

NAME

ADIL AYAZ

I.D

7889

Section

A

Subject

Quantity Surveying and
estimation.

Submitted To:

Sir Imtiaz Khan

Juva National University

Question no part i

①

ANSWER:

determine the quantity of various material to prepare 100 cft concrete if the ratio is (1:4:8), also calculate a brick work of 75 cft and ratio for that is given (1:4) Calculate No of bricks, Dry volume and Quantity of mortar?

Sol: 100 cft concrete if the ratio as (1:4:8)

Given data:

Quantity of wet material = 100 cft

Dry density of concrete = 1.54

Quantity of dry material = $\frac{\text{Quantity of wet material}}{\text{Dry density of concrete}}$
 $= 100 \times 1.54 = 154 \text{ cft}$

Quantity of Dry material = 154 cft

Ratio of dry material concrete = 1:4:8

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$$\text{Sum of Ratio} = 1 + 4 + 8 = \boxed{13}$$

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

$$= \frac{1}{13} \times 154$$

$$\text{Quantity of Cement} = 11.78 \text{ cft}$$

$$\text{one bag Cement} = 1.25 \text{ cft}$$

$$\text{Now } 11.78 / 1.25 = 9.42 \text{ bags}$$

So 10 bags required a Cement

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

$$= \frac{4}{13} \times 154 = 47.12 \text{ cft}$$

$$\text{Quantity of Coarse Aggregate} = \frac{\text{Ratio of Coarse aggregate}}{\text{Sum of Ratio}} \times \text{Dry material}$$

$$\text{Quantity of Coarse Aggregate} = \frac{8}{13} \times 154 = 94.24 \text{ cft}$$

$$\text{Cement bags} = 10$$

$$\text{Sand} = 47.12 \text{ cft}$$

$$\text{Quantity of Coarse Aggregate} = 94.24 \text{ cft}$$

③

Brick work of 75 cft and ratio
for that is given 1:4

Solution

Volume of brick work = 75 cft

To Find volume of ~~brick~~ ^{mortar}

Taking 25% of brick work for
mortar;

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

For dry volume we have multiply factor
1.27 wet volume

$$\text{Dry volume} = \text{wet volume} \times 1.27 \\ = 18.75 \times 1.27 = 23.81 \text{ cft}$$

$$\text{Dry volume} = 23.81 \text{ cft}$$

for a Cement we have quantity of
$$\text{Cement} = \frac{\text{Ratio of Cement}}{\text{Sum of Ratio}} \times \text{Dry volume}$$

$$\text{Ratio} = 1:4$$

$$\text{Sum of Ratio} = 5 \Rightarrow \frac{1}{5} \times 23.81$$

(4)

Quantity of Cement = 4.76 cft

$$1 \text{ bag} = 1.25 \rightarrow \frac{4.76}{1.25} = 3.8 \text{ bags}$$

Say 4 bags of Cement

for A Sand we have

$$\text{Quantity of Sand} = \frac{\text{Ratio of Sand}}{\text{Sum of Ratio}} \times \text{Dry volume}$$

$$\text{find no of brick} = \frac{4}{15} \times 23.81$$

$$1 \text{ Cubic brick} = 13.5 \text{ brick}$$

$$\text{In } 75 \text{ Cubic feet } \text{brick} \text{ there are } 112.5 \text{ bricks.}$$

(5)

Question NO 1

part ii

ANSWER:-

Dry volume:

Dry volume means volume of ingredient of concrete like cement, sand, and aggregate in mix dry condition before adding water.

Wet volume:

Wet volume means volume of ingredient of concrete like cement, sand and aggregate in wet mix after adding water.

1.54 is a factor that help us to convert the wet volume of concrete into dry volume

so that we can calculate the member of material in dry condition.

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Construct

Estimation in a helpful in a quantity surveying largely deals with managing and controlling various aspect of construction It gives an understanding of the technical element of construction over the life cycle of a facility or building a necessary project controls fool to achieve the volume and best quantity within the Client specification.

For the estimation ~~per~~ purpose dry volume of mortar can be taken as 1.27 or 1.30 times of its wet volume.

Question No 2

7

ANSWER

Sol:

①	Excavation in foundation	NO	Length	Breadth	height	quantity	note
	long wall	2	11.20m	0.90m	0.90m	18.14	$10.3 + 0.90 = 11.2\text{m}$
	short wall	2	7.4m	0.90m	0.90m	11.98	$8.3 - 0.90 = 7.4\text{m}$
						30.12cut	
②	concrete and foundation						
	long wall	2	11.20m	0.90m	0.30m	6.04	
	short wall	2	7.4m	0.90m	0.30m	3.99	
						10.03cut	
③	Brick work in foundation and path						
	1st Footing	2	10.9m	0.60	0.30	3.92	$L = 10.3 + 0.6 = 10.9\text{m}$
	2nd Footing	2	10.80m	0.50	0.30	3.24	$L = 10.3 + 0.50 = 10.8\text{m}$
	plinth wall	2	10.70m	0.40	0.30	2.56	$L = 10.3 + 0.40 = 10.7\text{m}$
	short wall					2.77	$8.30 - 0.60 = 7.7\text{m}$
	1st Footing	2	7.70	0.60	0.30	2.34	$8.30 - 0.50 = 7.8\text{m}$
	2nd Footing	2	7.80	0.50	0.30	1.89	$8.30 - 0.40 = 7.9\text{m}$
	plinth wall	2	7.90	0.40		16.72	
						Cut	
④	Brick work is super structure						
	long wall	2	10.6m	0.30m	2.50m	22.26	$10.30 + 0.30$
	short wall	2	8m	0.30m	3.50m	16.80	$8.30 - 0.30 = 8\text{m}$
						39.06	
						Cut	

Question Nos

8

ANSWER:

$$\text{Center Line} = \sum L + \sum W$$

first we find horizontal

$$H = 0.15 + 3 + 0.30 + 2 + 0.15 = 5.6$$

$$= 5.6 \times 2 = 11.2$$

$$V = 0.15 + 4 + 0.15 = 4.3$$

$$4.3 \times 3 = 12.9$$

$$\text{Center Line} = 11.2 + 12.9$$

$$C.L = 24.8$$

Description	NO	L	W	H	Q
1) Excavation in foundation length = $C.L - \frac{1}{2} \times \text{NO of junction}$ $24.8 - 0.9 \times \frac{2}{2}$ $= 23.9$	1	23.9	0.9	1.3	$26.1 m^3$
2) P.CC in found length = $24.8 - \frac{0.9}{2} \times 2$ $= 23.9$	1	23.9	0.9	0.10	$2.151 m^3$
3) Brick masonry in found $24.8 - \frac{0.6}{2} \times 2$ $= 24.2$	1	24.2	0.6	0.2	$2.904 m^3$

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Step 2:

$$L = 24.8 - \frac{0.5}{2} \times 2$$

$$= 24.3$$

Step 3:

$$L = 24.8 - \frac{0.4}{2} \times 2$$

$$= 24.4$$

Step 4:

upto Ground level

$$\text{length} = 24.8 - \frac{0.3}{2} \times 2$$

$$= 24.5$$

No	L	W	H	Q
2	24.3	0.5	0.2	2.43 m ³
2	24.4	0.4	0.2	1.952 m ³
1	24.5	0.3	0.6	4.41 m ³

THE

END