UNIT-I

1. (a) State the methods of preparing approximate estimates for residential buildings. Explain any two. 6

(b) Calculate the quantity of earthwork of an irrigation channel with the following data :—

(i) Bed width = 4 m

(ii) Side slope is : 1 in 1 in cutting and 1 in 1.5 in banking.

(iii) Bank Width – 2 m (either side).

(iv) Full supply depth = 0.80 m

(v) Free board is 0.40 m

(vi) Bed slope is 1 in 5000

Chainage (m)	Existing G.L. (m)	proposed. Bed level (mts.)
0	241.6	242.00
500	241.6	
1000	241.4	
1500	241.3	
2000	241.0	

7

1. a) What is the principle of units? Enlist the units of measurement for some important materials and items of building work. 6

b) Enlist the various methods of calculating earthworks in roads. Explain any one with a tabular Proforma. 7

The following table is an extract from the longitudinal section of a road earthwork survey. Calculate the volume of earth work.

a) Formation width of a road: 12m

b) Side slopes i) In banking – 2:1 ii) In cutting – 1.5:1

Chainage	200	230	260	290	320	350	380
R.L. of Ground (m)	98.70	98.80	99.30	99.50	99.80	99.90	99.60
R. L. of Formation (m)	99.50	------(+) (1in 300) ----->I<------(-) (1 in 150) ------>I					

OR

2. a) Prepare a preliminary estimate of a multistoried office building having carpet area of 2200 sq.m. 35% of total built up area will be taken up by corridors, verandah, lavatory, and staircase etc. 10% of total built up area is occupied by walls. Assume plinth area rate as Rs.3000.00 per square metre. Consider 8% of building cost for water supply and sanitation fitting, 10% for electrical fitting, 8% for other services and 2% for architectural treatment. 6

b) The ground levels at various chainages along centre line of a proposed road are 7

Chainage	21	22	23	24	25
Distance	0	30	60	90	120
RL Ground	180.50	183.36	185.52	187.10	186.50

The ground has uniform cross slope of 1 in 8. The length of chain is 30m. The road formation is proposed at uniform gradient passing through the G.L. at the end chainages with formation width as 8 m and side slope in cutting is 1:1. Estimate the quantity of earthwork for the proposed road section in a tabular form.

2. a) Prepare a preliminary estimate of a double stareyed building having carpet area of 2000m^2. It may be assumed that 30% of the built up area will be considered for corridors and verandahs and 10% of the area to occupied by walls. **7**

i) Plinth area rate : Rs. 1700 per m^2.

ii) Water supply and sanitary work : 5% of building cost.

iii) Electrical installation : 12.5% of building cost.

iv) Contingencies : 10%

b) What are various method of calculating Detailed estimated? Explain centre line method. **6**

1. a) Explain with suitable examples. The various methods of calculating Approximate estimates. **6**

b) The following table is an extract from the longitudinal section of road earth work survey. Calculate the quantity of earth work from the following data. **7**

i) Formation width : 14 m

ii) Side slopes : a) Banking – 2 : 1 b) cutting – 1.5 : 1

Chainage	0	30	60	90	120	150	180
R. L. of ground	99.70	99.80	100.30	100.50	100.80	100.90	100.60
R. L. of formation	100.50 – in 1300 (+) ∗ in 150 (–) →						

OR

2. a) Explain the objective of preliminary estimate and enlist method for preparing preliminary estimate. **6**

b) Estimate the quantity of earth work for an embankment 200 m long and 10 m wide at crest & where side slopes is 2 : 1. The central height from 0 to 30 chainage are 0.75, 1.50, 1.85, 2.1, 1.70m, 1.6m & 1.3m using Trapezoidal formula. **7**

1. a) Discuss the various methods for approximate estimate of a residential building. **6**

b) The following is an extract from the longitudinal section of a road alignment. The top width of earthwork is 7 meters. The side slopes in banking is 2 : 1 & cutting is 1 : 1. Calculate the earthwork in Road. **7**

Chainage	Ground level	Formation level
120	100.30	100.80
150	100.90	↑
180	101.40	(+) (1 : 120)
210	101.80	↓
240	101.50	↑
270	101.00	(-) (1 : 200)
300	100.60	↓
330	100.00	

OR

2. a) What are various methods of calculating Detailed Estimate? Explain centre line method comment on accuracy, compared to other methods. **6**

b) Estimate the Quantity of earthwork for an embankment of 180 m long and 10 m wide at crest & where side slopes is 2 : 1. The central height from 0 to at 30 m chainage are 0.70, 1.40, 1.75, 2.0, 1.60 m, 1.5 m & 1.2 m using Trapezoidal formula. **7**

1. a) Explain with suitable examples. The various methods of Calculating Approximate Estimates. **6**

b) The following table is an extract from the longitudinal section of a road earthwork survey. Calculate the quantity of earthwork from the following data. **7**

i) Formation width : 12 m

ii) Side Slopes : a) Banking – 2 : 1 b) Cutting – 1.5 : 1

Chainage	0	30	60	90	120	150	180
RL of Ground	99.70	99.80	100.30	100.50	100.80	100.90	100.60
RL of Formation	100.50 ———		in 300(+) →		← in 150(-) ———		

OR

2. a) Prepare a preliminary estimate of a double storeyed building having carpet area of 1800m^2. It may be assumed that 30% of the built up area will be considered for corridors and verandahs and 10% of the area to be occupied by walls **6**

Given :

1) Plinth Area Rate : Rs. 1500 per m^2
2) Water Supply and Sanitary works : 5% of building cost
3) Electrical Installation : 12.5% of building cost.
4) Contingencies : 10%

b) The ground levels at various chainages along centre line of a proposed road are **7**

Chainage	21	22	23	24	25
Distance, m	0	30	60	90	120
RL of Ground	180.50	183.36	185.52	187.10	186.50

The ground has uniform cross slope of 1 in 8. The length of chain is 30m. The road formation is proposed at uniform gradient passing through G.L. at the end chainages with formation width as 8 m and side slope in cutting is 1 : 1. Estimate the quantity of earthwork for the proposed road section in a tabular form.

a) Discuss the various method for approximate estimate of a residential structure. **6**

b) The ground level at various stations along the centrel line of a proposed road are as under: **7**

Station	Distance (m)	R.L. Of Ground at centre(m)
11	0	150.50
12	30	153.36
13	60	155.52
14	90	157.10
15	120	156.50

The ground has uniform cross slope of lin 8 the chain is 30m long. The road formation is proposed at uniform gradient passing through the G.L. at end chainage with formation width as 8m and side slope in cutting as 1:1.

Estimate the quantity of earthwork for the proposed road section.