

Name

WAJEEHUDDIN

ID

7921

Subject

Quantity Survey
and Estimation

Date

24 Aug 2020

Q no 1

ANSWER

100 ft³ of concrete in the
Ratio (1:4:8)

Step# 1

Quantity of wet material
= 100 ft³

Dry density of concrete = 1.54

Step# 2

Quantity of Dry Material
= $\frac{\text{Quantity of wet material}}{\text{Dry density of concrete}}$

2

$$= 100 \times 1.54 = 154 \text{ cf}$$

Quantity of dry material = 154 cf

Step # 3

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

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

$$= \frac{1}{3} \times 154$$
$$\text{Quantity of cement} = 11.78 \text{ cf}$$

and

$$\text{one bag cement} = 1.25 \text{ cf}$$

now

$$\frac{11.78}{1.25} = 9.42 \text{ bags}$$

~~one bag cement = 1.25 cf~~

So

10 bags required cement

Quantity of Sand.

3

$$\frac{\text{Ratio of sand}}{\text{Sum of Ratio}} \times \text{Dry material} = \frac{4}{13} \times 154 = \boxed{47.12 \text{ cft}}$$

Quantity of coarse Aggregate

$$\frac{\text{Ratio of coarse aggregate}}{\text{Sum of ratio}} \times \text{Dry material}$$

$$\frac{18}{13} \cdot 154 = 94.24 \text{ cft}$$

Cement bags = 10

Sand = 47.12 cft

Quantity of coarse aggregate = 94.24 cft.

4

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

Solution

volume of Brick work =
75 cft

To find p volume of

Taking 25% of Brickwork
for material

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

For Dry volume we have
multiply factor 1.27 with
wet volume

$$\begin{aligned} \text{Dry volume} &= \text{wet volume} \times 1.27 \\ &= 18.75 \times 1.27 = 23.81 \text{ cft} \end{aligned}$$

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

5
for a cement we have
Quantity of cement =

$$\frac{\text{Ratio of cement}}{\text{Sum of Ratio}} \times \text{Dry Volume}$$

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

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

$$\text{Quantity of cement} = 4.76 \text{ cft}$$

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

for sand we have quantity
of sand $\frac{\text{Ratio of sand}}{\text{Sum of Ratio}} \times \text{Dry material}$

$$= \frac{4}{5} \times 23.81$$

QNO 1 part 2

Estimation in the help of
in a construction project

Quantity survey largely deals with managing and controlling various aspects of construction. It gives an ~~understand~~ understanding of a technical element of construction over the life cycle of a facility or building a necessary project controls tool to achieve the value and best quality within the client specification.

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

7
For concrete $1\text{m}^3 = 54\%$.
Dry volume = wet volume + 54%
of wet volume

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

$$1 + 0.54$$

$$\text{Dry volume} = \underline{\underline{1.54}}$$

For Cement mortar 1m^3

$$27\% \text{ or } 54\%$$

Dry volume = wet volume + 27%
wet volume

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

$$\text{Dry volume} = \underline{\underline{1.27}}$$

Q NO 2

No	Item	No	L	B	H/D	Quantity	Note
1	Excavation of foundation						
	Long wall	2	11.20 m	0.90 m	0.90 m	18.14 m ²	$10.30 + 0.90 = 11.20 m$
	Short wall	2	7.4 m	0.90 m	0.90 m	11.98 m ²	$8.30 - 0.90 = 7.4 m$
						30.12 m ²	
2	Cement in foundation						
	Long wall	2	11.20 m	0.90 m	0.30 m	6.04 m ³	
	Short wall	2	7.4 m	0.90 m	0.30 m	3.99 m ³	
					10.03 m ³		
3	Brick work in foundation and plinth						
	Long Wall						
	1st footing	2	10.80 m	0.60 m	0.30 m	3.92 m ²	$L = 10.30 + 0.06 = 10.8 m$
	2nd footing	2	10.80 m	0.50 m	0.30 m	3.24 m ²	$L = 10.30 + 0.50 = 10.8 m$
	Plinth	2	10.70 m	0.40 m	0.30 m	2.56 m ²	$L = 10.30 + 0.04 = 10.7 m$

Item	No	L	B	H/D	Quantity	Note
Start wall						
1st footing	2	7.70	0.60	0.30	2.77 m ³	L = 8.30 - 0.60 = 7.70m
2nd footing	2	7.80	0.50	0.30	2.34 m ³	L = 8.30 - 0.50 = 7.80 m
Plinth wall	2	7.90	0.40	0.30	1.89 m ³	L = 8.30 - 0.40 = 7.90m
					<u>16.72m³</u>	
Brick work						
Long wall	2	10.60 m	0.30 m	3.50 m	22.26 m ³	10.30 + 0.30 = 10.60m
Short wall	2	8m	0.30 m	3.50 m	16.80 m ³	8.30 - 0.30 = 8m
					<u>39.06m³</u>	

Q no 3

Center line = $\Sigma H + \Sigma V$

First we find Horizontal

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

$$= 5.6 \times 2 = 11.2$$

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

$$C.L = 11.2 + 12.9 = 24.8$$

Description	NO	L	W	H	Q
Excavation in foundation	1	23.9	0.9	1.3	26.1 m ²
$\text{length} = C.L - \frac{W}{2} \times \text{NO of junction}$ $24.8 - \frac{0.9}{2} \times 2$ $= 23.9$					
(2) p.c.c in foundation	1	23.9	0.9	0.10	2.15 m ²
$\text{length} = 24.8 - \frac{0.9}{2} \times 2$ $= 23.9$					

Brick work in foundation

$$\text{Step \# 1} = 24.8 - \frac{0.6}{2} \times 2$$

$$= 24.2$$

NO	L	W	H	Q
1	24.2	0.6	0.2	2.9 m ³

2.9
m³

Step # 2

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

$$= 24.3$$

1	24.3	0.5	0.2	2.5 m ³
---	------	-----	-----	--------------------

2.5
m³

Step # 3

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

$$= 24.4$$

1	24.4	0.4	0.2	2.95 m ³
---	------	-----	-----	---------------------

2.95
m³

Step # 4

upto Ground level

level

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

$$= 24.5$$

1	24.5	0.3	0.6	4.41 m ³
---	------	-----	-----	---------------------

4.41
m³