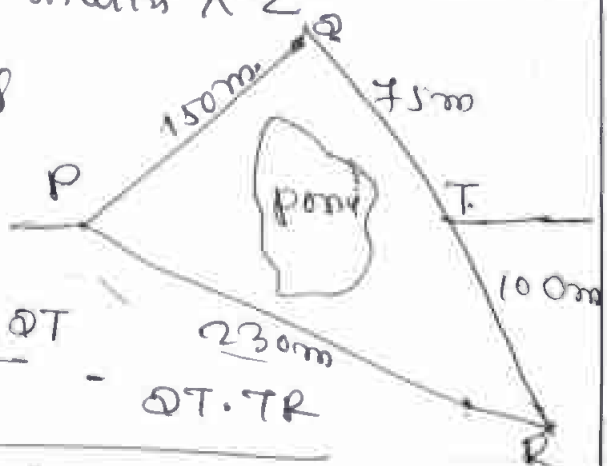
Scheme & Solution Basic Surveying 18CV35

Subject Title : Basic surveying **Subject Code :** 18CV35

Question Number	Solution	Marks Allocated
1 (a)	Defination — 2 mark classification based upon — ~~8 m~~ Instruments – 06, Terrain – 2	10
(b)	Defination — 2 marks Sketch — 2 m procedure — 4 m	08
(c)	Defination — 2 m	02
2 (a)	Each short notes 3 marks X 2	06
(b)	Fig : 03 marks  $PT^2 = \frac{PQ^2 \cdot TR + PR^2 \times QT}{QR} - QT \cdot TR$ $PT = \sqrt{\frac{150^2 \times 100 + 230^2 \times 75}{175} - 75 \times 100}$ $PT = 167.41 m$	03 03 02
(c)	Fig — 2 marks Explaination — 4 m	06

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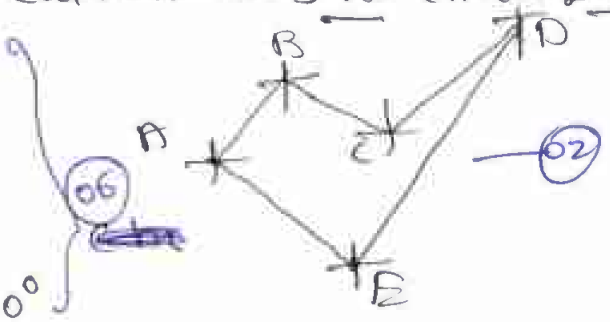
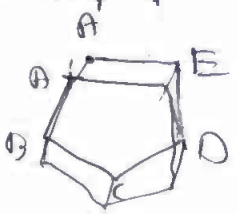
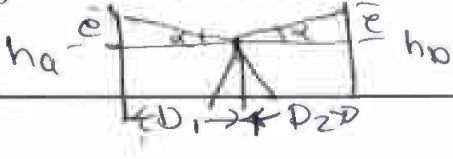
3(a)	Difference betⁿ them each 2m X 3no	06
(b)	Fig - 2mark. calculation - 5m check 1m $\angle A = 59°30'$ $\angle B = 118°30'$ $\angle C = 256°$ $\angle D = 20°30'$ $\angle E = 85°30'$ Checks $= 540°$  	08
(c)	Defn = 1 Detection & elimination = 03 Reason = 2	06
4(a)	Defn — 2m Types - 2m	04
(b)	Defn — 2m. Fig - 2m; procedure 4m  	
(c)	Let length EA = l Bearing = θ $l\cos\theta = -87.86$ $l\sin\theta = -0.73$ $EA = \sqrt{87.86^2 + 0.73^2} = 87.86m$ $\theta = \tan^{-1}\frac{ED}{EL} = \tan^{-1}\frac{0.73}{87.86} = 0°28'$ SW $\therefore \theta = 180°28'$	2+2 02 02
5(a)	Each term 1mark X4	04
(b)	Defn — fig — proof — 2+2+2  	06

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SN	BS	IS	FS	HI	RL	Rem
1	4.00			199.500 ✓	195.500 ✓	
2		3.565 ✓			195.935	
3	2.150		3.995	197.655 ✓	195.505 ✓	CP1
4		2.415			195.240	BM
5		1.665			195.990 ✓	
6		-3.115 ✓			200.770	
7	3.610		2.565 ✓	198.700 ✓	195.090 ✓	CP2
8			1.715		196.985	
Σ	9.760		8.275			

08

Checks $9.760 - 8.275 = 196.985 - 195.500$

$1.485 = 1.485$ 02

6(a) Each notes 2 marks X ÷ 3 ——— 0.6

(b) Sketch – 2 ma + procedure 4m ——— 06

(c) Diff^n in level $H = \frac{(2.545 - 1.625) + (1.405 - 0.725)}{2}$

$= 0.80$ 02

RL of B = 100.150 − 0.8 = 99.35

Apparent diff^n = 2.545 − 1.625 = 0.920 m

Error due to curv. & Refr = $0.0673 \times (1)^2 = 0.0673$ m 02

Error in observation = 0.92 − 0.8 = 0.12

collimation error = 0.12 − 0.06735 = 0.05265

$\alpha = \tan^{-1} \frac{0.05265}{1000} = 0°\,0'\,10''.86$ 04

MODULE - 4

7(a) Radiation & Intersection method with fig. 5 + 5 ——— 10

(b) Defn — 2m.
Diagram — 2m
procedure — 6 } ——— 10

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Question Number	Solution	Marks Allocated
8 (a)	Each short notes 2m X 3 ———	06
(b)	Temp. adjustment centering Leveling observation	06
(c)	Advantages 4 points Dis advantages — 4 points ———	08
9 (a)	Defn — 2m. Uses — 6m ———	08
(b)	$A = bd + sd^2$ $s = 2$ $A_1 = 11 \times 2.2 + 2 \times 2.2^2 = 33.88\ m^2$ $A_2 = 17.68\ m^2$ $A_3 = 16.08\ m^2$ $A_4 = 22.72\ m^2$ $A_5 = 24.48\ m^2$ Chai FRL 0 - 123. 80 - 123.8 160 - 124.6 240 - 125.4 320 - 126.2 Trapezoidal rule $V = d\left(\frac{A_1 + A_5}{2} + A_2 + A_3 + A_4\right)$ $V = 6852.8\ m^3$ prismoidal rule $V = \frac{d}{3}\left[(A_1 + A_5) + 4(A_2 + A_4) + 2(A_3)\right]$ $V = 6723.2\ m^3$	06 3 3
10 (a)	Each definimation 1m X 4 ———	04
(b)	Defn — 2m Fig — 3 Anchor, Anchor point, Tracing Arm. — Tracing point, Integrating unit 7.5	12
(c)	$C = 0$ $N = 1$. $A = M(FR - IR \pm 10N + C)$	04

End of Scheme & Solution Basic Surveying 18CV35