Sub:	Quantity Survey and Contract Management			SubCode:	**18CV71**		Branch:	Civil	
Date:	01/12/2022	Duration:	90min	MaxMarks:	50	Sem/Sec:	VII–A	Marks	CO	RBT

		Marks	CO	RBT
1	Write a note on capitalized value with an example problem. The capitalized value of a property is the amount the interest on which at the higher prevailing rate would be equal to the net income out of the property. Therefore capitalized value = net annual return * year's purchase Year's purchase is defined as the capital sum required to be invested in order to receive a annual income as an annuity of Rs 1/- at certain rate of interest. **Example: Find the capitalized value of a property fetching a net annual rent of Rs 3500/- when the highest rate of interest prevalent is 8%.** Solution: capitalized sum = annual income * year's purchase = 3500 * 100/8 = 43750/- Thus Rs 43750/- is the capitalized value to get Rs 3500/- interest.	[10]	CO2	L2
2	Write the specification for Earthwork in soft soil	[10]	CO1	L2

2 Write the specification for Earthwork in soft soil [10]

1. **Earthwork excavation:**

Excavation:

1. The excavation for the foundation trenches shall be carried out in all sort of soil as per plan approved at site. For that, necessary working of Centre line shall be done.
2. The sides of foundation trenches shall be truly vertical and bottom shall be uniformly leveled.
3. If the soil is not good, sides should be sloped back or timber shoring is provided.
4. The excavated material shall be stacked away from the sides of trench of the excavation by at least 1m.

Finish of the trench:

1. The bed of the trenches shall be lightly watered and will ram.
2. It should be level both longitudinally and transversely.
3. Soft or defective spots shall be dug out and removed and filled with concrete or with stabilized soil.
4. The excavation shall be measured as per exact length and width of lowest footing (as per the drawings).The depths of trench shall be measured vertically.

Finds:

1. The material of valuable things during excavation shall be property of the Government.

Trench filling:

1. The excavated material shall be filled in the plinth in layers of 15cms watered and well-rammed.
2. The excess (surplus) material shall be spread out uniformly up to lead of 100m leveled and dressed..

Water:

1. Water, if any accumulates in the trench, should be pumped out without any extra payment and necessary precautions shall be taken to prevent surface water to enter into the trench.

Excavation in saturated soil

1. Pumping or bailing out of water and removal of slush should also be considered.
2. Any extra support required for trench support should also be accounted for.

Measurement:

1. The rates of excavation include all timbering and other supports, which are necessary for securing the sides of the trenches.
2. Measurement of earthwork is taken in m^3.

3. Write the specification for Mosaic flooring . [10]

11. Mosaic flooring over cc 1:2:4 base course 7.5cm thick

1. Mosaic flooring is made of small pieces of broken tiles of china glazed or of cement or of marble arranged in different patterns.
2. The mosaic floor consists of two layers, bottom layer 2-2.5cm cement concrete 1:2:4 and an upper layer 6mm thick consisting of a mix of marble chips and cement in proportions of 1:1.5.
3. It shall be laid more than the specified thickness in order to get the specified thickness after cutting and finishing.

Materials:

1. Sand shall be coarse, well grade. Clean and free from dust and dirt.
2. Stone grit shall be of 12 mm gauge, well graded, clean and free from dust or dirt.
3. Marble chips have a maximum size of 3 mm and a minimum size of 1.5 mm.
4. Large size of marble chips limited to 6 mm may be used in floors of big rooms.

Mixing for cement concrete layer:

1. Cement concrete shall be prepared by mixing the ingredients dry. First cement and sand shall be mixed dry and this dry mixture shall be mixed with stone chips dry and mixed by adding water slowly and gradually.
2. The base shall be made rough and watered and given a cement wash and then the concrete shall be compacted by beating and tamping and levelled with wooden floats and finally laid in 2cm thick layer in panels of 1 m × 2 m bounded by 3 mm thick strip of aluminum strips.
3. After laying the concrete shall be compacted by beating and tamping and leveled with wooden floats.

Mixing for upper layer:

4. The materials for upper layer are proportioned in volume, mixed dry and mixed with water slowly to have a uniform plastic mix.
5. Within 2 hours of laying of bottom concrete layer, the upper layer of marble chips and cement shall be laid.
6. After 2 hours of laying, the surface shall be covered with wet bags and left undisturbed for 2 days.
7. The surface shall then be cut or ground by rubbing with sand stone blocks and all the cement in the surface are removed.
8. A neat cement wash is given in the surface and left undisturbed for 6 days and then the surface shall be ground with carborundum stones of different grades starting with coarse one and successively with finer ones, and the rubbing is continued until the entire surface show a uniform granular appearance.
9. Finally when the surface is absolutely dry, oxalic acid powder shall be well rubbed on the surface with a few drops of water and this should be continued till the surface is perfectly smooth and glossy.
10. For ground floor, a base of LC or weak cc shall be provided. For first and second floor, roughening

CO1 L2

4. From first principal determine the unit rate of Cement concrete 1:5:10 in foundation.   [10]

Take 10 m^3 unit = 1 m^3

Calculation for dry ingredients of concrete:

We know that **to get 10m^3 of compacted concrete we require 15.2 m^3 of dry ingredients of concrete.**

Cement = {15.2 / (1+5+10)}*1*30 = **28.5 bags**

Fine Aggregate = {15.2 / (1+5+10)}*5 = 4.75 m^3

Coarse Aggregate = {15.2 / (1+5+10)}*10 = 9.5 m^3

CO1 L3

Particulars	Quantity	Rate	Cost
Materials			
i) Cement	28.5 bags	Rs 350 per bag	9975.00
ii) Sand	4.75 m^3	Rs 250 per m^3	1187.50
iii) Coarse aggregate	9.5 m^3	Rs 300 per m^3	2850.00
Labour			
Head Masson	1	Rs 500 per day	500.00
Masson	4	Rs 450 per day	1800.00
Mazdoor (heavy)	8	Rs 350 per day	2800.00
Mazdoor (light)	6	Rs 300 per day	1800.00
Bishti/ water man	6	Rs 250 per day	1500.00
Tools and plants	lumpsum	Rs 500.00	500.00
		Total	22912.50

Particulars	Quantity	Rate	Cost
	-	-	-
		Total	22912.50
	Add 10%	Contractors profit	2291.25
	Add 1.5%	Water charges	343.68

	Grand Total		25547.53
Rae per cubic meter of concrete = 25547.53/10 =	**Rs 2554.75 per m³**		

5. Estimate the cost of earthwork embankment for the portion of road 300m long from the following data | 10 | CO1 | L3

RL of formation at **300m distance is 103.8m** with downward gradient of 1 in 100 from distance 0m to 300m
Formation width=10m
Side slopes in embankment is 2:1
Cost of earthwork is Rs 80.00/m³

RL of Ground	105.42	104.3	104.8	104	102.9	102	102.6
Distance(m)	0	50	100	150	200	250	300

Decrease in RL of formation = 1/100 * 50 = 0.50m

Distance	RL of Ground	RL of Formation	Depth /Height	Mean depth	area	length	quantity	
							banking	cutting
0	105.42	106.80	1.38	-	-	-	-	-
50	104.30	106.30	2	1.69	22.61	50	1130.50	
100	104.80	105.80	1	1.5	19.50	50	975.00	
150	104.00	105.30	1.3	1.15	14.145	50	707.25	
200	102.90	104.80	1.9	1.6	21.12	50	1056.00	
250	102.00	104.30	2.3	2.1	29.82	50	1491.00	
300	102.60	103.80	1.2	1.75	23.62	50	1181.00	
						total	6540.75 m³	

Abstract							
s.no.	perticulars			quantity	unit	rate	unit	cost
1	Earthwork in embankment			6540.75	m³	80	m³	523260
	Add 5%							26160
	Total cost							**549360**

6.