \tan \theta_2}{(\tan \theta_1 - \tan \theta_2)} = \frac{2.30 \tan 4°30'}{(\tan 6°30' - \tan 4°30')}$$

$$V = 5.137 \text{ m.}$$ — 1 m.

②

$$D = \frac{S}{\tan \theta_1 - \tan \theta_2} \qquad - 1m.$$

$$= \frac{2.30}{(\tan 6°30' - \tan 4°30')}$$

— 1 m.

$$D = 65.278 \, m.$$

RL OF staff Station A

$$= RL \text{ OF instrument Axis} + v - b. - 1m$$

$$= 355.5 + 5.137 - 0.95$$

— 1 m.

$$= 359.687 \, m.$$

∴ RL Of staff station is 359.687 m.

and horizontal distance between instrument station and staff is 65.278 m.

Q.1 b

Minimum elevation of line of sight

$$= 200 + 2 = 202 \text{ m}.$$

Let us take this elevation as the datum.

Elevation of A above datum $= h_1 = 240 - 202$

$$= 38 \text{ m}.$$

$$\cdots \cdots \quad 1 \text{ m}.$$

Tangent distance D_1 Corresponding to h_1

$$h_1 = 0.0673 \, D_1^2$$

$$38 = 0.0673 \, D_1^2$$

$$D_1 = \sqrt{\frac{38}{0.0673}} = 23.762 \text{ m}.$$

$$\cdots \cdots \cdots 1 \text{ m}.$$

Distance of B from point of tangency

$$= D_2 = D - D_1 = 60 - 23.762$$

$$= 36.238 \text{ m}.$$

$$\cdots \cdots \cdots 1 \text{ m}$$

The elevation h_2 corresponding to distance D_2 is =>

$$h_2 = 0.0673 \, D_2^2 \qquad \ldots \ldots 1 \, m.$$

$$= 0.0673 \times 36.238^2$$

$$h_2 = 88.377 \, m. \qquad -1 \, m.$$

The elevation of line of sight B

$$= 202 \mid + 88.377$$

$$= 290.377 \mid m. \qquad - 1 \, m.$$

Ground level at point B is : 280 m

Minimum height of Signal above ground at B.

$$= 290.377 - 280$$

$$= 10.377 \, m. \qquad \ldots -1 \, m$$

Q.1 | **c** | Given data

Scale of photograph = 1 : 10,000

Area = 100 sq·Km

Longitudinal Overlap = 60%

side overlap = 30%

Size of photograph = 20 cm x 20 cm.

⟹

Ground length covered by each photograph

$L = (1 - P_i) \times S \times l$

$= (1 - 60/100) \times 10,000 \times 0.2$

$= 800$ m.   — 2 m.

Ground width covered by each photograph.

$W = (1 - P_w) \times S \times l_w$

$= (1 - 30/100) \times 10,000 \times 0.2$

$= 1400$ m.   — 2 m.

Area covered by each photograph

$= 0.8 \times 1.4$

$= 1.12$ km²   — 1 m.

No. of photograph required $= \dfrac{\text{Area of Ground}}{\text{Area covered by Photograph.}}$
                                                                                          ... 1 m.

$= 100/1.2 = 89.28 \approx 90$ No

Total.

Q.2 | a. | Definition of raster data — 2m

Definition of Vector data — 2m. 4m

b | Explanation of GIS — 2m.

describing all componants.

Of GIS — 4m   6m.

Q.3 | a | define active remote sensing - 1m.

—" — passive —" — - 1m

Sketch — 1m   3 m.

b | definition of electro-magnetic energy

— 2m.

Interaction of EM energy - 3m.

Neat sketch — 2m   7m.

Q.4 | a | definition — 1m.

Application — 1m each   5m.

b | list of segments — 2m.

description — 1m each   5m.

c | definition. — 2m.

Working — 2m.

sketch — 1m   5m.