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SCHEME OF VALUATION

REVISION : 2015

COURSE CODE : 4013

COURSE TITLE : QUANTITY SURVEYING-I

Q. NO	SCORING INDICATORS	SPLIT UP	TOTAL
I	PART A		
1.	Contingencies : Expenses of miscellaneous nature which cannot be predicted	2	2
2.	Unit of Measurement i Painting - m^2 ii Pointing - m^2	2x1	2
3.	Lead : Average horizontal distance between centre of excavation and centre of deposition.		
4.	i Measurement is based on finished work. ii If same work is done under different condition it must be measured separately iii For massive work volume is measured for narrow work area is measured and for linear work length is measured	2x1	2.
5.	It is the process of calculating the rate at 1 unit of work including cost of materials, labour and all other costs	2	2.
II	PART B		
	Revised Estimate is prepared when : * Original sanctioned estimate is exceeded by 5% * when AS amount is exceeded by 10%		

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* When there is material deviation.

Supplementary Estimate is prepared when additional works become necessary for the completion of the project for which original Estimate was prepared

2. Quantity Survey is calculation of Quantities of works involved in a project.

Duties of Qty Surveyor

- i Preparing Estimate
- ii Preparing bills for payment
- iii Preparing revised Estimate
- iv Preparing part bills for partial completion of works
- v Tendering of works

3. Brick Work

$$L = 15\text{m}$$

$$B = 0.2\text{m}$$

$$H = 1.8\text{m}$$

$$Q = L \times B \times H = 15 \times 0.2 \times 1.8 = \underline{\underline{5.4\text{m}^3}}$$

Plastering

$$\text{Perimeter} = 1.8 + 0.2 + 1.8 = 3.8\text{m}$$

$$L = 15\text{m}$$

$$Q = \text{Perimeter} \times L = 3.8 \times 15 = \underline{\underline{57\text{m}^2}}$$

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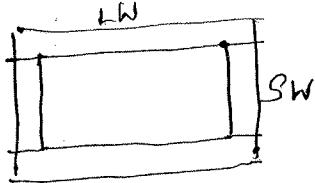
4 Long wall shoot wall method

Walls are divided into long walls and shoot walls and quantities are calculated separately for long walls and shoot walls.

$$\text{Length of long wall} = \text{Centre line length} + 2 \times \frac{\text{Width}}{2}$$

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$$\text{Length of shoot wall} = \text{Centre line length} - 2 \times \frac{\text{Width}}{2}$$

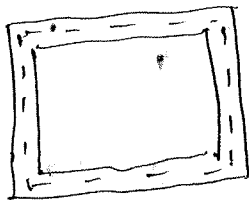


Centre line Method

Total centre line length of building is obtained by adding centre line length of all walls. Correction for T junction is applied.

$$\text{Corrected centre line length} = \text{Total centre line length} - \text{No of Tjn} \times \frac{\text{Width}}{2}$$

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- 5 i. specifications
- ii. Quantity and cost of material
- iii. cost of labour
- iv. Location of site and distance from source of material
- v. Over head charges
- vi. Profit of contractor

6x1

6

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6 Total volume of dry material = 1.52 m^3 1.5

Volume of cement = $\frac{1}{13} \times 1.52 = 0.077 \text{ m}^3$ 1.5

» of Sand = $\frac{4}{13} \times 1.52 = 0.468 \text{ m}^3$ 1.5

» of coarse aggregate = $\frac{8}{13} \times 1.52 = 0.935 \text{ m}^3$ 1.5

7. length of long walls = $3 + 0.15 + 0.15 = 3.3 \text{ m}$ 1

» short walls = 2 m 1

$B = 0.15$ $H = 2 \text{ m}$

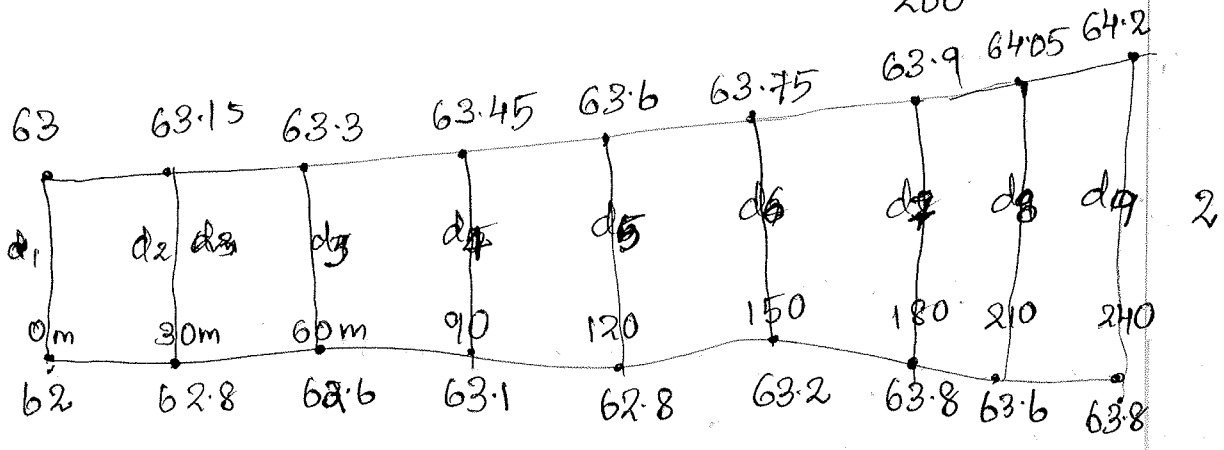
$Q = (3.3 \times 0.15 \times 2 \times 2) + (2 \times 0.15 \times 2 \times 2)$ 4
 $= 4.17 \text{ m}^3$

PART C

III $B = 10 \text{ m}$ Gradient = 1 in 200

$n = 2$ Rise in ht for 30 m distance

$L = 30 \text{ m}$ $= 30 \times \frac{1}{200} = 0.15 \text{ m}$



$d_1 = 1 \text{ m}$

$A_1 = Bd_1 + nd_1^2$
 $= 10 \times 1 + 2 \times 1^2 = 12 \text{ m}^2$

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Qa

$$\text{Building Cost} = \text{PA rate} \times \text{PA}$$

$$= 2500 \times 2500 = \text{Rs } 6250000 \quad 2$$

$$\text{Electrification} = 6\% \times 6250000$$

$$= \text{Rs } 375000 \quad 1$$

$$\text{Water Supply + Sanitary} = 5\% \times 6250000$$

$$= \text{Rs } 312500 \quad 1$$

$$\text{Architectural treatment} = 4\% \times 6250000$$

$$= 250000 \quad 1$$

$$\text{Total Cost} = 7187500 \quad 0.5$$

$$\text{Unforeseen items} = 2\% \times 7187500 = 143750 \quad 1$$

$$\text{Supervision} = 2\% \times 7187500 = 143750 \quad 1$$

$$\text{Grand Total} = \underline{\underline{\text{Rs } 74,75,000}} \quad 0.5$$

b.

$$A_1 = 500 \quad A_4 = 1780 \quad A_7 = 2900$$

$$A_2 = 900 \quad A_5 = 2050 \quad 1$$

$$A_3 = 1300 \quad A_6 = 2250 \quad 1$$

$$\text{Contour interval } L = 2\text{m} \quad 1$$

Volume of reservoir

$$= L \times \left[\frac{(A_1 + A_7)}{2} + A_2 + A_3 + A_4 + A_5 + A_6 \right]$$

$$= 2 \times \left[\left(\frac{500 + 2900}{2} \right) + 900 + 1300 + 1780 + 2050 + 2250 \right] \quad 5$$

$$= 2 \times [1700 + 900 + 1300 + 1780 + 2050 + 2250]$$

$$= \underline{\underline{19960 \text{ m}^3}}$$

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$$d_2 = 0.35$$

$$A_2 = 10 \times 0.35 + 2 \times 0.35^2 \\ = 3.745 \text{ m}^2$$

$$d_3 = 0.7$$

$$A_3 = 10 \times 0.7 + 2 \times 0.7^2 \\ = 7.98 \text{ m}^2$$

$$d_4 = 0.35$$

$$A_4 = 3.745 \text{ m}^2$$

$$d_5 = 0.8$$

$$A_5 = 10 \times 0.8 + 2 \times 0.8^2 \\ = 9.28 \text{ m}^2$$

$$d_6 = 0.55$$

$$A_6 = 10 \times 0.55 + 2 \times 0.55^2 \\ = 6.105 \text{ m}^2$$

$$d_7 = 0.1$$

$$A_7 = 10 \times 0.1 + 2 \times 0.1^2 \\ = 1.02 \text{ m}^2$$

$$d_8 = 0.45$$

$$A_8 = 10 \times 0.45 + 2 \times 0.45^2 \\ = 4.905 \text{ m}^2$$

$$d_9 = 0.4$$

$$A_9 = 10 \times 0.4 + 2 \times 0.4^2 \\ = 4.32 \text{ m}^2$$

$$Q_2 = L \left(\left(\frac{A_1 + A_n}{2} \right) + A_2 + A_3 + A_4 + \dots + A_{n-1} \right)$$

$$= 30 \left(\left(\frac{12 + 4.32}{2} \right) + 3.745 + 7.98 + 3.745 + \right. \\ \left. 9.28 + 6.105 + 1.02 + 4.905 \right)$$

$$= 30 \left(8.16 + 3.745 + 7.98 + 3.745 + 9.28 \right. \\ \left. + 6.105 + 1.02 + 4.905 \right)$$

$$= \underline{\underline{1103.4 \text{ m}^3}} \quad \underline{\underline{1348.2 \text{ m}^3}}$$

9x1 15
=9

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Va Centre line length of the building
 $= 3 \times (0.1 + 3.5 + 0.2 + 3.5 + 0.1) + 3(0.1 + 4 + 0.2 + 3.5 + 0.1)$
 $+ 1 \times (0.1 + 2 + 0.1)$ 2
 $= (3 \times 7.4) + (3 \times 7.9) + 2.2 = \underline{48.1 m}$

No of T junction = 8

Corrected c/L of PCC for foundation
 $= 48.1 - 8 \times \frac{0.8}{2}$ 2
 $= \underline{44.9 m}$

S/No	Item	No	L	B	H	Q
1	PCC for foundn	1	44.9	0.8	0.1	$1 \times$ $44.9 \times$ $0.8 \times$ 0.1 <hr/> $3.59 m^3$

b. Centre line length of the building
 $= 3 \times 7.4 + 3 \times 7.9 + 2.2 = 48.1$ 2

No of T jn = 8

Corrected c/L of walls = $48.1 - \frac{8 \times 0.2}{2}$ 2
 $= 47.3 m$

S/No	Item	No	L	B	H	Q
1	Brickwork in Super str	1	47.3	0.2	3	$1 \times 47.3 \times 0.2$ $\times 3$ $= 28.38$

Deductions

D	2	1	0.2	2.1	$2 \times 1 \times 0.2 \times 2.1$ $= 0.84$
D1	2	0.9	0.2	2.1	$2 \times 0.9 \times 0.2 \times 2.1$ $= 0.76$
W	6	1.5	0.2	2.1	$6 \times 1.5 \times 0.2 \times 2.1$ $= 3.78$
V	1	1	0.2	0.5	$1 \times 1 \times 0.2 \times 0.5$ $= 0.1$
D2	2	0.7	0.2	2.1	$2 \times 0.7 \times 0.2 \times 2.1$ $= 0.58$

8

Total

23.42 m³

Q1 a. calculate c/c length as in Va or Vb

2

$$\begin{aligned} \text{No of T Jn} &= 8 \\ \text{connected c/c length} &= 48.1 - \frac{8 \times 0.8}{2} \\ &= \underline{44.9 \text{ m}} \end{aligned}$$

2

7

$L = 44.9 \text{ m}$

$B = 0.8$

$H = 0.6 + 0.1 = 0.7 \text{ m}$

$Q = L \times B \times H = 44.9 \times 0.8 \times 0.7 = \underline{25.14 \text{ m}^3}$ 3

Q1 b

RCC for Roof slab

$$\begin{aligned} L &= 30 + 20 + 400 + 20 + 350 + 20 + 30 = 870 \text{ cm} \\ &= \underline{8.7 \text{ m}} \end{aligned}$$

$$\begin{aligned} B &= 30 + 20 + 350 + 20 + 350 + 20 + 30 = 820 \text{ cm} \\ &= \underline{8.2 \text{ m}} \end{aligned}$$

4

$H = 0.12$

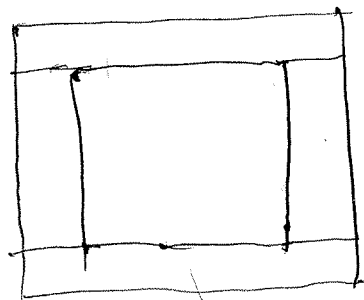
$$\begin{aligned} Q &= L \times B \times H = 8.7 \times 8.2 \times 0.12 \\ &= \underline{8.56 \text{ m}^3} \end{aligned}$$

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RCC for Sunshade

length of long wall

$$= 60 + 20 + 400 + 20 + 350 + 20 + 60 = 9.3 \text{ m}$$



length of short wall

$$= 20 + 350 + 20 + 350 + 20 = 7.60 \text{ m}$$

$$B = 0.6 \text{ m} \quad H = 0.1 \text{ m}$$

$$Q = (2 \times 9.3 \times 0.6 \times 0.1) + (2 \times 7.6 \times 0.6 \times 0.1) = \underline{2.03 \text{ m}^3}$$

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VII a Flooring using vitrified tiles

Sl no	Item	NO	L	B	H	Q
1.	Kitchen	1	4	3.5		14
2	Bedroom	1	4	3.5		14
3	W/A	1	1.8	2.0		3.6
4	Toilet	1	1.5	2.0		3.0
5	Hall	1	3.5	5.0		17.5
	Total					<u>52.1m²</u>

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Q.5

VII b Painting of walls inside and outside.

Sl no	Item	NO	L	B	H	Q
1	Painting of walls <u>inside</u>					
1.	Bedroom	1	4+4+3.5+3.5		3	45
			= 15			
2.	Kitchen	1	15		3	45
3	Hall	1	5+5+3.5+3.5		3	51
			= 17			
4	W/A	1	1.8+1.8+2+2		3	22.8
			= 7.6			
5	Toilet	1	1.5+1.5+2+2		3	21
			= 7			
	Outside	1	(4+3.5+2+2+2) × 2		3	94.2
			+ (3.5+3.5+2+2+2) × 2			
			= 31.4			
	Deductions					
1.	D	2	1		2.1	4.2
2.	D ₁	2	0.9		2.1	3.78

3

2

2

			10			
D ₂	2	0.7		2.1	2.94	
W	6	1.5		1.5	13.5	
V	1	1		0.5	0.5	
Total					<u>254.08m²</u>	1

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W/C a

Plastering of ceiling.

S no	Item	No	L	B	H	Q
1	Plastering of ceiling					
	Ceiling area	1	8.7	8.2		71.34
	<u>Deduction</u>					
	wall area	1	47.3	0.2		9.44
	e/l at wall taken from [Q-V _b]					<u>61.9</u>
						4
						2
						1

7.

W/C b

Wood work for doors & window frames.

S no	Item	No	L	B	H	Q
1	D					0.076
	$L = (2.1 \times 2) + (1 - (2 \times 0.075))$	2	5.05	0.075	0.1	0.038
	= 5.05m					
2	D ₁					
	$L = (2.1 \times 2) + (0.9 - (2 \times 0.075))$	2	4.95	0.075	0.1	0.074
	= <u>4.95</u>					
3	D ₂					
	$L = (2.1 \times 2) + (0.7 - (2 \times 0.075))$	2	4.75	0.075	0.1	0.071
	= 4.75					

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	NO	L	B	H	Q	
4. W						
$L = (1.5 \times 2) + (2 \times (1.5 - (2 \times 0.75)))$						
= 5.7	6	5.7	0.075	0.1	0.257	2

8

5. V						
$L = 1 \times 2 + (0.5 - (2 \times 0.75)) \times 2$						
= 2.7	1	2.7	0.075	0.1	0.02	

Total

0.498³
1

18a Purpose of rate Analysis.

1. To determine actual cost per unit of items
2. To work out economic use of materials
3. To plan the work with cost effective methods of construction
4. To calculate cost of extra items which are not available in the contract.
5. To revise schedule of rates to increase in the cost of material and labour
6. To work out the cost per unit of items for which data is not available in the data book.

Any
 4 x 1.5
~~4 x 1.5~~

6.

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Item	Qty	Rate	Arnt.	
<u>Material</u>			$500 \times \frac{12000}{1000}$	
Brick	500 no	RS 12000/1000 no	= 6000	
Day Sand	0.3 m ³	RS 2500/m ³	0.3 x 2500	3
			= 750	
Cement	75 kg	RS. 800/tonn = RS 8/kg	75 x 8	
			= 600	
<u>Labour.</u>				
Head Mason	0.5	RS 1200/ each/day	0.5 x 1200	
			= 600	
Mason	0.8	RS 1000/each day	0.8 x 1000	3
			= 800	
Mazdoor	1.5	RS 800/each day	1.5 x 800	
			= 1200	
Bhishti	0.2	RS 750/each/day	0.2 x 750	
			= 150	
Sindres	LS		500	1
Total			10600	
Contractors profit	10%		1060	1
G. Total			<u>RS 11660/m³</u>	1

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X	Item	Qty	Rate	Amount	
	<u>Material</u>				
	Rubble	1m ³	RS 2500/m ³	1 × 2500 = 2500	
	Day Sand	0.3m ³	RS 2500/m ³	0.3 × 2500 = 750	4
	Cement	72 kg	RS 8000/tonn = RS 8/kg	72 × 8 = 576	
	<u>Labour</u>				
	Mason	0.7	RS 1000/each day	0.7 × 1000 = 700	4
	Mazdoor	0.35	RS 800/each day	0.35 × 800 = 280	
	Bhistdi	0.7	RS 750/each/day	0.7 × 750 = 525	
	<u>Conveyance</u>				
	Rubble	1m ³	20 × 30 = RS 600/m ³	1 × 600 = RS 600	4
	Sand	0.3m ³	15 × 25 = RS 375/m ³	0.3 × 375 = 112.5	
	Cement	72 kg	10 × 30 = RS 300/tonn = RS 3/kg	72 × 3 = 216	
	Total			RS 6229.5	1
	Contractors Profit 10%			RS 622.95	1
	G-Total			<u>RS 6852.45/m³</u>	1

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