

Ahmad msamch

118/455

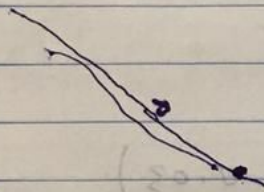
I pledge not to use any help from anyone and not to communicate about the exam through any form or media

Ahmad msamch

Q1) 55 in Group B1

$$G_1 = -2\% , G_2 = -1.2\%$$

$$L = 800 \text{ m}$$



$$PVI = (225 \times 20) + 16 = 4516 \text{ m}$$

$$\text{Sta. PVI} = 225 + 16 \text{ m}$$

$$h \text{ PVI} = 620 \text{ m}$$

$$\text{Sta. PVC} = 200 + 9.5 = 4009.5 \text{ m}$$

$\uparrow$   
(200 + 10) + 9.5

$$\text{Sta. PVC} = (225 + 16) - (40 + 0)$$

$$185 + 16 \text{ m}$$

$$= 3716 \text{ m}$$

$$\text{elev of PVC} = h \text{ PVI} + G_1 \frac{L}{2} = 620 + 0.02 \times \frac{800}{2}$$

$$h \text{ PVC} = 628 \text{ m}$$

$$x = 4009.5 - 3716 = 293.5 \text{ m}$$

$$y = \frac{G_2 - G_1}{2L} x^2 + G_1 x + E \text{ PVC}$$

$$\frac{8 \times 10^{-3}}{(2)800} (293.5)^2 + \frac{-2}{100} (293.5) + 628$$

$$h = 622.13 \text{ m}$$

~~scribble~~

①

Ahmed Msamah

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b) highest point is

is PVC = Sta =

$$\text{Sta. } (225 + 16) - \left(\frac{800}{2}\right) = \boxed{165 + 16 \text{ m}}$$

$$e = PVI + G_1 \frac{L}{2} = \boxed{628 \text{ m}}$$

Lowest Point

PVT

Station is  $\boxed{225 + 16 \text{ m}}$

$$e = 620 + \frac{1.2}{100} \times \frac{800}{2} = \boxed{615.2 \text{ m}}$$

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Q2] Ahmed Mesamch

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Group C

$$AVD = a_{conv}$$

$$f = 0.38$$

$$G = 3\%$$

$$AVD = V_i x t + \frac{V_i^2 - \cancel{V_f^2}}{2g(f + G)}$$

$$90 = V \times 2.5 + \frac{V^2}{2(9.81)(0.38 + 0.03)}$$

$$90 = V \cdot 2.5 + \frac{V^2}{8.04}$$

$$0.124 V^2 + 2.5V - 90 = 0$$

$$V = 18.68 \text{ m/s}, -38/84$$

$$V = 67.25 \text{ km/h}$$

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Ahmad msamoh

Q3 | Group C1.

$V = 80 \text{ km/h}$

~~inter~~  
interacting

$E = 12 \text{ cm} = 0.12 \text{ m}$

$aDE = \frac{0.5}{15} \text{ cm} = 0.0095 \text{ m}$

$L = 0.01216 E_d V$

$L = 0.744 E_d$

$\approx 75 \text{ mm}$

because ~~short~~ and velocity distance to not high

I assume  $a = 0.4g$

$L = 0.01216 (95)(80) = 92.42 \text{ m}$

$L = 0.744 (120) = 89.28 \text{ m}$

the lateral acceleration =  $0.4g$

$L_s = 92.42 \text{ m}$

$L = 0.0091 E_d V$

$L = 0.0091 (95)(80) = 69.16 \text{ m}$