

→ 7986

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→ Quantity & Estimation

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→ Civil Dept.

Question #1 (i): →

①

Given Data: →

Step #1: → Quantity of wet material = 100 cft

(2) Dry density of concrete = 1.54.

Step #2: →

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

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

$$\text{Quantity of dry material} = 154 \text{ cft}$$

Step #3: →

Ratio of Concrete 1:4:8

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

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

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

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

or
one bag cement = 1.25 cft

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

(P-T-O) ⇒

So

10 bags required a cement

(2)

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

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

~~Quantity of coarse aggregate = Ratio of coarse aggregate / sum of ratio~~

$$\text{Quantity of coarse aggregate} = \frac{\text{Ratio of coarse aggregate}}{\text{sum of Ratio}} \times \text{Dry material}$$

$$\text{Quantity of coarse aggregate} = \frac{8}{13} \times 154 = 94.24 \text{ cft}$$

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

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

$$\text{Quantity of coarse aggregate} = 94.24 \text{ cft}$$

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

Solution: ⇒ Volume of brick work = 75 cft

To find volume of mortar:

Taking 25% of brick work for mortar:

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

(P-T-O) ⇒

For dry volume we have multiply factor 1.27 with wet volume. ~~Drop volume~~ (3)

$$\text{Dry volume} = \text{wet volume} \times 1.27$$

$$= 18.75 \times 1.27$$

$$= 23.81 \text{ cft.}$$

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

For a cement we have.

$$\text{Quantity of cement} = \frac{\text{Ratio of cement}}{\text{sum of ratio}} \times \text{Dry volume}$$

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

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

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

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

So 4 bags of cement for a sand we have.

$$\text{Quantity of sand} = \frac{\text{Ratio of sand}}{\text{sum of ratio}} \times \text{Dry volume}$$

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

Quantity of Sand = 19 cft (4)

We have a brick work of 75 cft
and ratio of that is given (1:4)

Volume of brick work = 75 cft

1 Cubic feet = 13.5 No of brick

No of brick = Volume of brick \times No of brick

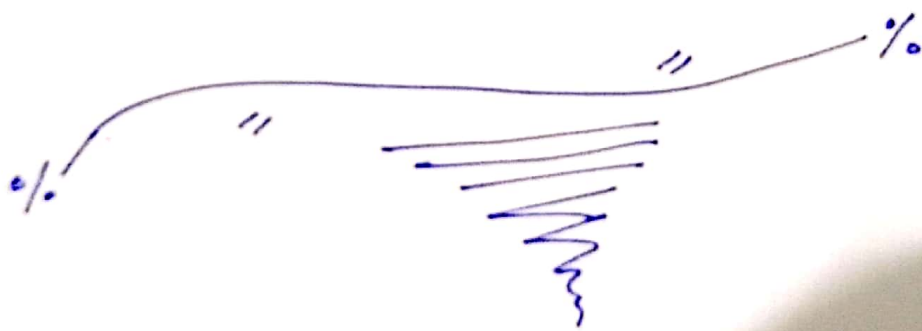
$$= 75 \times 13.5$$

~~1012.5~~

$$= 1012.5$$

1 cft = 13.5 No's of bricks

Required brick of a work = 1013



Question # 1 (ii) :->

5

Answer :->

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

Wet volume :->

wet volume mean 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 number of material in dry condition.

Estimation is a help ful in a construction quantity survey largely deals with managing controlling various aspect of construction.

It gives an understanding of the technical element of construction over the life cycle of facility or building, a necessary project controls (P-T-O) =>

Project controls tool to achieve the value and best quantity within the client's specification.

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



Q No # 2 :->

Answer :->

$$(p - \bar{1} - 0) \Rightarrow$$

S.No	Item Description	No	Length	Breath	Height	Quantity	Note
①	Excavation in Foundation						
	Long Wall	2	11.20m	0.90m	0.90m	18.14	$10.3 + 0.90 = 11.2m$
	Short Wall	2	7.4m	0.90m	0.90m	11.98	$8.3 - 0.90 = 7.4m$
						<u>30.12</u> (cume)	
②	concrete of Foundation						
	Long Wall	2	11.20m	0.90m	0.30m	6.04	
	Short Wall	2	7.4m	0.90m	0.30m	3.99	
						<u>10.03</u> cum	
③	Brick work in terrace and path						
	1st Footing	2	10.90m	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	2	7.70	0.60	0.30	2.77	$8.30 - 0.60 = 7.7m$
	1st Footing	2	7.80	0.50	0.30	2.34	$8.30 - 0.50 = 7.8m$
	2nd Footing	2	7.90	0.40	0.30	1.89	$8.30 - 0.40 = 7.9m$
	Plint wall					<u>16.72</u> CUM	
④	Brick work in super structure						
	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	$8.30 - 0.30 = 8m$
						<u>39.06</u> CUM	

Q No # 3:->

9

Answer:->

→ Center to center of long wall
 $= 10 + (\frac{1}{2} \times 0.30) + (\frac{1}{2} \times 0.30)$
 $= 10.95m$

→ Center to center of short wall
 $= 8 + (\frac{1}{2} \times 0.30) + (\frac{1}{2} \times 0.30)$
 $= 8.3m$

After finding out the length of the long wall & short wall, now found the quantity of the various items which are used in construction.

Different of measurement and calculation of Quantities.

S.No	Items Description	No.	L	Breath	H/O	Quantity
①	Excavation of Foundation	2	11.85m	0.90m	0.90m	19.197
	Long wall Short wall	2	7.4m	0.9m	0.90m	11.988
Total = 31.185 cumt						
②	Concrete Foundation	2	11.85	0.90m	0.30	6.399
	Long wall Short wall	2	7.4	0.90m	0.30	3.996
Total = 10.395						

3

Brick work
Foundation
Plinth
Long wall
Short wall
Plinth wall

2
2
2
2

11.55m
11.45m
11.35m

0.60
0.50
0.40

0.30m
0.30m
0.3 m

4.158
4.435
5.448

4

Short wall
First footing
2nd footing
Plinth wall

2
2
2

7.40
7.30
7.20

0.60m
0.30m
0.60m

0.30
0.30
0.30

2.664
2.19
3.456

Total = 21.357.

5

Brick wall
Long wall
Short wall

2
2

11.95m
8m

0.30m
0.30m

3.50
3.50

23.625
16.8

Total = 40.425.