① Convension of Q.B. into W.C.B.

Answer!

Q.B. = N 40° E

So, W.C.B. = 40°
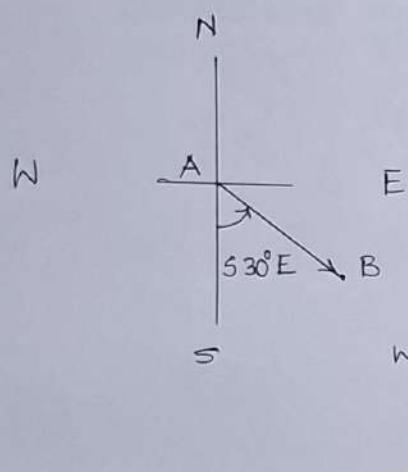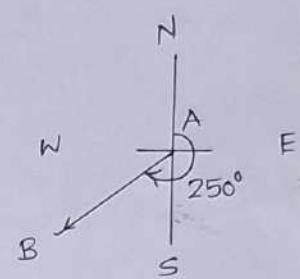
Answer!

Q.B. = S 70° E

∴

W.C.B. = 180°+ 70°

= 250°
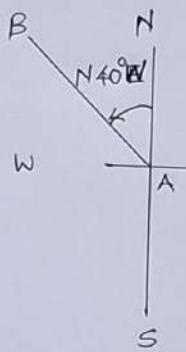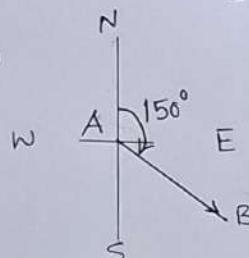
Answer!

Q.B. = S 30° E

∴ W.C.B. = 180° − 30°

= 150°
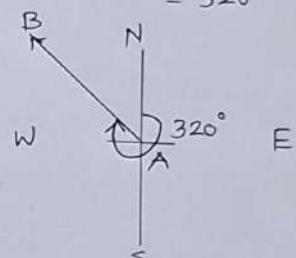
Answer!

Q.B. = N 40° W
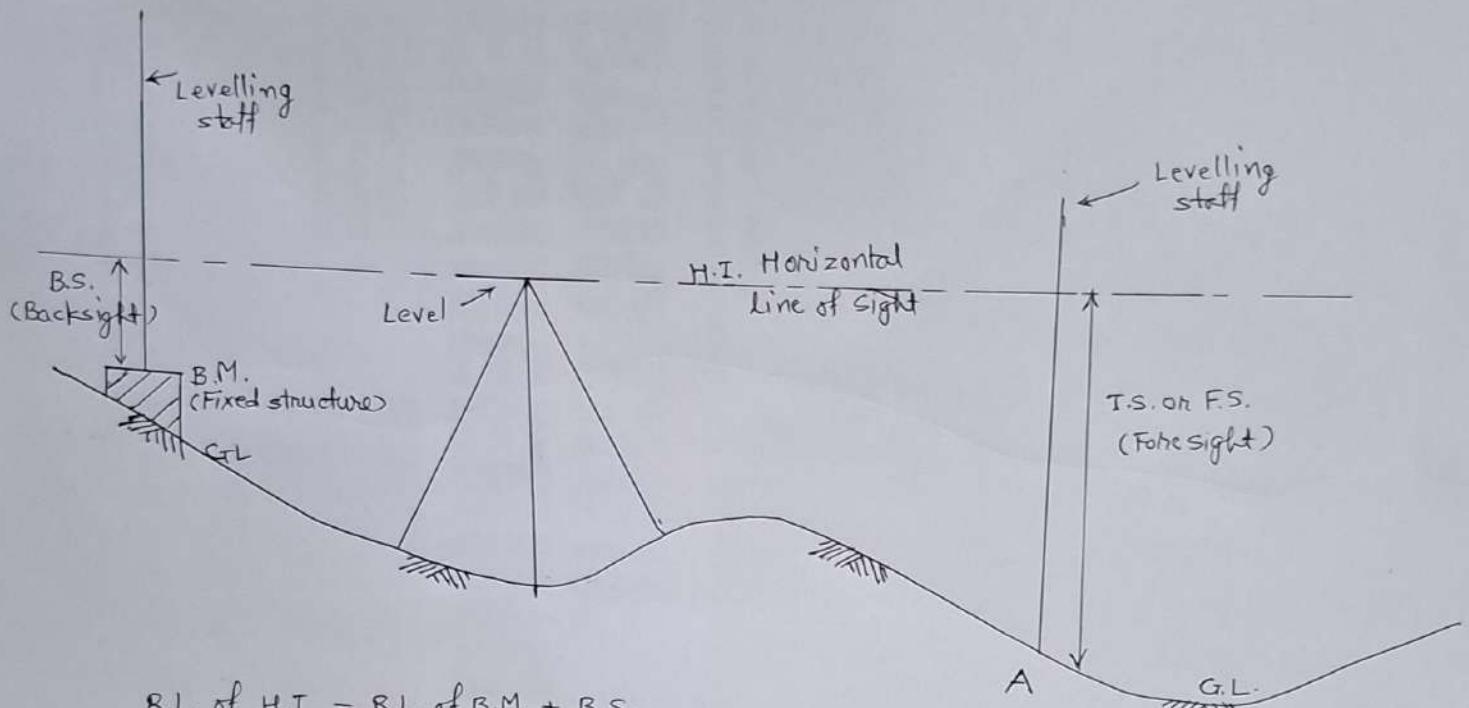
∴ W.C.B. = 360°−40°

= 320°

② Principle of Leveling

← Levelling staff

B.S.
(Backsight)

B.M.
(Fixed structure)

GL

Level →

H.I. Horizontal
Line of sight

Levelling staff

T.S. or F.S.
(Fore sight)

A

G.L.
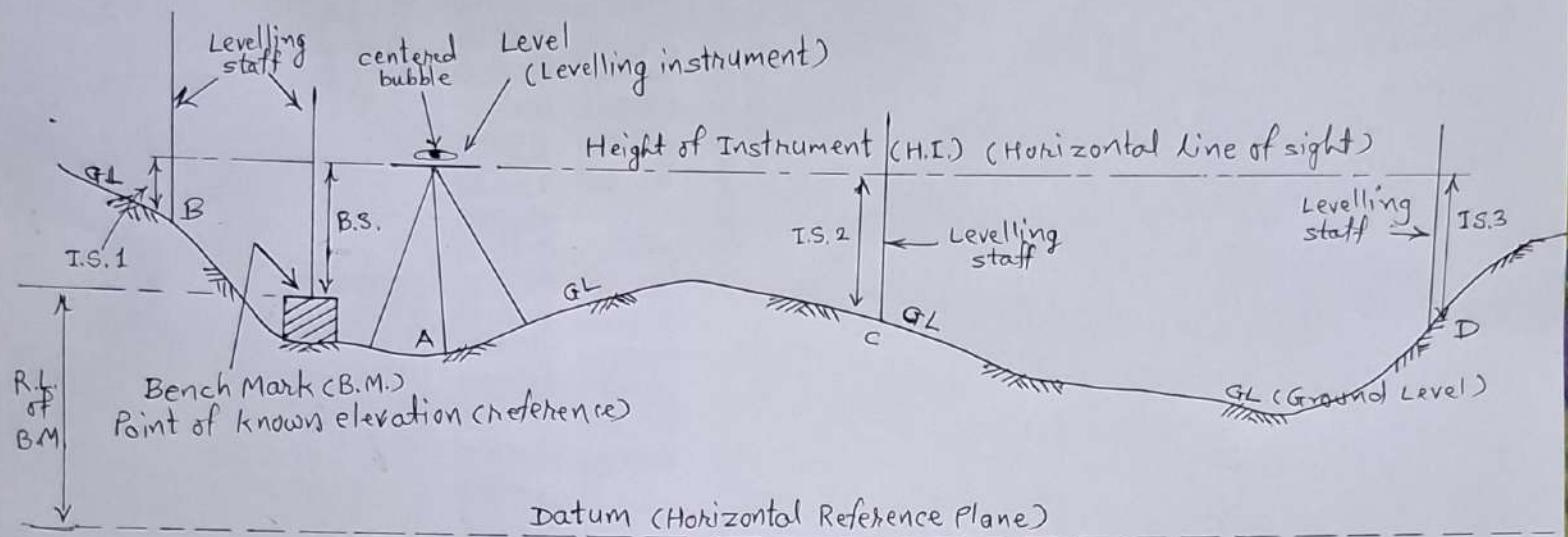
R.L. of H.I. = R.L. of B.M. + B.S.

R.L. of A (other points) = R.L. of H.I. − I.S.
                                      or
                                      F.S.

③
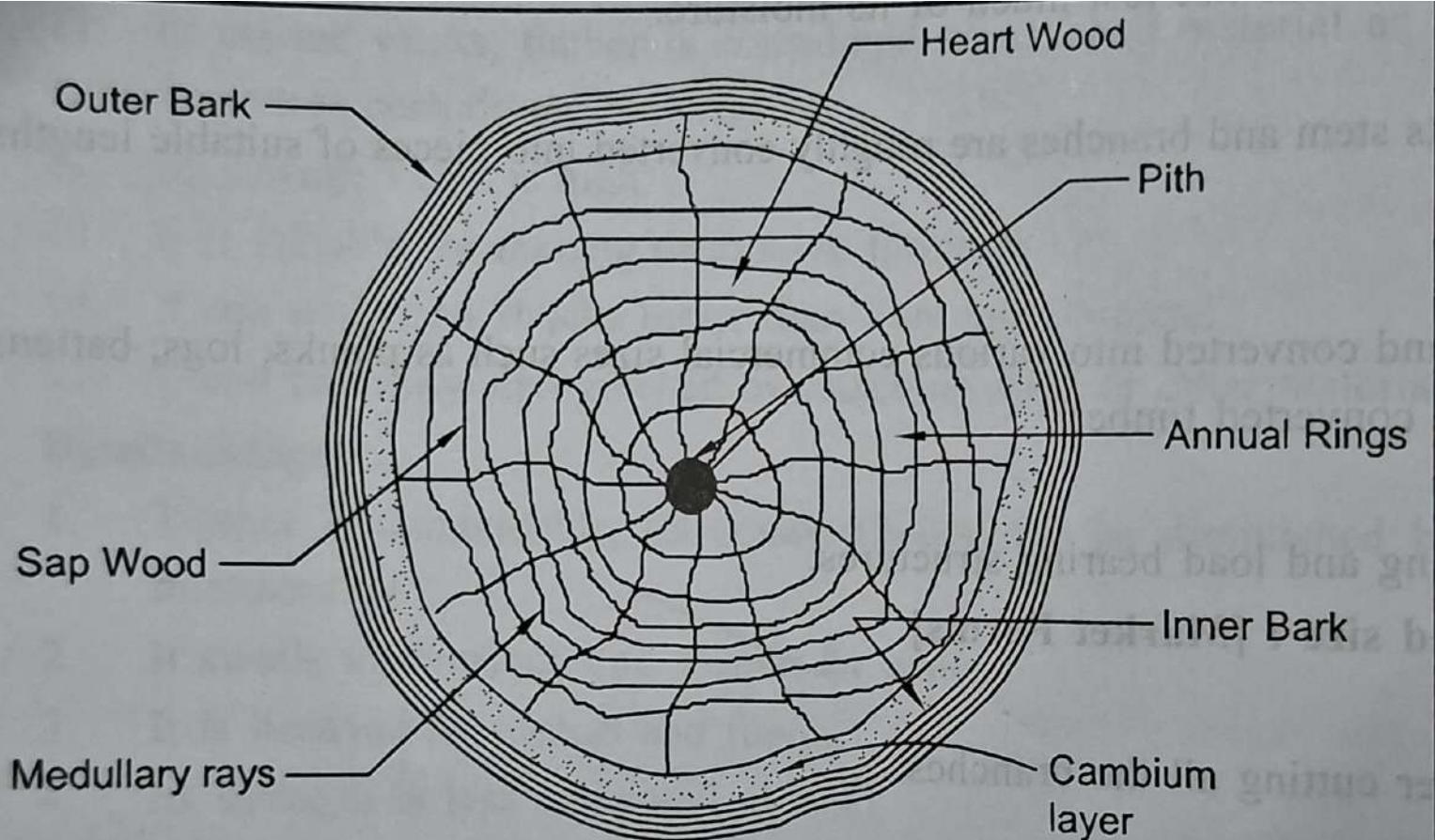
# Principle of Leveling
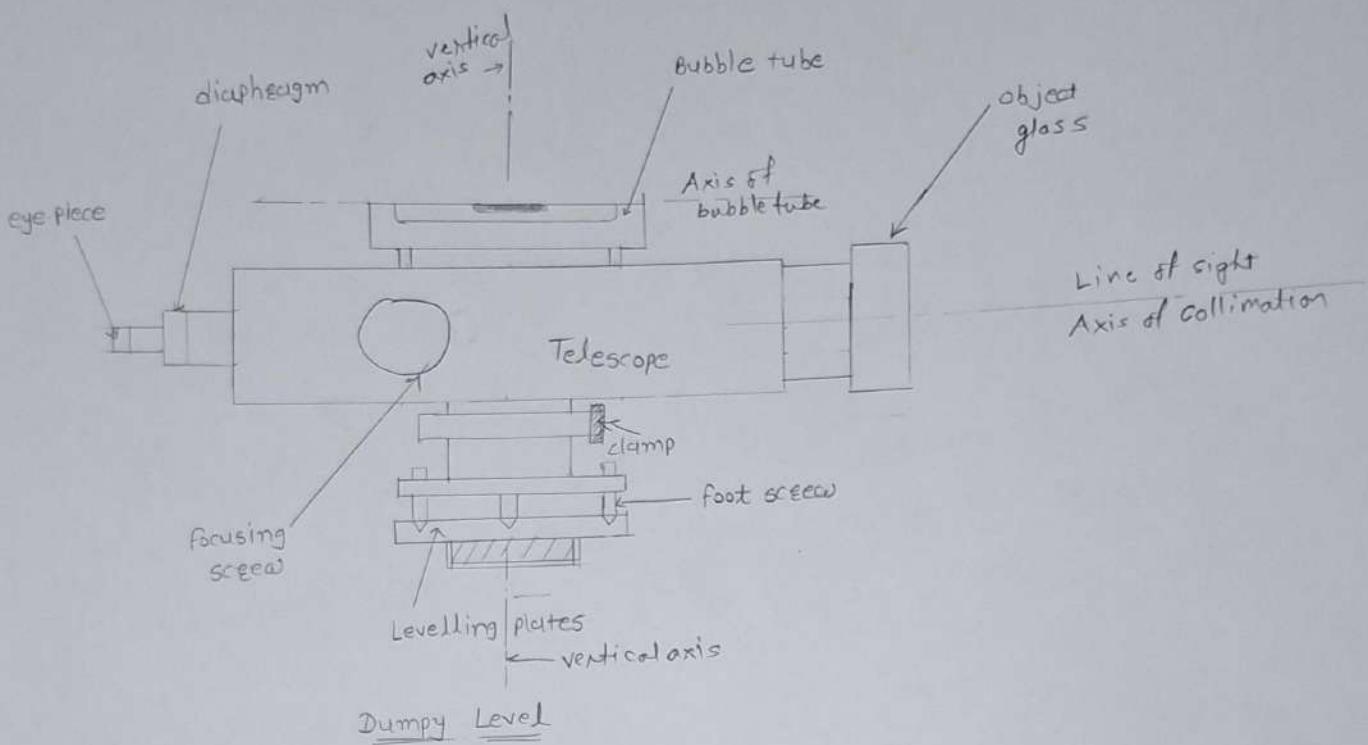


R.L. - Means Reduced Level (m)

Calculations:

① Assume R.L. of B.M. say 50 m.  So, H.I. = R.L. of B.M. + B.S. (on Bench Mark)

② R.L. of point B = H.I. – I.S.1

③ R.L. of point C = H.I. – I.S.2

④ R.L. of point D = H.I. – I.S.3

and so on.

Outer Bark

Heart Wood

Pith

Sap Wood

Annual Rings

Medullary rays

Inner Bark

Cambium layer
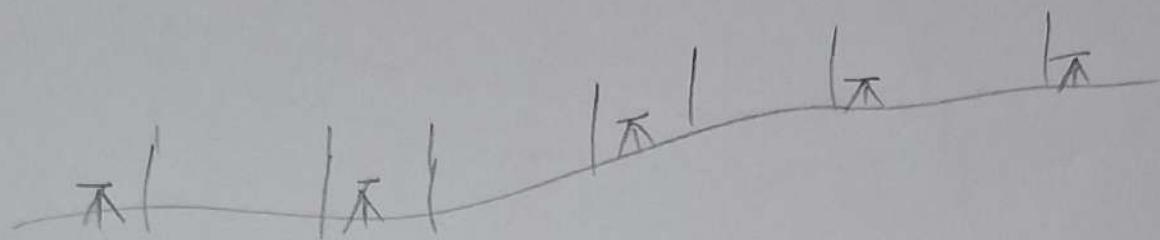
**Cross–section of an Exogenous Tree**

**Dumpy Level**

Labels in figure:
- eye-piece
- diaphragm
- vertical axis
- Bubble tube
- object glass
- Axis of bubble tube
- Line of sight
- Axis of collimation
- Telescope
- clamp
- foot screew
- focusing sceew
- Levelling plates
- vertical axis

p. 310

Fly leveling



Profile levelling



Road margins

Profile

GL    Formation Level

Datum

Cross Sectioning



Level

staff

Road margins



FL

GL

Datum

20 15 10 5 0 5 10 15 20
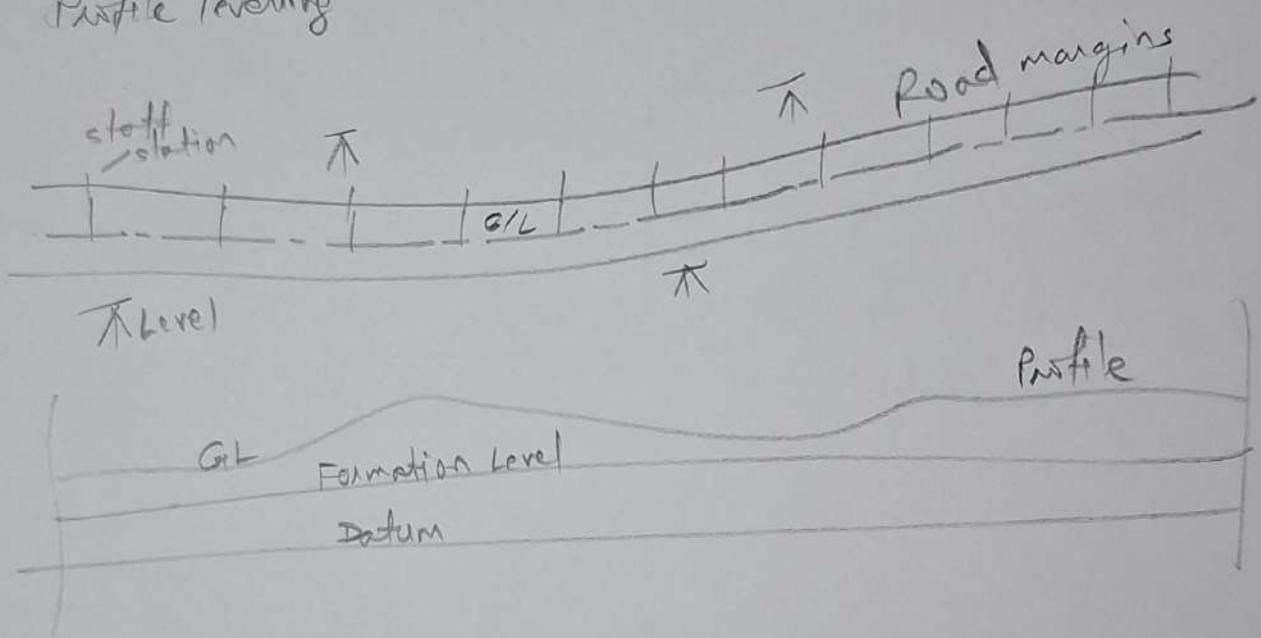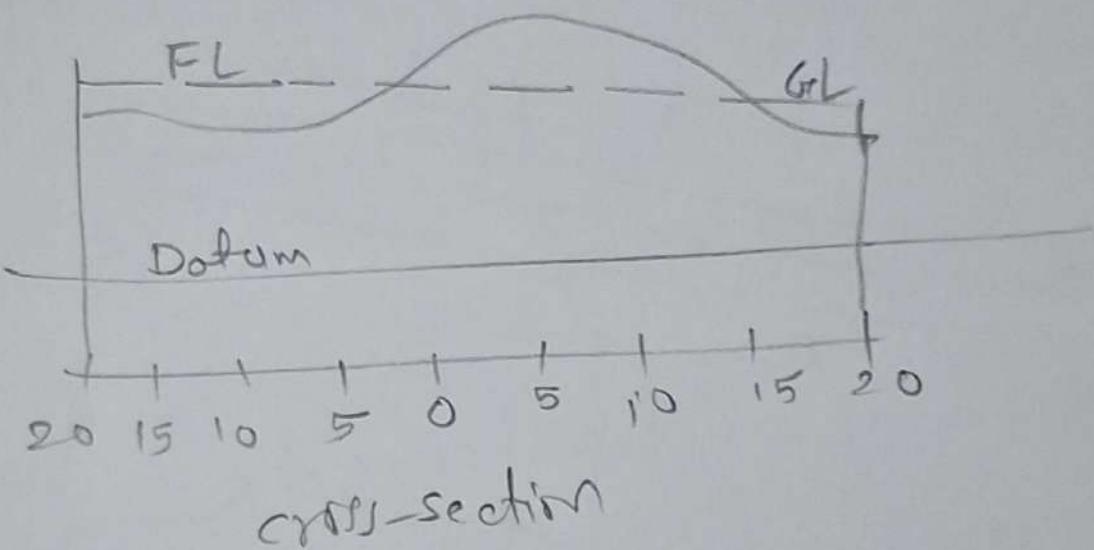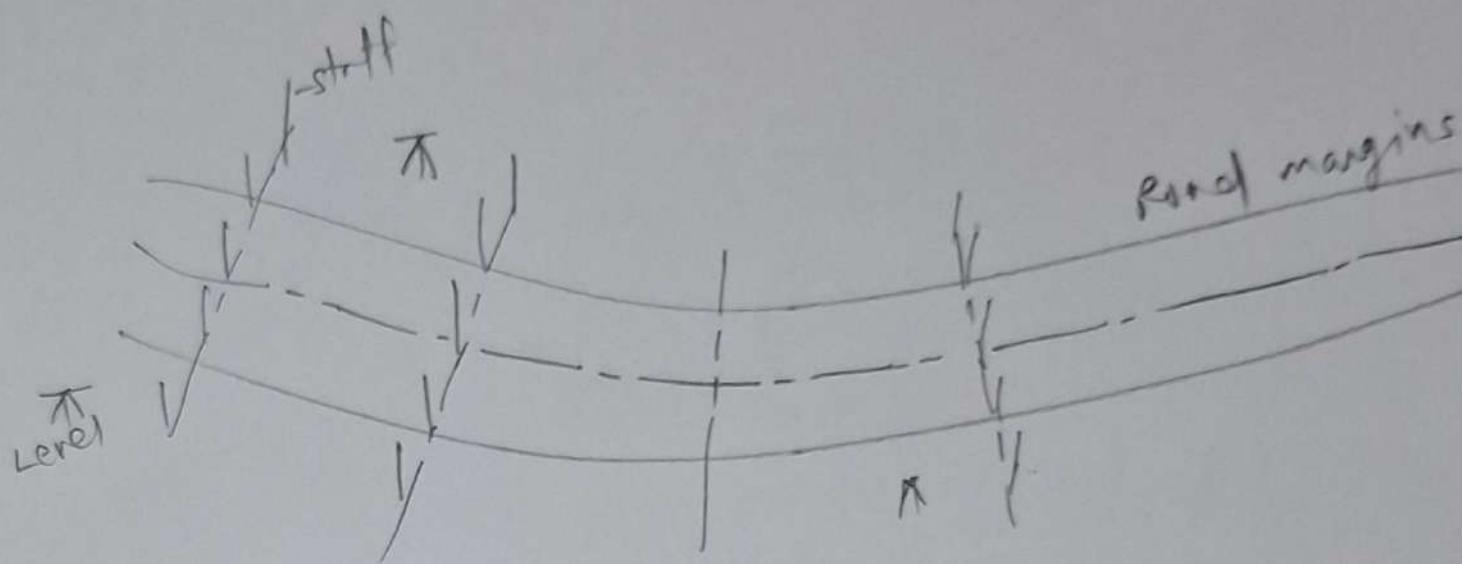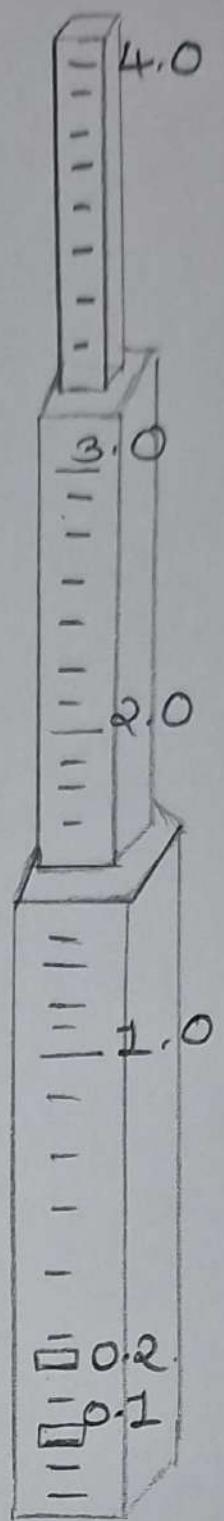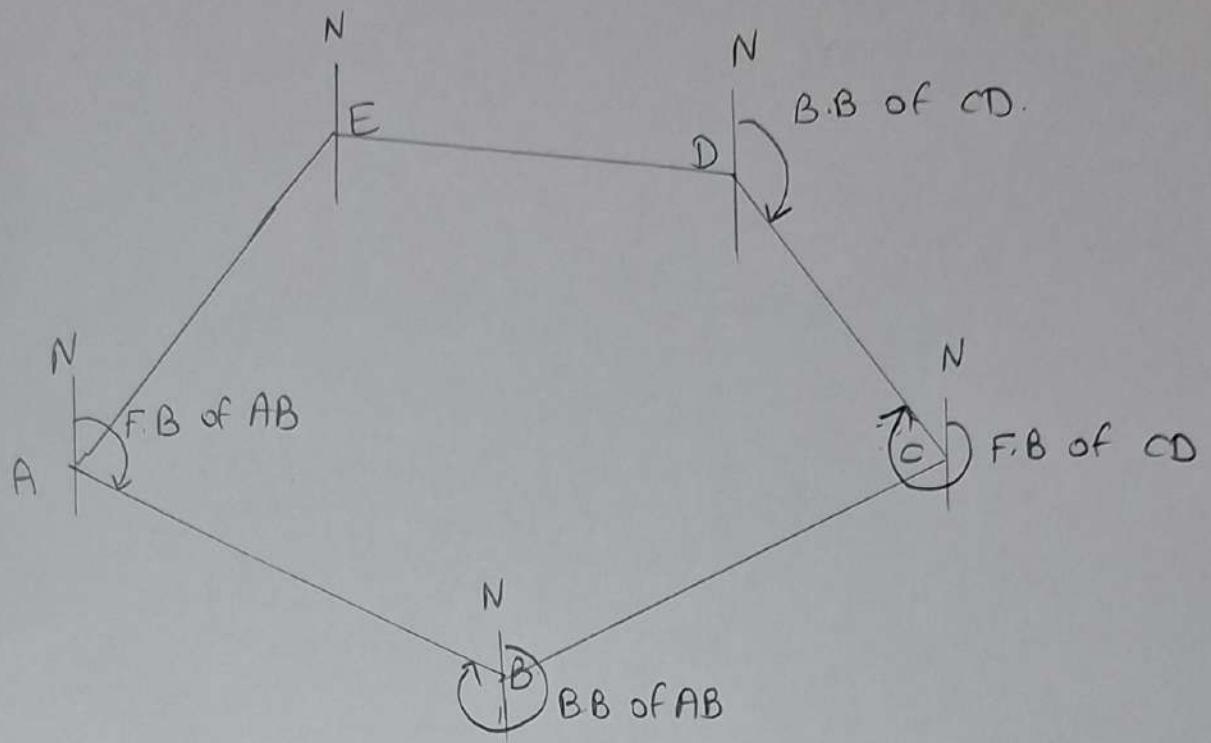
cross-section

Telescopic staff of 4m length / height

Difference of F.B & B.B of line = 180°

B.B of the line = F.B of the line ± 180°

F.B of the line = B.B of the line ± 180°