Bharati Vidyapeeth's Institute of Technology Navi Mumbai

Certificate

This is to certify that, Mr. / Ms. …….

Roll No. ……of Fifth Semester of Diploma in Civil engineering of Bharati Vidyapeeth Institute of Technology Navi Mumbai (Inst.code:0027) has satisfactorily completed the term work in the subject Estimating and Costing (22503) for the academic year 20…. to 20…. as prescribed in the MSBTE curriculum.

Place: …….. **Enrollment No. : ……**

Date:……. **Exam. Seat No. : ……..**

Sign:

Name:

Subject Teacher **Head of the Department** **Principal**

Seal of Institution

List of experiments and progressive assessment for term work (TW) D-3

Academic Year: **Name of Faculty:**

Course code: 22503 **Subject Code: EAC (22503)**

Name of candidate: **Enroll no.** **Roll no.**

Semester: FIFTH **Marks: Max : 50** **Min :20**

Sr. No.	Title	Date of performance	Date of submission	Marks	Sign of teacher
1	Prepare the check list of items to be executed with units for detailed estimate of the given structure from the given drawing.				
2	Prepare a report on market rates for given material, labour wages, hire charges of tools & equipment's required to construct the given structure as mentioned in at Serial number 1 above.				
3	Prepare a detailed specification for the given items using DSR (for any ten items).				
4	Prepare an approximate estimate for the given civil engineering works.				
5	Prepare an approximate estimate for the given civil engineering works.				
6	Prepare bill of quantities of given item from actual measurements. (any four items).				
7	Prepare bill of quantities of given item from actual measurements. (any four items).				
8	Calculate the quantity of items of work from the given set of drawings using standard measurement sheet for load bearing residential structure using description of items from DSR (1BHK building with staircase)				
9	Calculate the quantity of items of work from the given set of drawings using standard measurement sheet for load bearing residential structure				

	using description of items from DSR (1BHK building with staircase)				
10	**Calculate the quantity of items of work from the given set of drawings using standard measurement sheet for load bearing residential structure using description of items from DSR (1BHK building with staircase)**				
11	**Prepare detailed estimate from the given set of drawings using 'Standard measurement & abstract format' for RCC framed structure using description of item from DSR along with face sheet & prepare quarry chart, lead statement (G+1) building.**				
12	**Prepare detailed estimate from the given set of drawings using 'Standard measurement & abstract format' for RCC framed structure using description of item from DSR along with face sheet & prepare quarry chart, lead statement (G+1) building.**				
13	**Prepare detailed estimate from the given set of drawings using 'Standard measurement & abstract format' for RCC framed structure using description of item from DSR along with face sheet & prepare quarry chart, lead statement (G+1) building.**				
14	**Prepare detailed estimate from the given set of drawings using 'Standard measurement & abstract format' for RCC framed structure using description of item from DSR along with face sheet & prepare quarry chart, lead statement (G+1) building.**				
15	**Calculate the reinforcement quantities from the given set of drawings for a room size of 3M x 4M with bar bending schedule (Footing, column, beam, lintel with chajja, slab)**				
16	**Calculate the reinforcement quantities from the given set of drawings for a room size of 3M x 4M**				

	with bar bending schedule (Footing, column, beam, lintel with chajja, slab)				
17	**Calculate the reinforcement quantities from the given set of drawings for a room size of 3M x 4M with bar bending schedule (Footing, column, beam, lintel with chajja, slab)**				
18	**Calculate the reinforcement quantities from the given set of drawings for a room size of 3M x 4M with bar bending schedule (Footing, column, beam, lintel with chajja, slab)**				
19	**Prepare the rate analysis for the given five items of work.**				
20	**Prepare the rate analysis for the given five items of work.**				
21	**Prepare detailed estimate of W.B.M. road one Kilometer length from the given drawing.**				
22	**Prepare detailed estimate of small septic tank from the given set of drawing.**				
23	**Prepare detailed estimate of well from the given set of drawing.**				
24	**Use relevant software to prepare detailed estimate of any one of the WBM road / Septic tank / Well.**				
25	**Use relevant software to prepare detailed estimate of any one of the WBM road / Septic tank / Well.**				
			Total marks out of 100		
			Marks out of 50		

EXPERIMENT: -1

Aim: Prepare the check list of items to be executed with units for detailed estimate of the given structure from the given drawing..

Theory: Measurement of an item is based on the Principle of units

The unit of different work is depends on their nature, size & shape. In general, the unit of different items of work is based on the following principle.

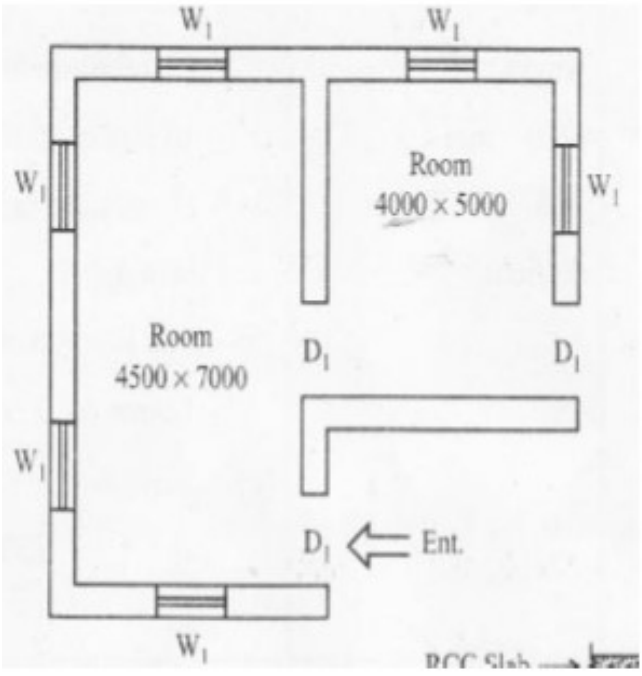
i) Mass, Voluminous and thick works shall be taken in cubic unit or volume. The measurements of length, breadth and height or depth shall be taken to compute the volume or cubic contents.

ii) Shallow, thin & surface works shall be taken in square units or in area. The measurement of length and breadth or height shall be compute to the area.

iii) Long and thin work shall be taken in linear or running unit, and linear measurement shall be taken.

iv) Piece work, job work, etc. shall be taken in number.

Prepare The checklist of items with units from below drawing



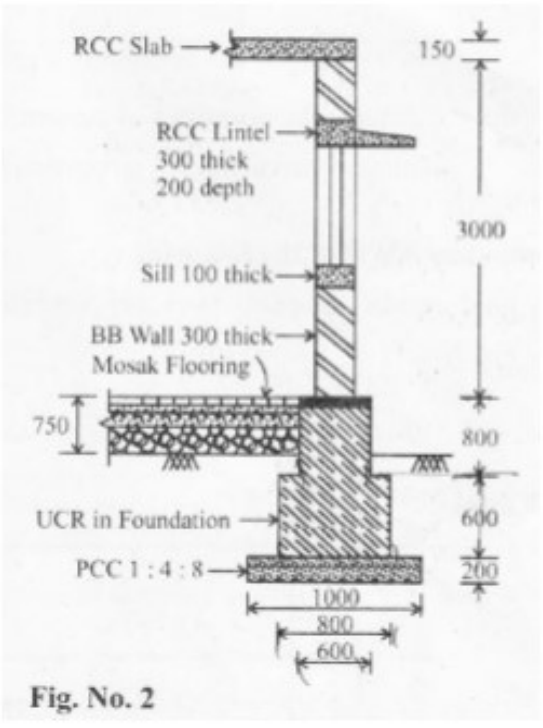


Fig. No. 2

Sr. No	Particular of Item	Unit of measurement

Sr. No	Particular of Item	Unit of measurement

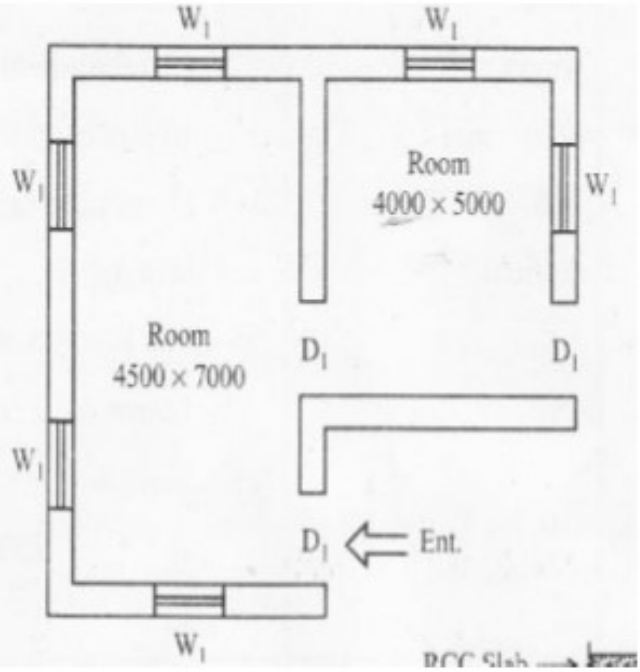
Sr. No	Particular of Item	Unit of measurement

Sr. No	Particular of Item	Unit of measurement

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT: -2

Aim: - Prepare a report on market rates for given material, labour wages, hire charges of tools & equipment's required to construct the given structure as Shown below.



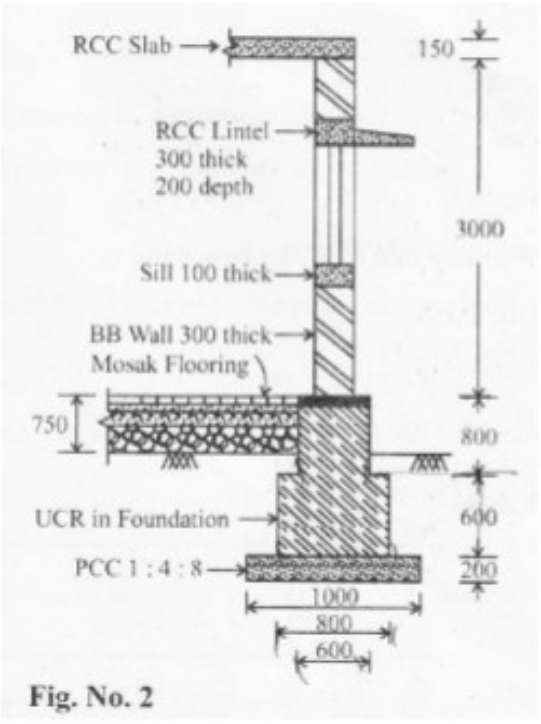


Fig. No. 2

Sr. No	Particular of Item	Rate	Per Unit

Sr. No	Particular of Item	Rate	Per Unit

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT: -3

Aim: - Prepare a detailed specification for the given items using DSR.

Theory : District schedule rates (DSR)is a booklet of printed rates of different items, labour etc. as per the region. These rates according to locally available materials, labours. For government contract we have to use DSR rates. DSR rates are revised every year.

Excavation is the act or process of digging, especially to the specific width of foundation, the sides should be vertical. It is measure in Cubic meter.
PCC (Plain Cement Concrete) it should be of specific proportion e.g. 1:2:4 or 1:4:8, it should be measure in Cubic meter.

UCR Uncoursed rubble masonry is used in foundation and plinth and is calculated separately in cubic meter.
Brick Masonry is used in the wall. It is measured in Cubic meter, but for partition wall it is measured in square meter.
Door and Windows Door and window frames are calculated in cubic meter. Its rates vary with type of materials.
Plastering and Pointing Plastering is calculated in Square meter. Deduction should be made as per IS 1200. Internal and External plastering quantities are calculated separately.
Colouring is calculated in square meter

Painting of door, windows and grills quantity is find out as per IS 1200. Brand of paint and coats of paint should be specified.

Flooring is measured in square meter. Quantity of flooring is similar to Ceiling plaster.

Sr. No	Particular of Item	Completed Rate (Rs)	Labour Rate (Rs)

Sr. No	**Particular of Item**		**Unit of measurement**

Marks Obtained			**SIGN**
Process Related (15)	**Product Related (10)**	**TOTAL (25)**	

EXPERIMENT 4

Aim: Prepare an approximate estimate for the given civil engineering works.

It is also called as preliminary estimate, usefull for getting administrative approval. From site plan & layout plan approximate estimate can be prepared.

Purposes of Approximate estimate:-

- It gives rough idea of the cost required to complete the building.
- Easy to check feasibility of the project.
- For Govt. projects, it is required for budget provision & administrative approval.
- For valuation of existing building, approximate estimate plays an important role.

Methods of Approximate estimate

1. Plinth area method.

$$\text{Plinth area rate of existing building} = \frac{\text{Cost of construction of existing building}}{\text{plinth area of the same building}}$$

Approximate Cost of Building By Plinth area method	=	Plinth area rate of existing building	X	Plinth area of proposed building

2. Cubic content method.

Approximate Cost of Building= Volume of Building x Rate per unit volume

3. Service Unit method

Approximate Cost = Number of Service Unit x Cost per service unit

4. Typical bay method

Approximate Cost = Number of bays x Cost per bay

5. Approximate Quantity method

- This method is divided into two parts.
    1. Foundation including plinth

2. Superstructure
3. Running meter rate of foundation is found out.

- Approximate quantities of items such as foundation, brickwork upto plinth, DPC are calculated per running meter.
- Similarly for superstructure approximate quantities of brickwork, wood work, roof, floor finish is calculated.

Multiply quantities by rate per running meter

Solve below Numerical

1. The plinth area of proposed building is 400 sqm. The known cost of construction for similar structure is Rs. 19, 35,000 having plinth are 225 sqm. Calculate approximate cost of proposed building.
2. The cost of construction of college building is 3 crores for the capacity of 600 students and area of construction about 2500 m2 . Prepare approximate estimate of a new proposed college building for 3500 students with the area 14000 m2 . Use service unit method

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 5

Aim : Prepare an approximate estimate for the given civil engineering works.

1) Approximate Estimate for Roads & Highways
   Cost of road is depending on width of road, topography & Pavement surface.
   For Roads & highways per km rate is taken.
   E.g. cost of construction of 1 km road is 3, 00,000/- then cost of construction for 10 km road is ??
   300000 x 10 = Rs. 30, 00,000/-
2) Approximate Estimate for Railway
   Below five things are important for railway cost
   Foundation
   Bridges
   Staff Quarters
   Gradient post
   Station building & Platform
   Gauge, Sleepers, Ballast are common things for all projects.
   The cost per km for similar project is considered & approximate estimate is calculated.
3) Approximate Estimate for Irrigation Project
   Approximate estimate of Irrigation project is determined by considering approximate estimate of storage reservoir, dam, or canals.
   For storage reservoir and the dam , estimate is prepared on the basis of per million cubic meter of storage capacity or sqm of catchment area.
   This method involves selection of site with the help of topo- sheets and finding the catchment area.
   Finding rainfall data from rain gauge station near catchment area,
   Finding capacity of reservoir by contours, and deciding construction cost per million cubic meter.
4) Estimate for irrigation canal
   The unit to be adopted for finding out the approximate estimate of irrigation canal, is one of the following
   Area of land under command of canal
   In the first case, the area under the command of irrigation canal is worked out in hectares. Knowing the cost of similar project, suitable amount per hectare is decided. The approximate estimate is calculated by multiplying the area under the command to per hectare cost of canal.
   Per Km length.
   In this case per Km length is calculated from the similar units, constructed previously. The approximate cost of proposed canal is calculated by multiplying the length of

proposed canal to cost per km length of canal. An amount of contingencies, normally 10% is added to the cost of project. For overheads, 10%cost of approximate estimate is included in the estimate. At last cost for land acquisition, normally 12% is added to get total approximate estimated cost of a project

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 6

Aim : Prepare bill of quantities of given item from actual measurements.

Draw Plan & section of actual site measurements.

Bill of quantities

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 7

Aim: Prepare bill of quantities of given item from actual measurements.

Draw Plan & section of actual site measurements.

Bill of quantities

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 8

Aim: Calculate the quantity of items of work from the given set of drawings using standard measurement sheet for load bearing residential structure using description of items from DSR (1BHK building with staircase)

Plan and Section of 1 BHK building with Staircase.

Measurement Sheet

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 9

Aim: Calculate the quantity of items of work from the given set of drawings using standard measurement sheet for load bearing residential structure using description of items from DSR (1BHK building with staircase)

Plan and Section of 1 BHK building with Staircase.

Measurement Sheet

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 10

Aim: Calculate the quantity of items of work from the given set of drawings using standard measurement sheet for load bearing residential structure using description of items from DSR (1BHK building with staircase)

Plan and Section of 1 BHK building with Staircase.

Measurement Sheet

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 11

Aim: Prepare detailed estimate from the given set of drawings using 'Standard measurement & abstract format' for RCC framed structure using description of item from DSR along with face sheet & prepare quarry chart, lead statement (G+1) building

Plan and Section of building (G+1)

Measurement Sheet

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Abstract Sheet

Sr. No.	Particular of Item	Quantity	Rate	Per	Amount

Face Sheet:

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 12

Aim: Prepare detailed estimate from the given set of drawings using 'Standard measurement & abstract format' for RCC framed structure using description of item from DSR along with face sheet & prepare quarry chart, lead statement (G+1) building

Plan and Section of building (G+1)

Measurement Sheet

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Abstract Sheet

Sr. No.	Particular of Item	Quantity	Rate	Per	Amount

Face Sheet:

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 13

Aim: Prepare detailed estimate from the given set of drawings using 'Standard measurement & abstract format' for RCC framed structure using description of item from DSR along with face sheet & prepare quarry chart, lead statement (G+1) building

Plan and Section of building (G+1)

Measurement Sheet

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Abstract Sheet

Sr. No.	Particular of Item	Quantity	Rate	Per	Amount

Face Sheet:

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 14

Aim: Prepare detailed estimate from the given set of drawings using 'Standard measurement & abstract format' for RCC framed structure using description of item from DSR along with face sheet & prepare quarry chart, lead statement (G+1) building

Plan and Section of building (G+1)

Measurement Sheet

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Sr. No	Particular of Item	No	Length	Width	Depth / Height	Quantity

Abstract Sheet

Sr. No.	Particular of Item	Quantity	Rate	Per	Amount

Face Sheet:

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 15

Aim: Calculate the reinforcement quantities from the given set of drawings for a room size of 3M x 4M with bar bending schedule for Footing.

Draw Footing Plan and Section

Calculation of lengths:

Bar Bending Schedule:

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 16

Aim: Calculate the reinforcement quantities from the given set of drawings for a room size of 3M x 4M with bar bending schedule for column.

Draw Footing Plan and Section

Calculation of lengths:

Bar Bending Schedule:

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 17

Aim: Calculate the reinforcement quantities from the given set of drawings for a room size of 3M x 4M with bar bending schedule for beam.

Draw Footing Plan and Section

Calculation of lengths:

Bar Bending Schedule:

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 18

Aim: Calculate the reinforcement quantities from the given set of drawings for a room size of 3M x 4M with bar bending schedule for slab.

Draw Footing Plan and Section

Calculation of lengths:

Bar Bending Schedule:

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 19

Aim: Prepare the rate analysis for the given five items of work.

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 20

Aim: Prepare the rate analysis for the given five items of work.

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 21

Aim: Prepare detailed estimate of W.B.M. road one Kilometer length from the given drawing.

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 22

Aim: Prepare detailed estimate of small septic tank from the given set of drawing.

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 23

Aim: Prepare detailed estimate of well from the given set of drawing.

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 24

Aim: Use relevant software to prepare detailed estimate of any one of the WBM road / Septic tank / Well.

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	

EXPERIMENT 25

Aim: Use relevant software to prepare detailed estimate of any one of the WBM road / Septic tank / Well.

Marks Obtained			SIGN
Process Related (15)	Product Related (10)	TOTAL (25)	