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Subject = Quantity Survey and Estimation

Date = 24/8/2020

Question No# 1

solution :-

Quantity of wet material = 100 CFT

Dry Density of concrete = 1.54

Quantity of Dry material = 100 × 1.54

Quantity of Dry material = 154 cft

Ratio of Concrete = 1 : 4 : 8

Sum of Ratio = 1 + 4 + 8 = 13

Quantity of cement = $\frac{\text{Ratio of cement}}{\text{Sum of Ratio}}$ × Dry material

Quantity of cement = $\frac{1}{13} \times 154 = 11.84$ cft

∴ 1 bag = 1.25 cft

and $11.84 / 1.25$ ⇒ 9.47 bags = 10 bags

Quantity of Sand = $\frac{\text{Ratio of sand}}{\text{Sum of Ratio}}$ × Dry material

$= \frac{4}{13} \times 154 = 47.38$ cft

Quantity of aggregate = $\frac{\text{Ratio of coarse}}{\text{Sum of Dry}}$ × Dry material

$= \frac{8}{13} \times 154 = 94.76$ cft

Volume of Bricle = 75 cft

Taking 25% of Bricle work for motor

$\frac{25}{100} \times 75 = 18.75$ cft (wet volume)

For Dry volume we have
x Factor 1:27 with wet
volume of motor

Dry volume = 18.75 x 1.27

= 23.81 cft

Ratio = 1:4

Sum of Ratio = 5

Quantity of cement = $\frac{\text{ratio of cement} \times \text{Dry material}}{\text{Sum of Ratio}}$

= $\frac{1}{5} \times 23.81$

Quantity of cement = 4.76 cft.

Note:- 1 bag = 1.25 cft

4.76 / 1.25 = 3.8 bags or 4 bag

Quantity of sand = $\frac{\text{Ratio of sand} \times \text{Dry material}}{\text{Sum of ratio}}$

= $4/5 \times 23.81$

= 19 cft

To Find volume of motor:-

conside 20% of 30% mortar in brick work

Taking 25% of brick work
for mortor

$25/100 \times 75 =$ **18.75 cft wet volume**

Question 1
(part 2)

Solution:- Dry and wet volume of concrete:-

=> Dry volume of concrete is the combined volume cement Fine aggregate and coarse agg in Dry condition.

=> After mixing the resultant wet volume turn out to be approximately 60-70% of the dry volume.

For estimation purpose dry volume of concrete can be taken as 1.54 of it wet volume

for concrete 1 cum = 54%

Dry volume = wet volume + 54%.

$$= \left(1 + \frac{54}{100} \times 1\right)$$

$$= 1 + 0.54$$

Dry volume = 1.54

Dry and wet volume of Motar:-

When water is added to the volume of Dry mix of cement-sand reduced it happen due to presence of air void in sand particle.

for estimation purpose dry volume of Motor can be taken 1.27 & 1.54 time of its wet volume.

For cement mortar = 1 cum

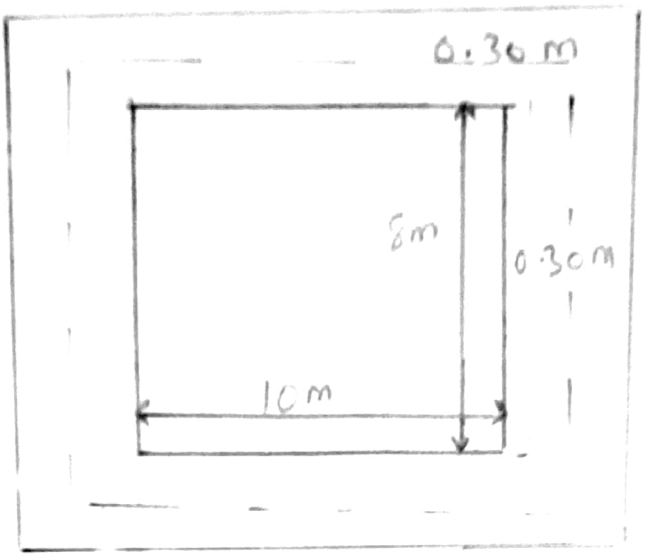
= 27% or 57%

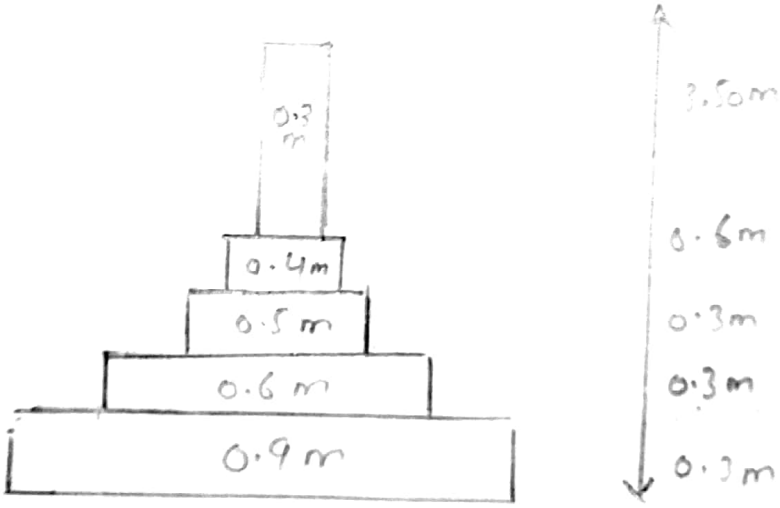
Dry volume = wet volum + 27 of wet Volume

$= 1 + \left(\frac{27}{100} + 1\right) = 1 + 0.27$

Dry volume $\boxed{= 1.27}$

Question No # 2





Solution :-

C.C length of long wall = $10(\frac{1}{2} \times 0.3) + (\frac{1}{2} \times 0.3)$

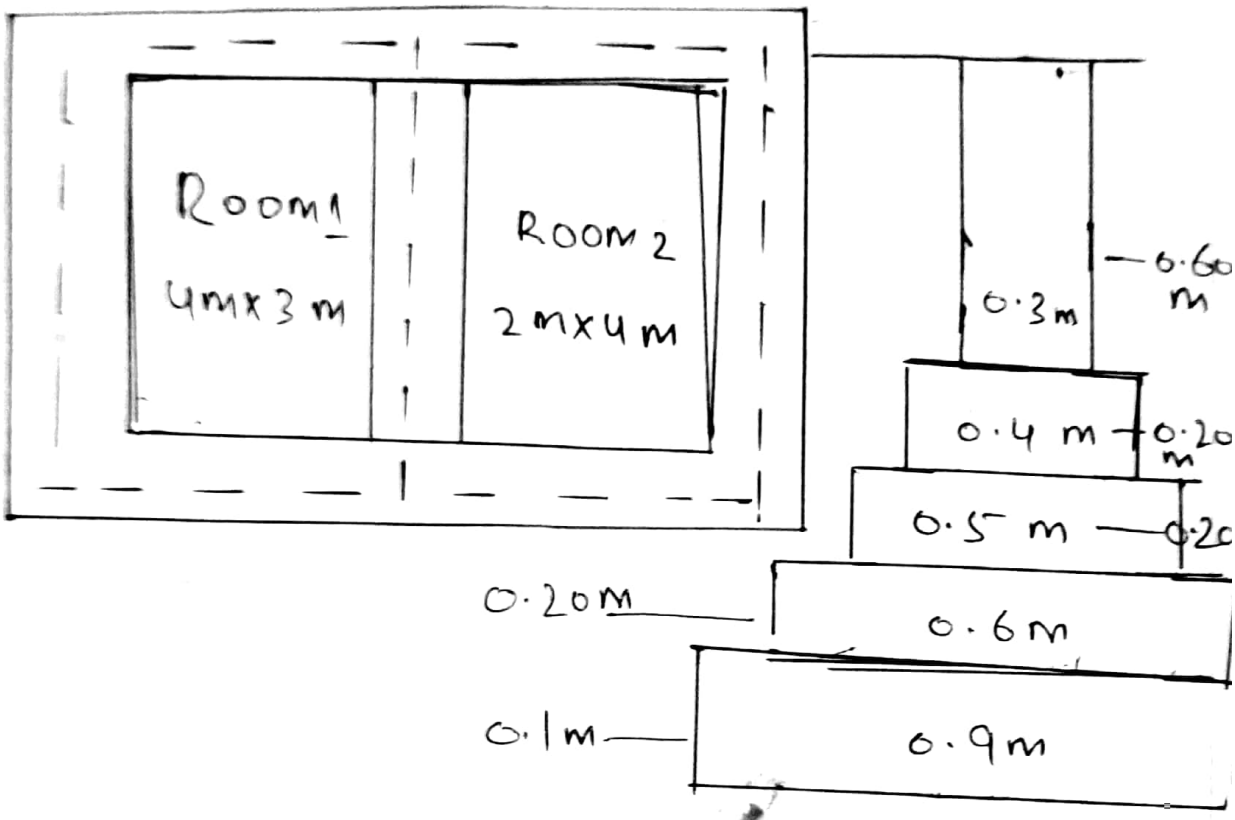
C.C of long wall = **10.3 m**

C.C length of short wall = $8 + (\frac{1}{2} \times 0.30) + (\frac{1}{2} \times 0.3)$

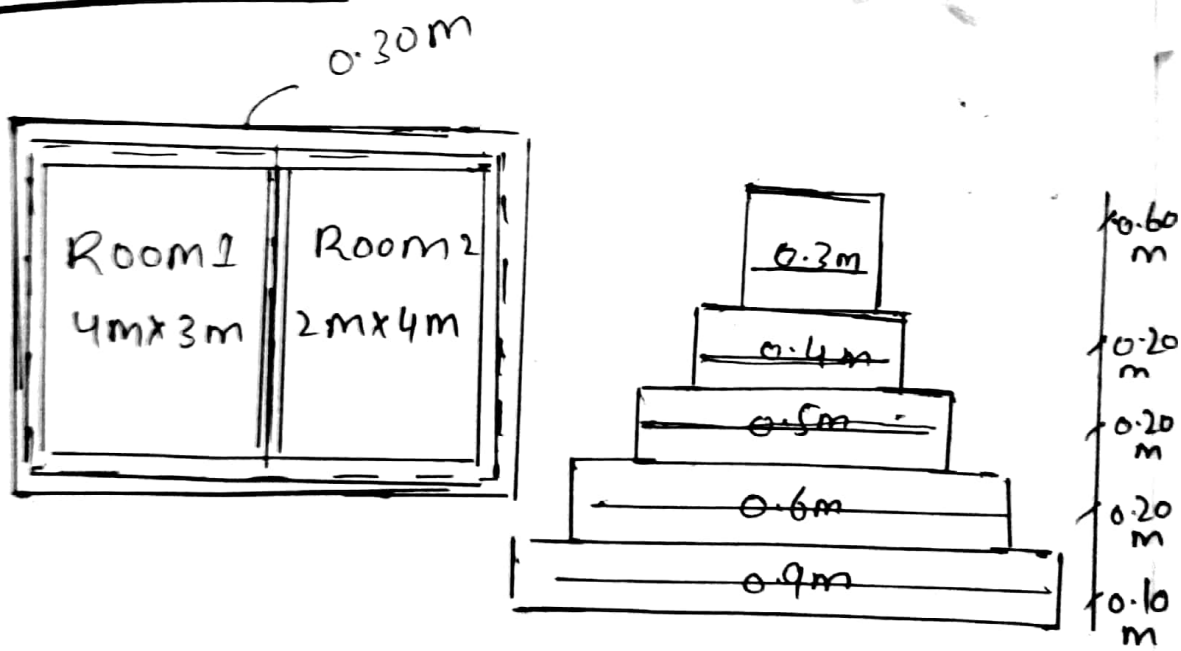
= **8.3 m**

Sr.NO	item Description	No	lensth	Breadth	Height	Quantity	Note
①	Exacvation in foundation						
	Long wall	2	11.20m	0.90m	0.90m	15.14	10.3+0.90 = 11.2 m
	Short wall	2	7.4m	0.90m	0.90m	11.98 / 30.12 cumt	8.3 − 0.90 = 7.4m
②	Concrete & Foundation						
	Long wall	2	11.20m	0.90m	0.30m	6.04	
	Short wall	2	7.4m	0.90m	0.30m	3.99 / 10.43 cumt	
③	Brick work in foundation and path						
	1st Footing	2	10.9m	0.60	0.30	3.92	L = 10.3+0.6 = 10.9m
	2nd Footing	2	10.80m	0.50	0.30	3.24	L = 10.3+0.50 = 10.8m
	Plint wall	2	10.70m	0.40	0.30	2.56	L = 10.3+0.40 = 10.7m
	Short wall						
	1st Footing	2	7.70	0.60	0.30	2.77	8.30 − 0.60 = 7.7m
	2nd Footing	2	7.80	0.50	0.30	2.34	8.30 − 0.50 = 7.8m
	Plinth wall	2	7.90	0.40	0.30	1.89 / 16.72 cumt	8.30 − 0.40 = 7.2m
④	Brick work in Superstructure						
	long wall	2	10.6m	0.30m	3.50m	22.26	10.30+0.30
	short wall	2	8m	0.30m	3.50m	16.80 / 39.06 cumt	8.30−0.30 = 8m

Question No # 3



Solution :-



S.No	Description	L	B	H	Q	Remarks
①	Excavation in Foundation	20.90	0.90	1.30	24.45	$L = C.L - (b/2) \times$ No T junction $= 20.90$
②	PCC in Foundation	20.90	0.90	1.10	1.88	
③	Brick in Foundation					
	step 1	21.20	0.60	0.20	2.544	$21.80 (B/2)^2$
	step 2	21.30	0.50	0.20	2.13	$L = C.L = (b/2) \times$ not-junction
	step 3	21.40	0.4	0.20	1.712	$L = C.L (b/2) \times$ not Junction
	step 4	21.50	0.3	0.60	3.87	$L = C.L (b/2) \times 2$

Total brick work quantity

= 10.256 cubic meter