

**SCHEME OF VALUATION**

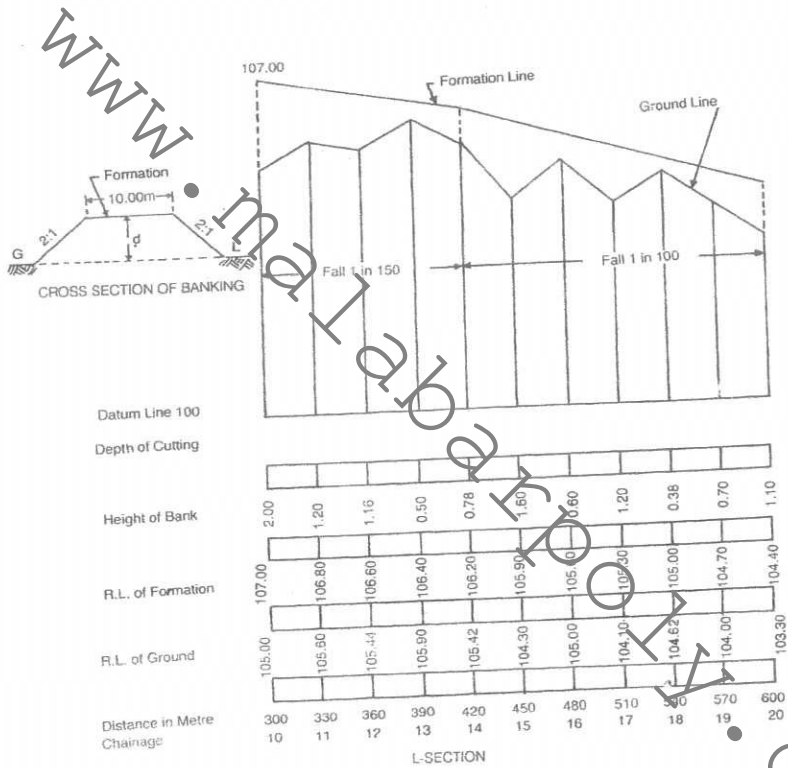
**(Scoring Indicators)**

REVISION : 2010		COURSE CODE: 3026		
QUANTITY SURVEYING-I				
Q.NO.	SCORING INDICATOR	SPLITUP SCORE	SUB TOTAL	TOTAL
I.	<b>PART - A</b>			
1.	During the construction of a project considerable number of skilled supervisors, work assistance, watch men etc., are employed on temporary basis. The salaries of these persons are drawn from the L.S. amount allotted towards the work charged establishment. That is, establishment which is charged directly to work. An L.S. amount of 1½ to 2% of the estimated cost is provided towards the work charged establishment.	2		2
2.	(i) m <sup>3</sup> , (ii) m <sup>3</sup> , (iii) m <sup>2</sup> and (iv) m <sup>3</sup>	2		2
3.	(i) Centre line method, (ii) in-to-in and out-to-out and (iii) crossing method.	2		2
4.	The basis of arriving at a correct and reasonable rate per unit work or supply, for a particular item following its specification and detailed survey of materials, labour, equipment etc. as required for the unit work and their prevailing rates may be called as an analysis of rate.	2		2
5.	The cost under item of work is calculated from the quantities already computed at workable rate, and the total cost is worked out in a prescribed form. A percentage of 3 to 5 % is added for contingencies, to allow for petty contingent expenditures, unforeseen item etc, A percentage of 1 ½ to 2% is also added to meet the expenditure of work charged establishment. The grand total thus obtained is the estimated cost of the work.	2		2
II	<b>PART - B</b>			
1.	<p><b>Revised estimate</b> is a detailed estimate and is required to be prepared under any one of the following circumstances.</p> <p>(i) When the original sanctioned estimate is exceeded or likely to exceed by more than 5 %</p> <p>(ii) When the expenditure on a work exceeds or likely to exceed the amount of administrative sanction by more than 10 %</p> <p>(iii) When there are material deviations from the original proposal, even though the cost may be met from the sanctioned amount.</p> <p>The revised estimate should be accompanied by a comparative statement showing the variations of each item of works, its quantity, rate and cost under original and revised, side by side, the</p>	3		6

	excess or saving and reason for variation.																																	
2	<p>The process of working out the cost or rate per unit of each item is called as Data. In preparation of Data, the quantities of materials and labor required for one unit of item are taken from Standard Data Book. In preparation of cost, the rates of materials and labor are obtained from current standard scheduled of rates.</p> <p>The rates per unit of various items of work, the rates of various materials to be used in the construction, and the wages of different categories of labour etc available for preparing estimate. The location of the work and its distance from the source of materials and the cost of transport should be known. These rates may be obtained from P.W.D. Schedule of Rate book or the rates may be worked out by the 'Analysis of Rate' method.</p>	3	3	6																														
3	<p><b>Details of measurements form</b></p> <table border="1"> <thead> <tr> <th>S.No</th> <th>Description of Item</th> <th>No</th> <th>Length (L) m</th> <th>Breadth (B) m</th> <th>Depth/Height (D/H)m</th> <th>Quantity</th> <th>Explanatory Notes</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><b>Abstract of Estimate Form</b></p> <table border="1"> <thead> <tr> <th>Item No.</th> <th>Description/Particulars</th> <th>Quantity</th> <th>Unit</th> <th>Rate</th> <th>Per (Unit)</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	S.No	Description of Item	No	Length (L) m	Breadth (B) m	Depth/Height (D/H)m	Quantity	Explanatory Notes									Item No.	Description/Particulars	Quantity	Unit	Rate	Per (Unit)	Amount								3	3	6
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4	<p>Quantity of consolidated material = <math>1 \times 1000 \times 4 \times 0.16 = 640 \text{ cu.m}</math>  Increase this amount by 50% when loose = <math>640 + 640 \times \frac{1}{2}</math>  = <b>960cu.m.</b></p>	3	3	6																														
5	<p>The estimates may be divided in to the following categories:-  (1) Preliminary or Approximate estimate. (2) Rough cost estimate based on plinth area. (3) Rough cost estimate based on cubic contents. (4) Detailed estimate. (5) Annual repair estimate. (6) Special repair estimate. (7) Revised estimate (8) Supplementary</p>	Any six	6	6																														

	estimate.		
6	<p>Inner radius, <math>r = \text{span}/2 = 2\text{m}/2 = 1\text{m}.</math></p> <p>Mean radius, <math>r_m = r + t/2 = 1 + 0.3/2 = 1.15\text{ m}.</math></p> <p>Length of mean arch, <math>l_m = 2\pi r_m / 2 = \pi r_m = \pi \times 1.15\text{ m}.</math></p> <p>Quantity, <math>Q = l_m \times w \times t = \pi \times 1.15 \times 0.6 \times 0.3 = 0.650\text{ cu.m}.</math></p>	2 2 2	6
7	<p>Span = <math>4500 + 300 + 300 + 450 + 450 = 6000\text{mm} = 6\text{m}.</math></p> <p>Rise = <math>1/3^{\text{rd}}</math> of span = <math>1/3 \times 6 = 2\text{m}.</math></p> <p>Length of hip rafter = <math>\sqrt{3^2 + 2^2} = \sqrt{13} = 3.61\text{ m}.</math></p> <p>Length of 4 hip rafters = <math>4 \times 3.61 = 14.44\text{ m}.</math></p>	2 2 2	6

III **PART - C**



15

Station or chainage	Length	H/D	Mean height or depth	Central area Bd	Side area sd2	Total sectional area Bd+sd2	L	Q= (Bd+sd2)L
m	m	m	m	m <sup>2</sup>	m <sup>2</sup>	m <sup>2</sup>	m	m <sup>3</sup>
10	300	2.00	-	-	-	-	-	-
11	330	1.20	1.60	16.00	5.12	21.12	30	633.60
12	360	1.16	1.18	11.80	2.78	14.58	30	437.40
13	390	0.50	0.83	8.30	1.38	9.68	30	290.40
14	420	0.78	0.64	6.40	0.82	7.22	30	216.60
15	450	1.60	1.19	11.90	2.83	14.73	30	441.90
16	480	0.60	1.10	11.00	2.42	13.42	30	402.60
17	510	1.20	0.90	9.00	1.62	10.62	30	318.60
18	540	0.38	0.79	7.90	1.25	9.15	30	274.50
19	570	0.70	0.54	5.40	0.58	5.98	30	179.40
20	600	1.10	0.90	9.00	1.62	10.62	30	318.60
<b>Total</b>								<b>3513.60</b>

IV (a)

$$\text{Quantity} = \frac{1}{6} (A_1 + A_2 + 4A_m)$$

$$\text{Or Quantity} = \left[ B \frac{(d_1 + d_2)}{2} + S \frac{(d_1^2 + d_2^2 + d_1 d_2)}{3} \right] L$$

$$A_1 = Bd_1 + sd_1^2 = 10 \times 1 + 2 \times 1^2 = 12 \text{ sq.m}$$

$$A_2 = Bd_2 + sd_2^2 = 10 \times 1.60 + 2 \times 1.60^2 = 21.12 \text{ sqm}$$

$$A_m = Bd_m + sd_m^2, \text{ where } d_m = \frac{d_1 + d_2}{2} = \frac{1.00 + 1.60}{2} = 1.30 \text{ m.}$$

$$= 10 \times 1.30 + 2 \times 1.30^2 = 16.38 \text{ sq.m}$$

$$\text{Quantity} = \frac{200}{6} (12 + 21.12 + 4 \times 16.38) = \frac{200}{6} \times 98.64$$

$$= 3288 \text{ cu m.}$$

3

3

3

9

(b) (i) lump sum

While preparing an estimate, it is not possible to work out in detail in case of petty items. Items other than civil engineering such items are called lump sum items or simply L.S. Items.

The following are some of L.S. Items in the estimate.

1. Water supply and sanitary arrangements.
2. Electrical installations like meter, motor, etc.,
3. Architectural features.

	<p>4. Contingencies and unforeseen items.</p> <p>In general, certain percentage on the cost of estimation is allotted for the above L.S. Items Even if sub estimates prepared or at the end of execution of work, the actual cost should not exceed the L.S. amounts provided in the main estimate.</p> <p>(ii) In an estimate a certain amount say 3% to 5% of estimated cost is provided to allow for the expenses for miscellaneous petty items which do not fall under any sub-head of items of works is called Contingencies.</p>	3			6																														
V	<b>MODULE - II</b>																																		
(a)	<table border="1"> <tr> <td>Contour in m</td> <td>101</td> <td>102</td> <td>103</td> <td>104</td> <td>105</td> <td>106</td> <td>107</td> </tr> <tr> <td>Area in m<sup>2</sup></td> <td>528</td> <td>910</td> <td>1500</td> <td>1750</td> <td>2100</td> <td>2800</td> <td>3100</td> </tr> <tr> <td>A<sub>0</sub></td> <td>A<sub>1</sub></td> <td>A<sub>2</sub></td> <td>A<sub>3</sub></td> <td>A<sub>4</sub></td> <td>A<sub>5</sub></td> <td>A<sub>6</sub></td> <td>A<sub>7</sub></td> </tr> </table> <p>Volume by Trapezoidal Formula method, V</p> $V = \frac{D}{2} [A_0 + A_n + 2(A_1 + A_2 + A_3 + \dots + A_{n-1})]$ $= \frac{1}{2} [528 + 3100 + 2(910 + 1500 + 1750 + 2100 + 2800)]$ $= 10,874 \text{ m}^3$	Contour in m	101	102	103	104	105	106	107	Area in m <sup>2</sup>	528	910	1500	1750	2100	2800	3100	A <sub>0</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	A <sub>5</sub>	A <sub>6</sub>	A <sub>7</sub>	3	3	3	9						
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(b)	<p><b>CENTRE LINE METHOD</b></p> <p>This method is suitable for walls of similar cross sections. Here the total Centre line length is multiplied by breadth and depth of respective item to get the total quantity at a time. When cross walls or partitions or verandah walls join with main all, the centre line length gets reduced by half of breadth for each junction. Such junction or joints are studied carefully while calculating total centreline length. The estimates prepared by this method are most accurate and quick.</p>	6			6																														
VI	<table border="1"> <thead> <tr> <th>ITEMS</th> <th>NO</th> <th>L m</th> <th>B m</th> <th>H/D m</th> <th>QTY m<sup>3</sup></th> </tr> </thead> <tbody> <tr> <td>Earthwork Excavation in foundation</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    Long wall</td> <td>2</td> <td>11.70</td> <td>1.10</td> <td>1.00</td> <td>25.74</td> </tr> <tr> <td>    Short wall</td> <td>3</td> <td>5.20</td> <td>1.10</td> <td>1.00</td> <td>17.16</td> </tr> <tr> <td>    Total</td> <td></td> <td></td> <td></td> <td></td> <td>42.90</td> </tr> </tbody> </table>	ITEMS	NO	L m	B m	H/D m	QTY m <sup>3</sup>	Earthwork Excavation in foundation						Long wall	2	11.70	1.10	1.00	25.74	Short wall	3	5.20	1.10	1.00	17.16	Total					42.90	5	5		15
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	1 <sup>st</sup> class Brickwork in lime mortar in superstructure.								
	Long wall	2	10.90	0.30	4.20	27.47			
	Short wall	3	6.00	0.30	4.20	22.68			
	<b>Total (excluding deduction)</b>					<b>50.15</b>			
	2.5cm CC Damp proof course.						5		
	Long wall	2	11.00	0.40	-	8.80			
	Short wall	3	5.90	0.40	-	7.08			
	Deduct door sill	2	1.20	0.40		0.96			
	<b>Net Total</b>					<b>14.92 m<sup>2</sup></b>			
VII	(v) Plastering wall surface in C.M. (1:3) 12 mm thick								
	(a) Inside -								
	Hall	2	8.50	3.1	52.70	8.5 = (4.5 + 4.0)			
	Bed	2	7.00	3.1	43.40				
	Kit	2	6.50	3.1	40.30				
	Bath	2	4.52	3.1	28.02	4.52 = 1.79 + 2.73	7.5		
	W.C.	2	2.75	3.1	17.05				
	Passage (W.C.)	2	1.48	3.1	9.18				
	Front, Bath	1	1.00	3.1	3.10				
	Passage (common)	2	2.73	3.1	16.93				
	" "	2	1.00	3.1	6.20				
	(b) Outside -								
	Front and back	2	8.69	3.20	55.62	8.69 = 4.5 + 3.5 + 3 x 0.23			
	Sides	2	9.19	3.20	58.82	9.19 = 4.0 + 1.00 + 3.50 + 3 x 0.23	7.5		
	Deduction for openings								
	Doors D <sub>1</sub>	5x1	1.20	2.1	12.60(-ve)				
	Doors D <sub>2</sub>	2x1	0.90	2.1	3.78(-ve)				
	Windows W <sub>1</sub>	2x1	2.00	1.5	4.50(-ve)				
	Windows W <sub>2</sub>	3x1	1.50	1.5	6.75(-ve)				
	Ventilators V	2x1	1.00	0.60	1.20(-ve)				
	<b>Net Total =</b>				<b>302.39</b>	<b>sq m</b>			15

VIII	(iv) R.C.C. (1:2:4) in Chajja, Lintel and roof slab.								5																																																												
	(a) Chajja-Over Windows W <sub>1</sub> ...	2	2.30	0.45	0.06	0.12	Thickness of Chajja 7 cm to 5 cm. Project = 45cm																																																														
	W <sub>2</sub> ...	3	1.80	0.45	0.06	0.15																																																															
	(b) Lintel	[ 1	53.51	0.23	0.15	1.85			5																																																												
	(c) Roof Slab : For rooms (clear area)																																																																				
	Hall ...	1	4.50	4.00	0.10	1.80																																																															
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	(a) Materials – stone chips	8.8 cu.m	Rs.900/cu.m.		7920.00																																																																
	Sand (coarse)	4.4 cu.m	Rs. 350/cu.m.		4356.00																																																																
	Cement	2.2 cu.m = 66 bags	Rs.180/bag		11,880.00			5																																																													
	(b) Labour – Head Mason	½ NO	Rs.125/E/day		62.50																																																																
	Mason	3 Nos.	Rs.115/E/day		345.00																																																																
	Mazdoor (including 4 Bhisti)	23 Nos.	Rs.80/E/day		1840.00																																																																
	Contingencies, T.P, etc.	L.S. ½ % (a+b)	L.S.		132.02																																																																
					26, 535.52																																																																
	(c) Water charges	@1% of the total			265.36																																																																
					TOTAL		26,800.67																																																														
	(d) Profit and Overhead	@10% of the total			2680.08																																																																
				GRAND TOTAL		Rs. 29,480.95																																																															
				Rate per cu.m		Rs. 2948.10		5		15																																																											

X				
(a)	Particulars	Quantity	Rate	Amount
	(a)Materials – Bricks	5000 Nos	Rs.2900/ % nos	14500.00
	Sand (medium)	2.8 cu.m	Rs. 300/cu.m.	840.00
	Cement- 0.70cu.m	21 bags	Rs.180/bag	3780.00
	Scaffolding	L.S	Rs.80	80.00
	(b)Labour – Head Mason	½ NO.	Rs.125/E/da y	62.50
	Mason	8Nos.	Rs.115/E/da y	920.00
	Mazdoor/including 4 Bhisit	16 Nos	Rs.80/E/day	1280.00
	Contingencies , T.P, etc	L.S. ½ % (a+b)	L.S.	107.30
	TOTAL			21569.81
	( c) Water charge	@1%of the total		215.70
	Total			21785.51
	(d) Profit & overhead	@10% of the total		2178.55
	Grand total			23,964.06
	Rate per cu.m			Rs. 2396.41

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