

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Estimating and Costing (CE705)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Necessary figures are attached herewith.
- ✓ Assume suitable data if necessary.

1. Enlist the purposes of preparing an estimate of quantities of work and its cost. [4]
2. What are various methods of taking quantities of works? [4]
3. What are the components of a complete estimate? Prepare a sample of abstract cost [4+4]
4. Briefly explain the various factors that affect the rate analysis. Why is rate analysis in civil engineering necessary? [4+4]
5. Prepare quantities of material required of 12 mm thick (1:6) cement plastering per 10m² in brick wall. [4]
6. Prepare rate analysis of plain cement concrete (1:3:4). Assume suitable rates of material and labor. [6]
7. What do you mean by Project estimate? How do you prepare project estimate? State the reports on estimate. [1+2+3]
8. Find the quantity of the following from attached drawing. (fig. 1) [3x4]
 - a) Brick work in cement mortar (1:6) up to plinth.
 - b) 10 mm thick cement plastering in ceiling and underside of roof projection.
 - c) P.C.C. in foundation (1:3:6)
9. Find the quantity of earth work of a hill road from the following data. Formation width is 10 m, side slope in filling and cutting 2:1 and 1½ :1 respectively. [12]

Chainage (m)	0	100	200	300	400	500	600
RL of Ground (m)	1115.20	1116.10	1116.85	1118.00	1118.25	1118.10	1117.75

Formation: RL at chainage 0 is 1116.5 m, upward gradient 1 in 200 up to chainage 300m.

Downward gradient 1 in 400 from chainage 300m to onward.

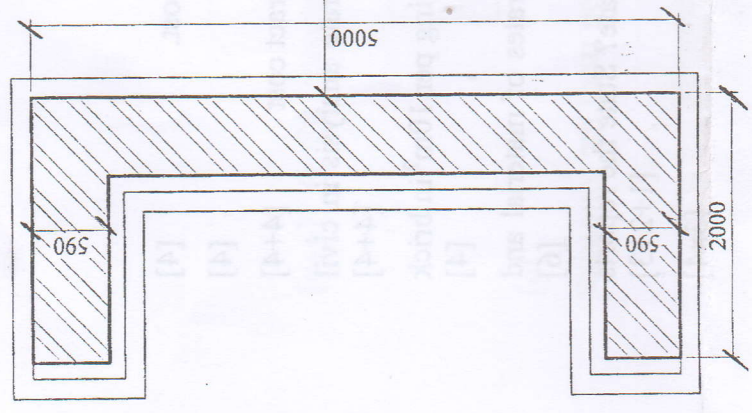
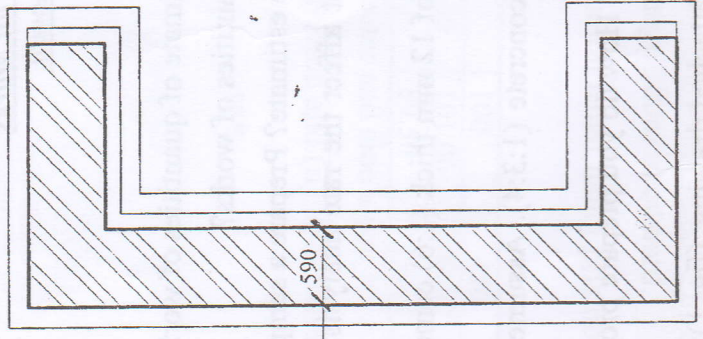
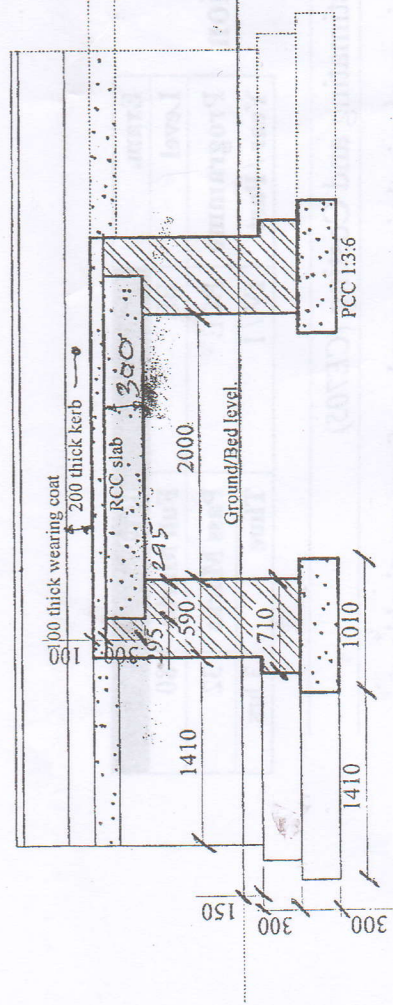
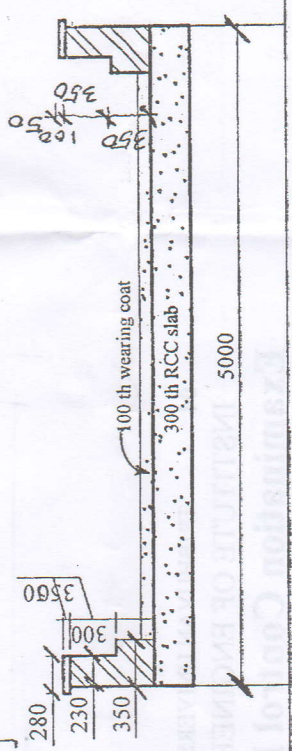
10. Find the quantity of earth work of irrigation canal using prismoidal method from the following data: [6]

Distance (m)	0	50	100	150	200
RL of Ground (m)	100.00	101.00	101.00	99.00	100.00
RL of Formation(m)	99.50	99.00	89.50	89.00	88.50

Formation bottom width of canal is 6 meter and side slope 1:1.

11. Workout quantity of (i) earth work excavation and (ii) brick work of slab culvert. (fig. 2) [4+6]

SLAB CULVERT



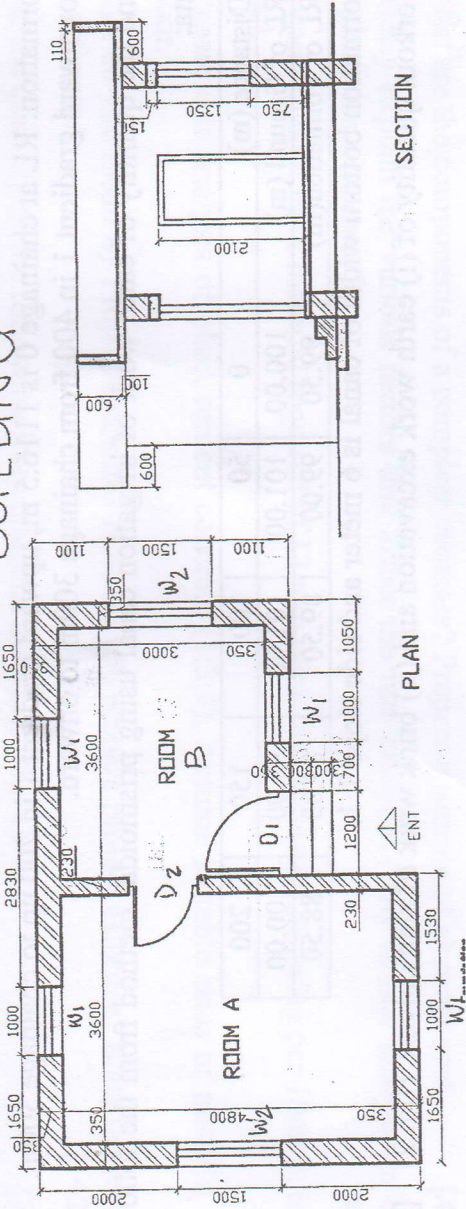
ROAD WAY

PLAN

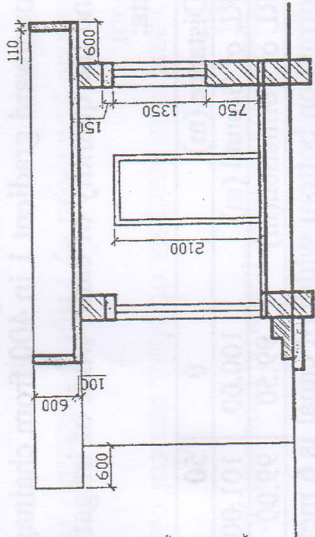
SECTIONAL PLAN

Fig:2

BUILDING



SECTION



Foundation

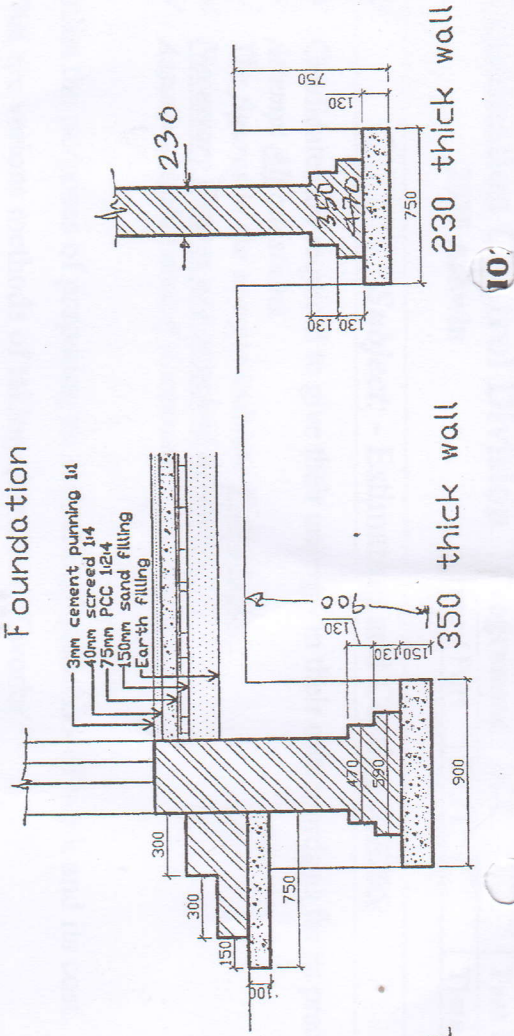


Fig:1

10

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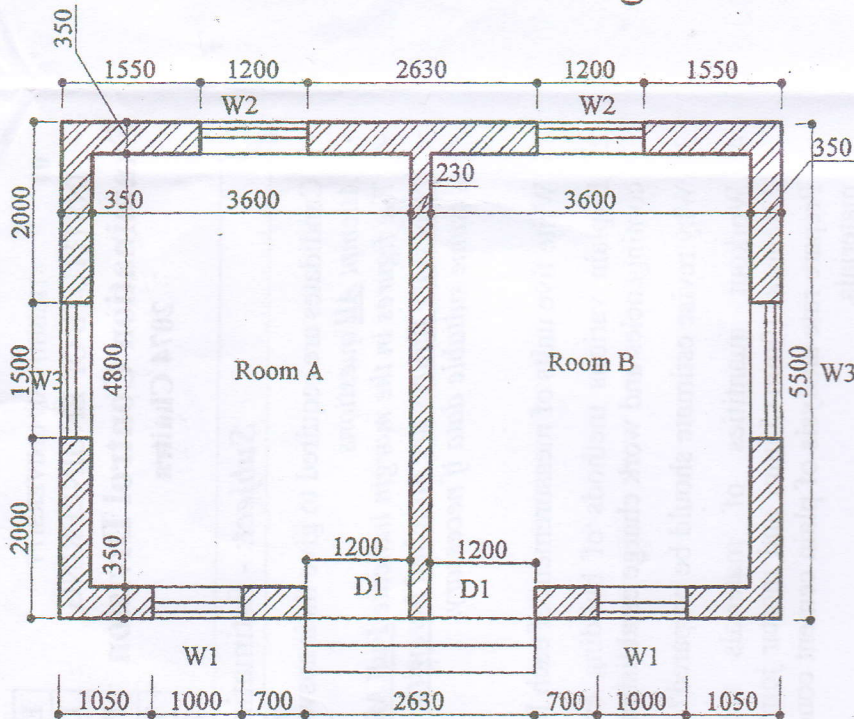
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- ✓ Attempt All questions.
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1. Write five units of measurement of each length, area and volume. [5]
2. Explain various methods of building estimate with suitable sketch. Explain the term contingencies and work charge establishment. [5+5]
3. Why revise estimate should be prepared? What is Rate analysis? Explain its important. [5]
4. Workout quantities of materials required in brickwork (consider brick size 230mm×110mm×55mm and mortar joint thickness as 10 mm) in cement mortar (1:6). Prepare rate analysis of plain cement concrete (1:2:4). Assume suitable rates of labor and materials. [14+6]
5. Define project. Discuss estimation of road project. [5]
6. Calculate the quantity of earthwork for a portion of hill road from following data: Formation width = 10 m in banking and 8 m in cutting, side slope in cutting = 1:1, side slope in filling = 2:1. [10]

Chainage	Cut depth	Fill height	Transverse slope
0+060	0.5	-	10:1
0+090	0.6	-	15:1
0+120	-	0.7	12:1

7. A drawing of a building is attached herewith. Calculate the quantities of:
 - i) Brickwork in cement mortar (1:6) up to plinth [10]
 - ii) 35 mm thick paneled door shutters. [5]
 - iii) 10 mm thick cement plaster in ceilings and underside of roof projection. [5]
8. Workout quantity of brickwork of a septic tank. [5]

Two Room Building



Note: All dimensions are in millimeter
Assume necessary dimensions

Foundation

External wall:

Depth: 900

Width: 900

Concrete depth: 150

Footings, width and depth:

1st footing: 590 and 130

2nd footing: 470 and 130

3rd footing and plinth: 350 th

Plinth height: 450

Sill height: 750

Internal wall:

Depth: 750

Width: 750

Concrete depth: 130

Footing width and depth:

1st footing: 470 and 130

2nd footing: 350 and 130

3rd footing and plinth: 230

Plinth height: 450

Sill height : 750

Steps:

Tread: 300

Riser: 150

100 th. PCC

Roofs:

RCC Slab thickness: 100

Projection: 600

Parapet wall: 110 thick, 300 high at the end of roof projection

Superstructure

Floor to floor height: 2700

External wall: 350

Internal wall: 230

Openings

Doors D: 1200x2100

Windows W1: 1000x1000

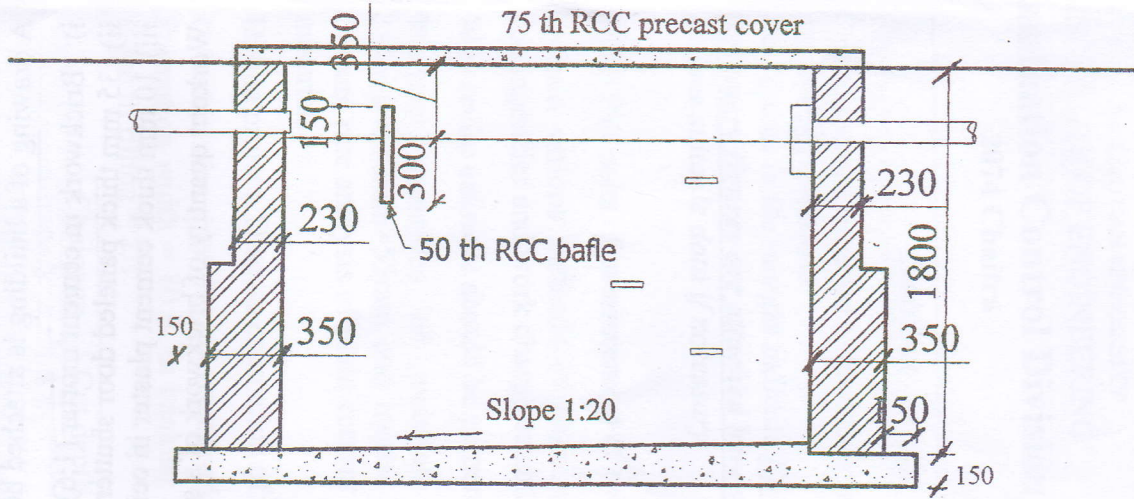
Windows W2: 1200x1200

Windows W3 1200x1200

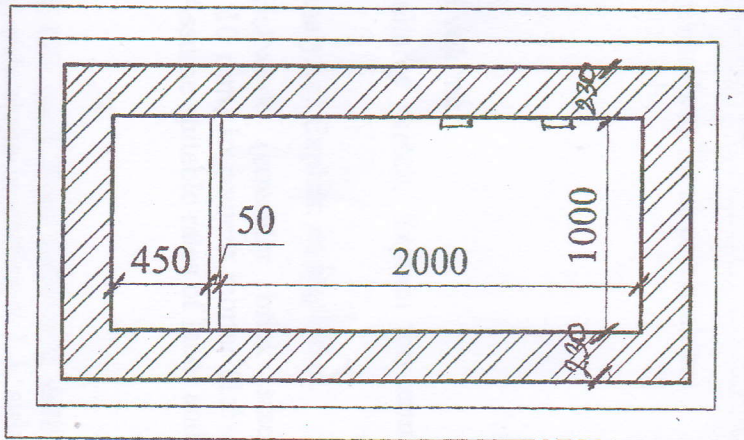
Frame size: 75x100

Doors and windows shutter: 35 thick

SEPTIC TANK



SECTION



PLAN

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- ✓ Assume suitable data if necessary.

- a) Mention the various purposes of Estimating. [4]
- b) Write the units of measurement and payment for the following items of work: [4]
 - (i) Surface excavation
 - (ii) Brick work in well steining
 - (iii) Lightning conductor
 - (iv) Cornice
2. Describe how will you prepare a detailed estimate of a building. [6]
3. Under what circumstances the following types of estimates prepared? [6]
 - a) Preliminary estimate
 - b) Revised estimate
 - c) Supplementary estimate
 - d) Complete estimate
4. a) What are the factors on which the unit rates of particular item of work depends? [4x3]
- b) Calculate the quantities of materials required for the following items of work:
 - (i) 75 m³ of Brick work in (1:3) cement mortar
 - (ii) 115 m² of 75 mm thick PCC (1:2:4) in floor
- c) Prepare an analysis of rate for WC Pan with low level Cistern.

OR

Prepare an analysis of rate for providing, laying and consolidation of 40mm thick Premix Asphalt carpeting per m².

5. a) A town planning authority has to acquire an area of 500000 m² for the development of new colony. After developing the area it is proposed to be sold at Rs 50.00 per m². Work out the maximum compensation which can be given to the owners whose land is to be acquired for the development of the colony, assuming: [8]
 - (i) the authority is establishment charges 15% on the sale price
 - (ii) 40% area is to be provided for roads, parks etc
 - (iii) Colony improvement expenditure Rs 8.00 per m²
 - (iv) Engineers and architect's fee for surveying and planning the colony at 4% on the sale price •
- b) Write short notes on: [6]
 - (i) Scrap value
 - (ii) Depreciation
 - (iii) Sinking fund
 - (iv) Capitalized value

6. Estimate the quantities of the following items of work from the accompanying RCC slab culvert drawings: [12]

- a) Earthwork in excavation in foundation
- b) PCC (1:3:6) in foundation
- c) Brick work in (1:4) cement mortar
- d) PCC (1:2:4) for RCC slab

7. Estimate the quantities of the following items of work from the accompanying Building drawings: [12]

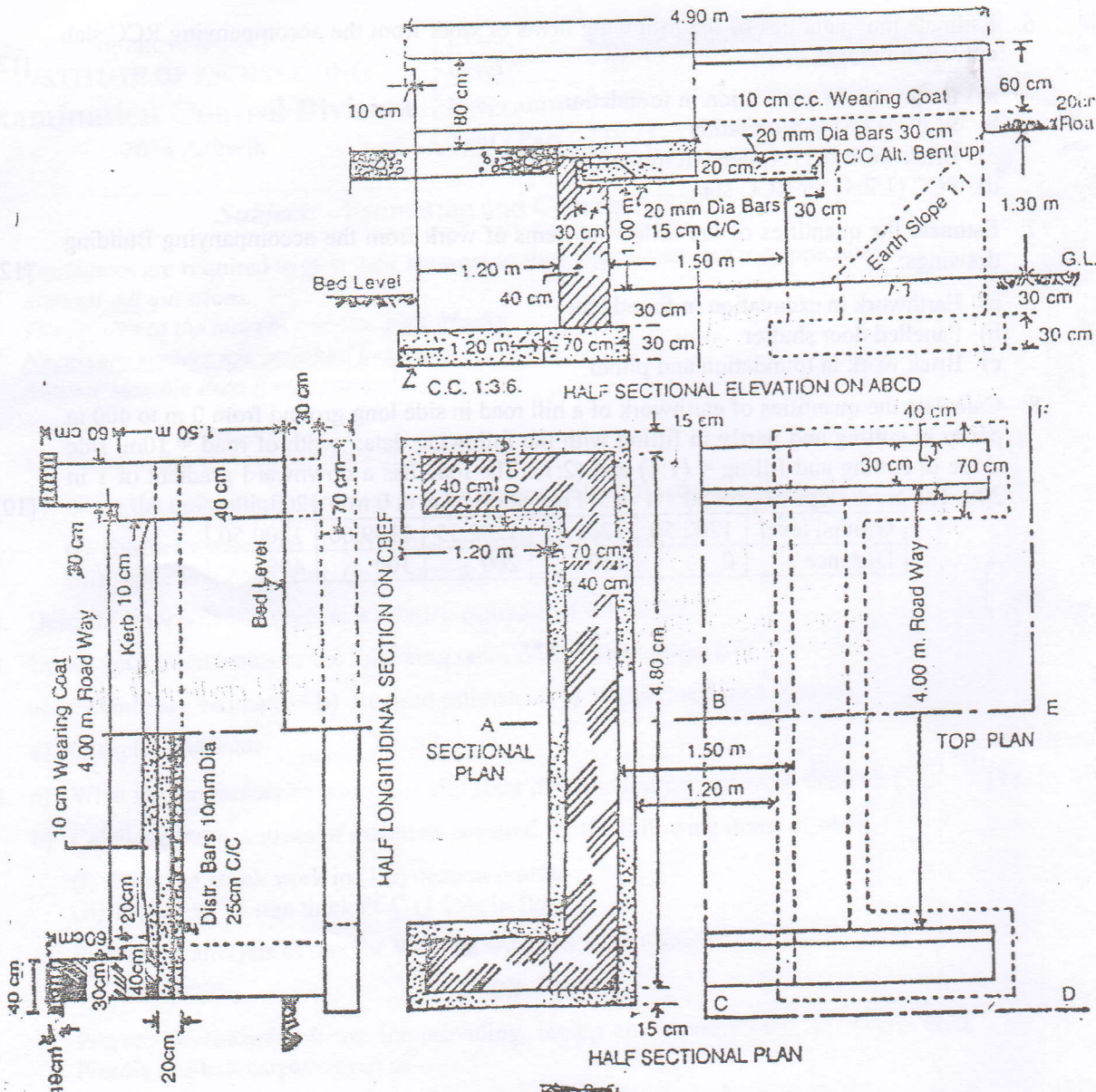
- a) Earthwork in excavation in foundation
- b) Panelled door shutter
- c) Brick work in foundation and plinth

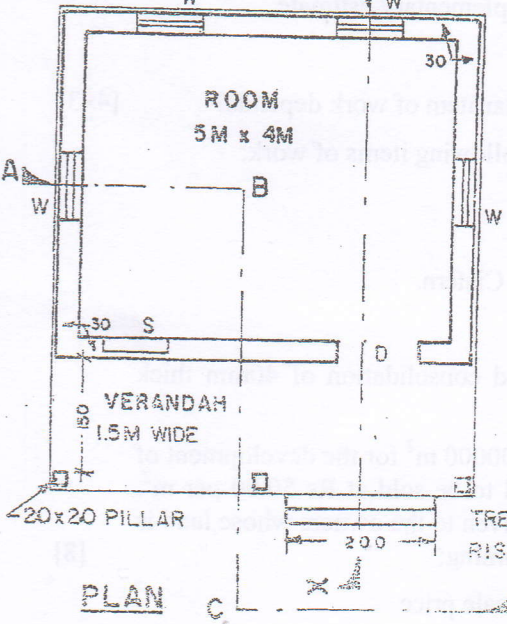
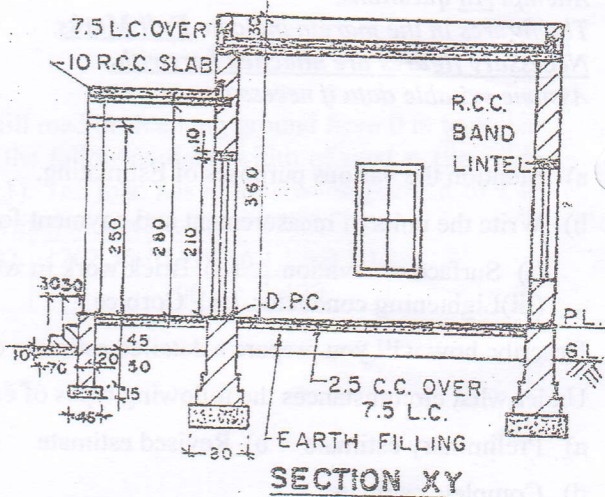
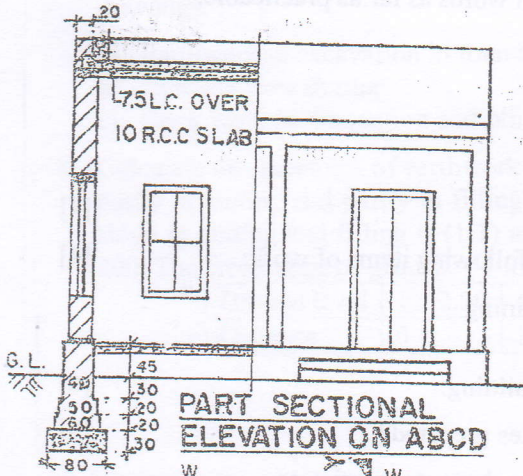
8. Calculate the quantities of earthwork of a hill road in side long ground from 0 m to 400 m partly in cutting and partly in filling with the following data: width of road = 10m, side slope in cutting and filling = (1:1) and (2:1). The road has a downward gradient of 1 in 200. The cross slope of ground = 1 in 5. Formation level at 0 m = 1203.50m. [10]

Ground level	1202.50	1201.97	1202.35	1199.66	1200.50
Distance	0	100	200	300	400

Assume suitable rates.

R.C.C. SLAB CULVERT 1.50 m SPAN with standard modular bricks





SCHEDULE
 DOOR D = 110 x 210
 WINDOW W = 90 x 150
 SHELF S = 90 x 150
 DIMENSIONS ARE IN CMS.

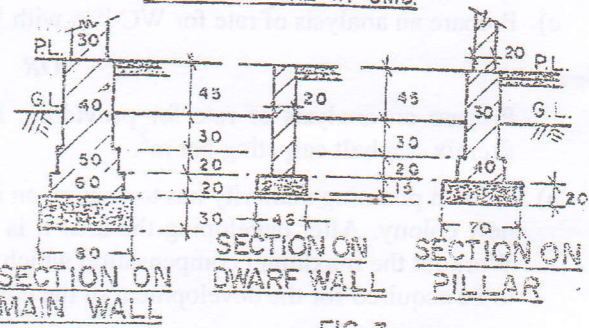


FIG. 3

Exam.	New Back (2066 & Later Batch)		
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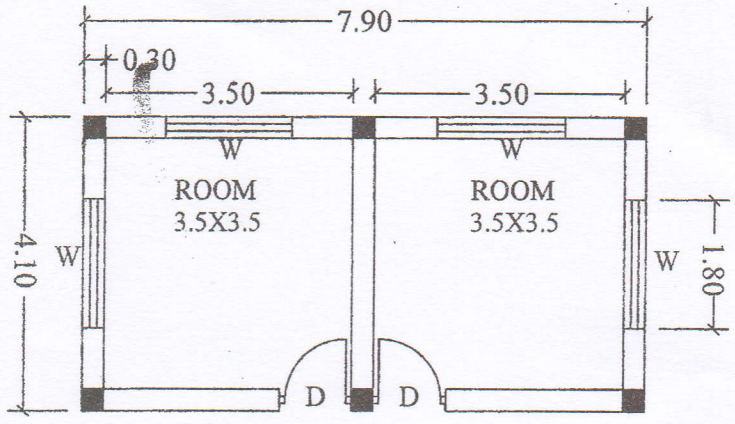
1. a) Describe the term estimate. State the necessity of estimated cost in construction work. Mention the various requirements for preparing detailed estimate. [2+2+2]
- b) (i) Describe briefly how will you prepare a detailed estimate of a building. [2×5]
- (ii) Prepare bill of quantities from the following data for the construction of RCC T-beam Decking bridge.

Quantity of work	Detail of work	Rate per unit of work
108 m ³	PCC (1:1:2) for RCC works	Rs 13,200.00
3240 m ²	Formwork for RCC works	Rs 750.00
21600 kg	Steel reinforcement for RCC works	Rs 115.00
18 m ³	PCC (1:2:4) wearing coat	Rs 12090.00

2. a) What are the different methods of preparing approximate estimate? Write the suitability of each method. [6]
- b) Estimate the quantities of the following items of work from the accompanying BUILDING drawings. [10]
 - i) Lime concrete in foundation
 - ii) Brick work in second footing
 - iii) DOOR shutters
 - iv) 25 mm thick DPC
3. i) What are the purposes of analysis of rate? Which points are taken into consideration while preparing analysis of rate? [4×4]
- ii) Estimate the quantities of cement, sand and coarse aggregate required for 12 cm thick RCC slab of (1:1½:3) mix proportion. The outside dimensions of slab are 4.20m×3m.
- iii) Calculate the quantities of materials required for 115m³ of brick masonry in (1:3) cement mortar, (the size of brick is 240×115×60 mm and thickness of mortar is 12 mm)
- iv) Prepare an analysis of rate for 12 mm thick cement plaster (1:3) in ceiling per 10m².
4. Calculate the following items of work from the attached building drawing. [16]
 - i) Earthwork in excavation
 - ii) Stone soling in foundation and sand filling in floor.
 - iii) PCC for RCC upto plinth beam
 - iv) Brick work upto plinth
5. Prepare an estimate of earthwork for a road portion from the following data: [16]

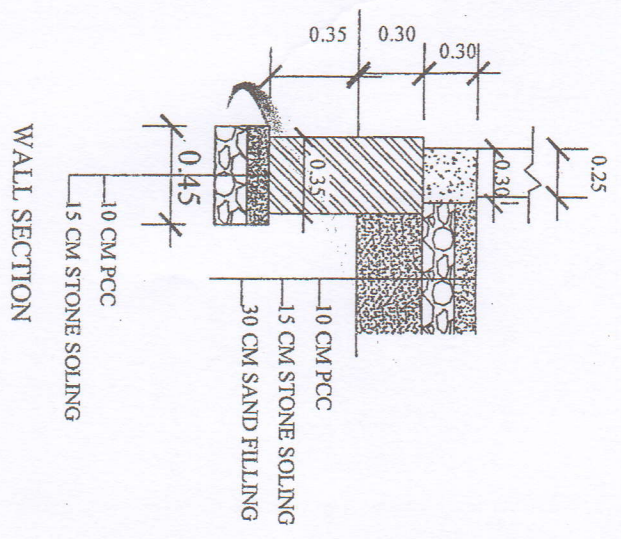
Formation width = 8 m in cutting and 10 m in banking
Side slope in cutting = 1:1
Side slope in Banking = 2:1 (H:V)

RD:	0	30	60	90	120
RLS of ground:	507.0	507.95	507.30	506.90	506.50
Formation level:	507.0 and upward gradient @ 1 in 150				
Cross slope of ground:	1:10	1:12	1:10	1:12	1:10



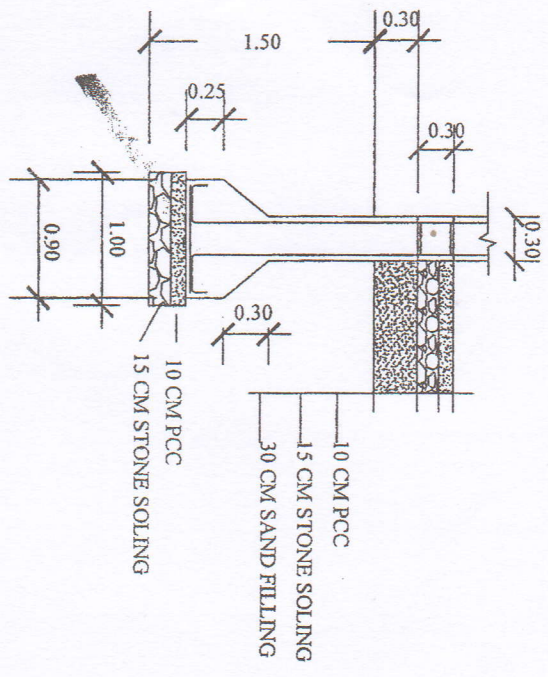
PLAN

NOTE
ALL DIMENSION ARE IN METRE
DRAWING IS NOT IN SCALE



WALL SECTION

OPENING SCHEDULE
DOOR D-1.0x2.1
WINDOW-W-1.8x1.5



COLUMN SECTION

SECTION
COLUMN: 0.30x0.30
FOOTING: 0.90x0.90
PLINTH BEAM: 0.30x0.30

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1. Explain with example process of preparation of a preliminary estimate of a office building. [5]
2. a) Explain with neat sketches to workout quantity of semi-circular arch (span, thickness and rise of arch given). [4]
 - b) Prepare tables of quantity sheet and abstract cost for a residential building. [3]
 - c) What is Bill of quantities? State its importance. [3]
3. List most common units of measurement and payment for civil works and sanitary works (at least five from each). [5]
4. a) Prepare materials required for an items of brickwork in cement mortar (1:4). Size of brick is 230mm×110mm×55mm, with mortar joint 10mm. [6]
 - b) Prepare rate analysis for 20mm thick cement sand plaster (1:4) in wall per 100m². [6]
 - c) Explain various factors which affects the rate analysis. [6]
5. Define project. Discuss estimate of irrigation project. [5]
6. a) Estimate detailed quantities for the following items form attached building drawing:
 - i) Earth work in excavation in foundation [4]
 - ii) Brick work in cement sand (1:6) mortar up to plinth [4]
 - iii) 40 mm thick sal work wood paneled door shutter [4]
 - iv) 12 mm thick inside cement plaster (1:6) [4]
- b) Calculate the quantities of earthwork of a portion of hill road from the following data: [12]

Formulation width = 8m, side slope in cutting and filling = (1:1) and (2:1)

Distance	Depth of cut	Depth of fill	Cross slope of ground
0 m	0.30	-	10:1
30 m	0.20	-	15:1
60 m	-	0.50	12:1
90 m	-	0.70	8:1

- c) Workout the quantity of well foundation of a bridge. The well is to be circular of 4.5 meter internal diameter with 800 mm wall in 1:6 cement and sand mortar. The well to be founded on strata 15 meter below bed of river which is dry during the hot weather. Bottom of the well to be plugged with 1.0 meter thick cement concrete 1:4:8 and the top to be sealed with 0.75 meter thick cement concrete 1:4:8 and central portion is to be sand filled. [9]

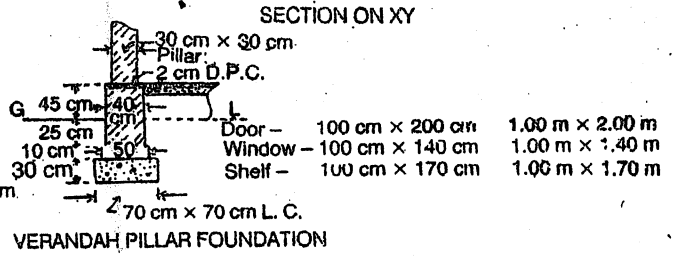
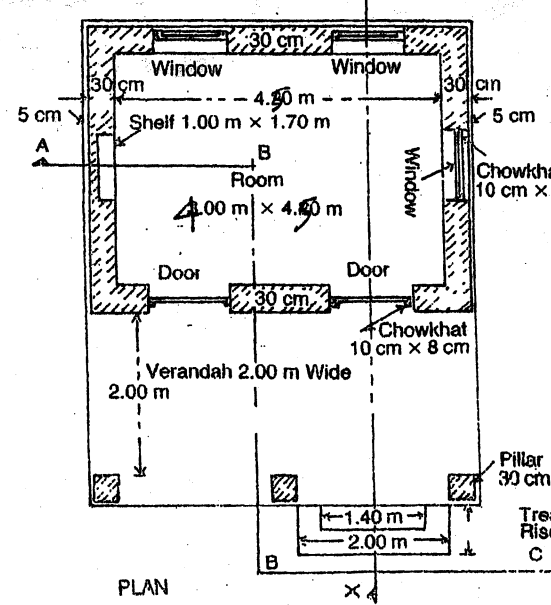
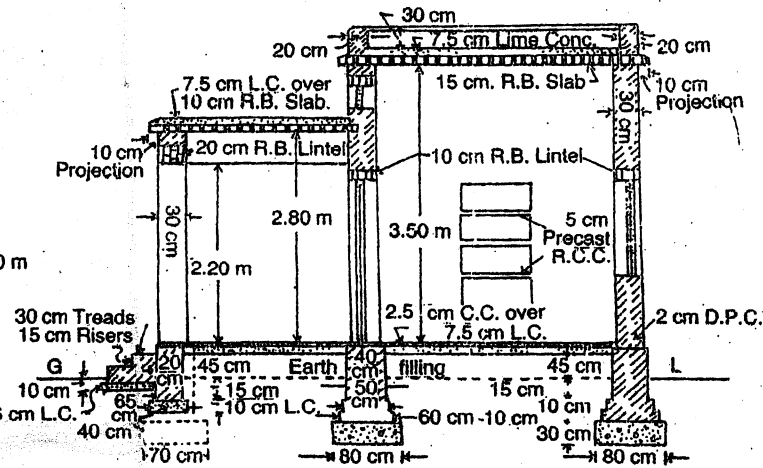
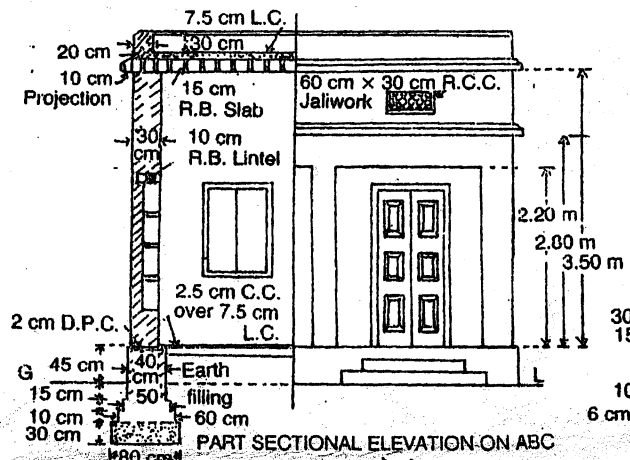


FIG.

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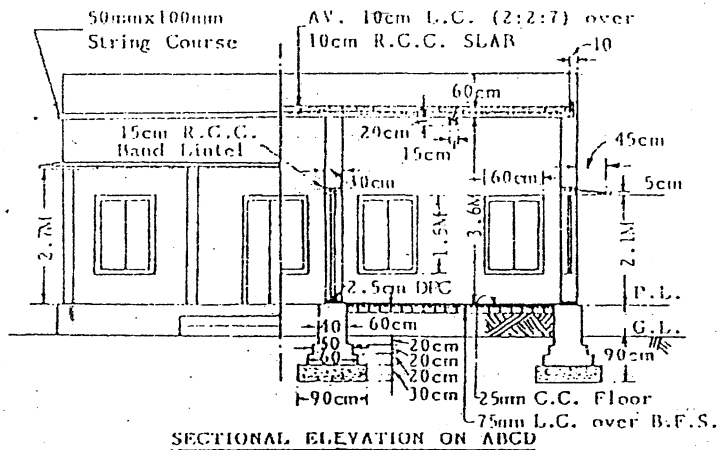
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- What are the purposes of Estimating and Costing? Explain the data required for Estimating. [3+5]
 - Explain in short the various methods of taking quantities in building works. [4]
 - What do you understand by approximate estimate? When do you need revised estimate? And Why? Explain. [4+4]
 - What are the purposes of Rate Analysis? Prepare Rate analysis of the following: [4+4+4]
 - 1st class brick work is 1:6 C.S mortar per m³
 - 25 mm thick premix carpeting per m² W.C commode low level cistern per no.
 - What are the works that an estimator has to take account in project estimate? Explain. [6]
 - Find out the quantities of the following items of work of a T-beam seeking of a bridge with 6 m span and 45 cm bearing at ends. [5+3]
 - RCC work (1:2:4) excluding steel
 - Cement concrete (1:2:4) in wearing coat
 - Prepared a detailed estimate of the following items of work of a building (drawing attached here with) [5+4+5]
 - Earth work in excavation
 - PCC (1:3:6) in foundation
 - Brick work is 1:6 c.s mortar in foundation and phith
 - Estimate the quantities of earthwork for a portion of a hilly road from following data: [10]

Formation width = 10 m
 Side slopes in cutting = 1:1 and in Banking = 2:1 (H.V) length of chain = 30 m

Chainage:	12	13	14	15
Depth of cut:	0.4	0.2	-	-
Ht.of Banking:	-	-	0.3	0.5
Transverse slope of ground:	1:10	1:12	1:10	1:8
 - Calculate the quantity of earth work for a portion of channel with the following data: [10]
 - Bed width = 3 m
 - Free Board = 0.44 m
 - Side slope for digging = 1:1
 - Side slope for Banking = 1: 1½ (V:H)
 - Fully supply depth = 1 m
 - Top width of bank = 1.5 m

Chainage:	0	30	60	90	120	150
RL of GL:	225.24	224.8	224.43	224.12	224.5	224.98
Proposed level:	224.00	223.94	223.88	223.82	223.76	223.7

Also draw a typical X-section.

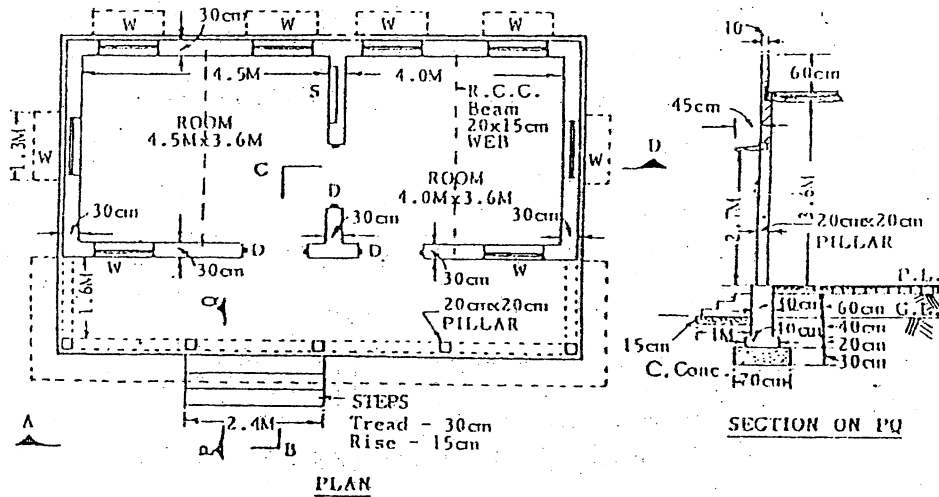


Schedule

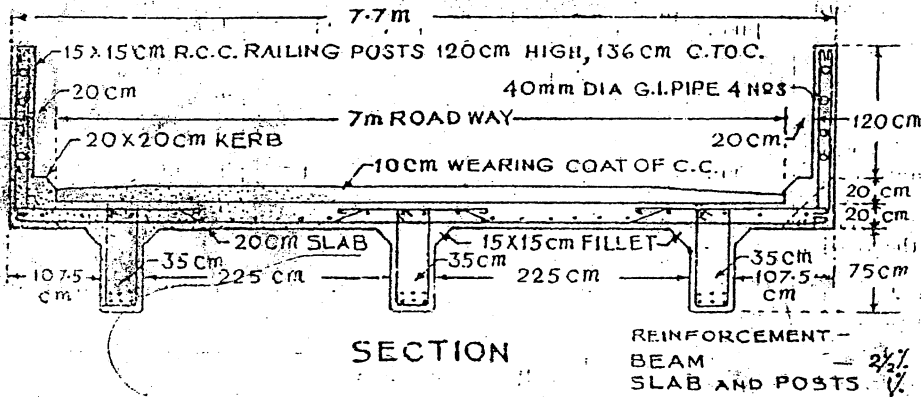
DOOR :
 D = 1.2M x 2.1M
 FRAME = 10cm x 8.0cm

WINDOW :
 W = 1.1M x 1.5M
 FRAME = 10cm x 8.0cm

SHELF :
 S = 1.1M x 1.5M
 20cm Deep



R. C. C. T-BEAM DECKING



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Subject: - Estimating and Valuation

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1. a) How are the following items of work measured? What are their units of measurement and payment? (i) Pointing work (ii) Steel reinforcement [3]
- b) Explain what do you understand by: (i) Bill of quantities (ii) Contingency [3]
- c) Explain why approximate estimate of any structure is done before the detailed estimate and final cost is worked out? [4]
2. Describe how will you prepare a detailed cost estimate of a building. [4]
3. a) What do you mean by analysis of rates? What are the requirements of rate analysis? [2]
- b) Calculate the quantities of materials required for the following items of work: [2×3]
 - i) 105m³ of PCC (1:4:8) in foundation
 - ii) 725m² of 20mm thick cement plaster (1:4) in wall.
- c) Prepare an analysis of rate of brick masonry in (1:5) cement mortar in super structure. Assume size of brick 240 × 130 × 65mm and thickness of mortar joint is 12mm. [4]

OR

Prepare an analysis of rate for 40mm thick asphalt concrete wearing coat per 10m².

- d) Prepare an analysis of rate for W.C. commode with low level cistern. [4]
4. a) What are the factors which should be kept in mind while evaluating fair and reasonable value of the property? [4]
- b) Discuss the various methods of valuation of the property. [4]
- c) Workout the valuation of a cold storage with the following data: [8]
 - i) Cost of land = Rs. 20,00,000.00
 - ii) Gross income per year = Rs. 95, 00, 000.00
Expenses incurred per year are as follows:
 - iii) Staff salary, electricity charges at the rate of 25% of gross income.
 - iv) Repair and maintenance of machinery, plants, equipments etc at the rate of 5% of their capital cost, which is Rs. 15,00,000.00.
 - v) Sinking fund for machinery, plants etc with 25 yrs life at the rate of 4% after allowing 10% scrap value.
 - vi) Insurance premium per year is Rs. 15,000.00
- Assume year's purchase for 60 yrs at the rate of 8% and redemption of capital at the rate of 4%.
5. a) Estimate the quantity of Earthwork of a portion of road from the following data: [8]

Formation width of the road = 10m

Side slope in banking = 2:1 (H:V.) Side slope in cutting = 1:1

Downward grade 1 in 120 from distance 0 to 30m while it remains in level from distance 30m to 90 m and have again upward grade 1 in 90 from distance 90 to 120m.

The formation level at distance 60m = 1197.50m.

The ground levels of the centre line of road are as under:

R.L. of ground	1198.65	1196.40	1199.30	1200.40	1198.10
Distance in m.	0	30	60	90	120

- b) Work out the quantity of Earth work in cutting and filling of a portion of a hill road as per data given below:

[10]

Cross slope = 1 in 5

Formation width = 8m

Side slope in cutting = 1:1

Side slope in filling = 2:1

R.L. of formation	699.20	702.20	704.20
R.L. of ground	698.80	700.00	706.20
Distance(m)	0	30	60

6. Estimate the quantity of the following items of work from the accompanying building drawings:

[3+5+4+4]

- i) PCC (1:3:6) in foundation
- ii) Brick work in (1:6) cement mortar in foundation and plinth.
- iii) Salwood work for doors and windows frame
- iv) PCC M20 for R.C.C. slab

Exam.	Regular/Back		
	Level	BE	Full Marks
Programme	BCE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Estimating and Valuation

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt **All** questions.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ **Necessary figures are attached herewith.**
- ✓ Assume suitable data if necessary.

1. a) What is an estimate? What is meant by ^{quantity} quality survey? Distinguish between estimated cost and actual cost. [3]
- b) What is meant by analysis of rate? What are the factors which affect the rate analysis? [3]
2. a) Prepare a preliminary estimate of two storied health post building to get administrative approval of Ministry. Data are given as below. [6]
30% built up area is occupied by circulation space.
10% built up area is occupied by walls.
Plinth area rate is Rs. 18000.00/sq.m.
Extra cost for interior design 1% of building cost.
Extra cost for electrical installation 8% of building cost.
Extra cost for other service 5% of building cost.
Contingency = 5%
Supervision charge = 3%
- b) How are the following items of work measured? [4]
 - i) Plaster work
 - ii) Cornice work
- c) Write short notes on: (any three) [3×2]
 - i) Overhead charge
 - ii) Task or out turn of work
 - iii) Salvage value and scrap value
 - iv) Sinking fund
3. a) Prepare an analysis of rate for M20 (1:1½:3) for RCC work per 10m³. [6]
- b) Calculate the quantities of materials required for following works: [2×4]
 - i) 10m³ brick masonry in 1:6 cement mortar
 - ii) 10m³ PCC (1:3:6) in foundation
4. a) Why valuation of property is required? Differentiate between obsolescence and depreciation. [5]
- b) Mention the various data you will need to collect as a valuator for land valuation. [4]

c) A town planning authority has to acquire an area of $4,50,000\text{m}^2$ for the development of a new colony. After developing the area it is proposed to be sold at a rate of Rs. 40.00 per m^2 . Work out the maximum compensation which shall be given to the land owners, whose land is to be acquired, assuming: [7]

- i) The town planning authority's establishment charges @ 15% on the sale price.
- ii) 35% area is to be provided for roads, parks and other public amenities.
- iii) Colony improvement expenditure @ Rs. 6.00 per m^2 .
- iv) Engineer's and Architect's fee for surveying and planning the colony @ 4% on the sale of plots.

5. a) Estimate the quantity of earthwork in cutting and filling from the following data for a portion of road. [7]

Formation width = 10m
 Side slope in banking = 2:1
 Side slope in ~~banking~~ ^{cutting} = 1:1

Chainage	Depth of cutting (m)	Height of filling (m)	Cross slope of ground
0	0.60	—	10:1
20	0.30	—	8:1
40	0.50	—	12:1
60	—	0.35	10:1
80	—	0.70	12:1

b) Find out the quantity of earthwork of a portion of road to be constructed with the following data: [7]

Formation width of the road throughout = 10m
 Side slope in banking (2:1) and side slope in cutting (1:1)
 Downward grade 1 in 120 from distance 90m to 120m. While it remains in level from distance 120m to 180m and have again upward grade 1 in 90 from distance 180m to 210m.

The formation level at distance 180m = 1197.50m.

The ground levels are as under

R.L. of ground	1198.65	1196.40	1199.30	1200.40	1198.10
Distance (m)	90	120	150	180	210

6. Estimate the quantities of the following items of work from the accompanying drawing. [14]

- a) Earthwork in excavation
- b) Cement concrete
- c) 1st class brick work
- d) RCC work

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Estimating and Valuation

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Necessary figures are attached herewith.
- ✓ Assume suitable data if necessary.

1. a) Describe how will you prepare a preliminary estimate of a government office building for administrative approval of government including external services. The external services should be specified [5]
- b) How are the following items measured? [5]
 - i) Plaster work ii) Cornice work
2. a) Prepare an analysis of rate for p.c.c (1:3:6) pr m³. [6]
- b) Calculate the quantities of materials required for the following works: [10]
 - i) 150m³ of brick work in (1:4) cement mortar in super structure
 - ii) 120m² of 20mm thick cement sand plaster(1:4)
3. a) Distinguish clearly between: [6]
 - i) Value and cost ii) Salvage value and scrap value
 - iii) Cost based method of valuation and development method of valuation
- b) A building is situated in a town on a land measuring 600m². The area of the built up portion is 20m × 15m. The building is provided with water supply, sanitary and electrical fittings and is of very sound construction and the life of which may be assumed as 100 yrs. Work out the valuation of the property, if the age of the building is 30 yrs. The prevailing built area rate is Rs 15000.00 per m² and value of land is Rs 500.00 per m². *plinth* [10]
4. a) Find out the quantity of earth work of a portion of road to be constructed with the following data: [10]

Formation width of the road = 10m
 Side slopes in banking and cutting = (2:1) and (1:1)
 Downward grade 1 in 120 from distance 90 to 120m while it remains in level from distance 120 to 180m and again upward grade in 1 in 90 from distance 180 to 210m.
 The formation level at distance 150m = 1197.50

R.L. of ground	1198.65	1196.40	1199.30	1200.40	1198.10
Distance (m)	90	120	150	190	210
- b) Calculate the quantity of earthwork in cutting and filling in a portion of a hill road from km 8.50 to km 9.00 having cross slope (transverse slope) of ground in 5 with the following data. [10]

Formation width of road = 8m
 Side slope in cutting = (1:1)
 Side slope in filling = (2:1)
 Depth of cut at centre line at km 8.50 = 40cm
 Depth of cut at centre line at km 9.00 = 80cm
5. Estimate the quantities of the following items of work from the accompanying drawing: [18]
 - a) Earth work in excavation in foundation
 - b) Brick work in foundation and plinth
 - c) Inside wall and ceiling cement plaster
 - d) Brick work in superstructure

Exam. Level	Regular / Back		
	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Estimating and Valuation

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Necessary figures are attached herewith.
- ✓ Assume suitable data if necessary.

1. a) What are the purposes of estimating? 'An estimate is never the actual cost of the work', justify your answer. [5]
- b) What are the different types of estimates? How do they differ from each other? [5]
2. a) Prepare a preliminary estimate of a 4 storied office building having total carpet area of 2000m² for obtaining the administrative approval of the ministry. Given the following data. 30% built up area will be taken up by corridors, verandah, toilets, staircase etc and 10% of the built up area will be occupied by walls. [7]
Plinth area rate is Rs. 15000/sqm
Extra for special architecture treatment 1.5% of building cost
Extra for electrical installation 8% of building cost
Extra for other services 5% of building cost
Contingencies 5% of building cost
Supervision charge 5% of building cost
- b) Write short notes on (any three): [6]
 - i) Approximate estimate
 - ii) Revised estimate
 - iii) Centre line method
 - iv) Capitalized value
3. a) Prepare an analysis of rates for supplying and laying premix asphalt concrete per m². [7]
- b) Calculate the quantities of material required for following works. [10]
 - i) 100m² cement sand plaster 12mm thick in (1:6)
 - ii) 100m³ P.C.C. (1:2:4)
4. a) You have been asked to prepare a valuation report of land for a security of loan. Describe various data which you will collect as a valuation. [5]
- b) A 4 storey building has just completed at a cost of Rs. 40,00,000. The building is constructed on a plot of 19 aana purchased for Rs. 25,00,000 in 2060. The prevailing rate of plots in the locality is Rs. 32,00,000 per ropani. Work out the standard rent per floor per month assuming the following outgoings. [10]
 - i) Municipal tax 25% of ratable value
 - ii) Collection and management charge @ 3% of gross rent
 - iii) Repairs at 1% on 9/10th cost of construction
 - iv) Sinking fund @ 5% for 65 years on 90% cost of construction
 - v) Miscellaneous expenses @ Rs. 500 per month

5. a) Estimate the quantity of earth work for a portion of road, when formation width is 10m. Side slope in cutting and filling are 1:1 and 2:1 respectively. [5]

				Distance
0m	30m	60m	90m	

				R.L.G
100m	110m	111m	112m	

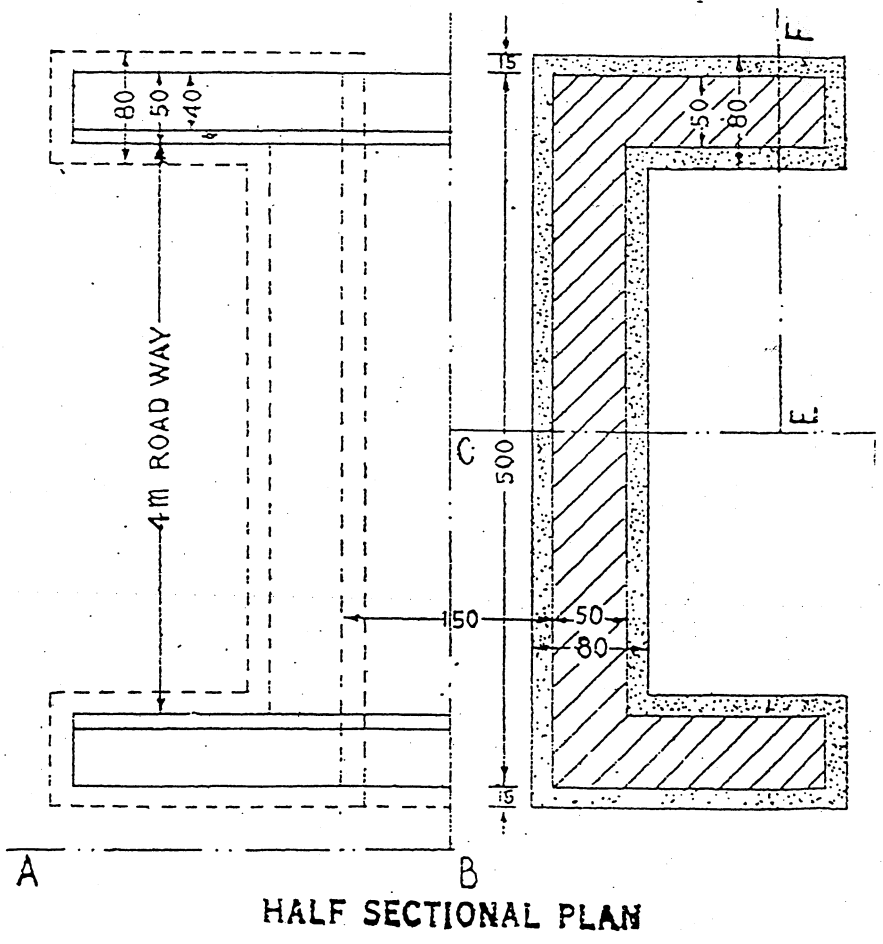
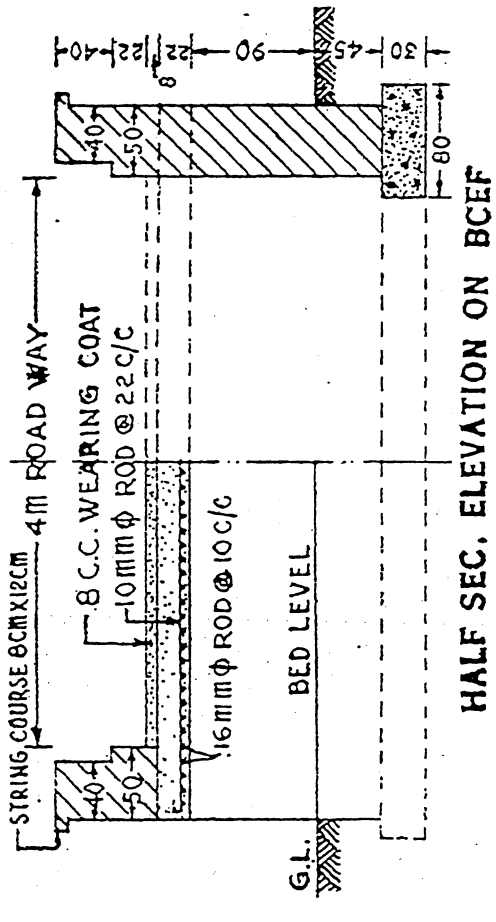
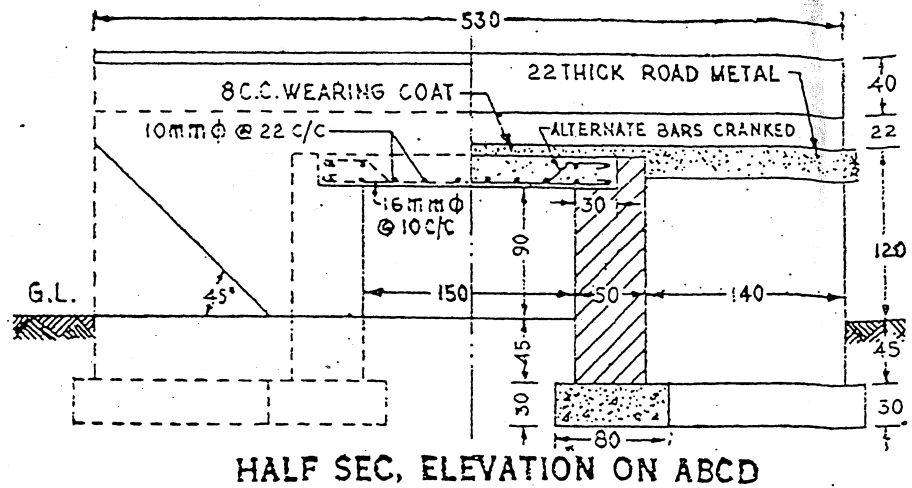
				R.L.F
100m	upward grad (1:100)			

- b) Find out the quantity of a hill road when the following data are given: formation width is 10m. Side slope in cutting and filling are (1:1 and 2:1) respectively. [6]

Chainage	Depth of cutting at centre line	Cross slope of ground
0	0.5m	10:1
30	0.30m	12:1
60	1.00m	10:1

Draw cross section at each point.

6. Estimate the quantities of the following items of work from the accompanying drawing. [14]
- Earthwork in excavation
 - Cement concrete in foundation
 - Brick work
 - RCC work



All dimensions in centimetre

OG Bhadra
Estimating & valuation

05

TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

Examination Control Division

2065 Shrawan

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Estimating and Valuation

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Necessary figure is attached herewith.
- ✓ Assume suitable data if necessary.

1. a) What is an estimate, why it should be prepared before construction work? What are the requirements of estimating? [5]
- b) Under what circumstances different types of estimate is prepared? Describe each of them with conditional examples. [5]
2. a) Prepare a preliminary estimate of a two storied VDC's office building to get administrative approval of district development committee having carpet area 500m². 30% of the built up area is occupies by circulation element and 10% of built up area is occupies by walls. Plinth area rate for civil work is Rs. 10,000 per m² cost of water supply, sanitary and electrification is 15% of civil cost. Cost of other services is 10% of civil cost. Departmental charge 8% of total cost. [7]
- b) Write short notes on (any three) [3×2]
 - i) Contingency
 - ii) Bill of quantities
 - iii) Distress value
 - iv) Depreciation
3. a) Prepare an analysis of rates for doors and window frame per m³. [7]

OR

Prepare an analysis of rates for supplying and laying W.C. commode with low level cistern.

b) Calculate the quantities of materials required for [2×5]

- i) 10m^3 Brick masonry in 1:4 cement mortar
- ii) 100m^3 PCC 1:3:6 in foundation.

4. a) Mention various method of valuation and under what circumstances each one is prepared? [5]

b) A 4 story building having a cubic content of 400m^3 was constructed 25 yrs ago on a freehold land measuring 500m^2 . The building fetches a rent of Rs. 25,000.00 per month. What amount will you recommend for advancing a loan to the owner against mortgage if the rate of land in that area is Rs. 2000.00 per m^2 . Assume the following outgoing: [10]

- i) Municipal and property taxes @ 30% of gross rent.
- ii) Collection and management charges @ 3% of the gross rent.
- iii) Repairs and maintenance @ 8% of gross rent. Assume the future life to be 65 yrs.
Rate of interest as 8% and for redemption of capital 4%.

5. Estimate the quantity of earthwork in cutting and filling from the following data for a portion of road 80m length. [10]

Formation width – 10m
Side slopes in banking 2:1
Side slopes in cutting 1:1

Chaingage	Depth of cutting at centre line	Height of banking	Cross slope of ground
0m	0.60	—	10:1
20m	0.70	—	12:1
40m	0.50	—	15:1
60m		0.30	12:1
80m		0.70	10:1

6. Estimate the quantities of the following items of work from the accompanying drawing. (Aqueduct) [15]

- a) Earthwork in excavation
- b) Cement concrete in foundation
- c) Brick work
- d) RCC work
