Code No:**R1642011** **R16** **Set No. 1**

**IV B.Tech II Semester Regular/Supplementary Examinations, June - 2022**

**ESTIMATION SPECIFICATIONS & CONTRACTS**

**(Civil Engineering)**

**Time: 3 hours** **Max. Marks: 70**

***Question paper consists of Part-A and Part-B***
***Answer any THREE questions from Part-A***
***Part-B is compulsory***

*****

## PART–A *(3x14=42 Marks)*

1. a) What is an Estimate? Explain the purpose of Estimation [7]
   b) Explicate the various general items of work in buildings. [7]

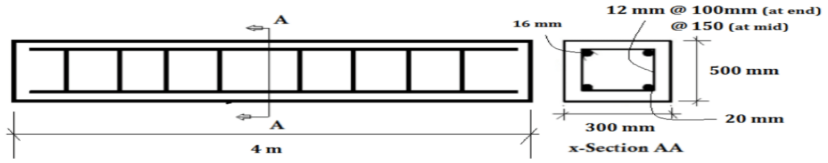
2 a) Discuss in detail about various components of rate analysis. [7]
   b) Illustrate the estimation of materials and rate analysis for brickwork of volume 10 cu.m. Include all the materials needed along with labour charges. [7]
   Head Mason – Rs.450 per day, Mason – Rs. 375 per day, Bhisti – Rs. 250 per day, Mazdor – Rs. 250 per day

3 a) With reference to the construction of a canal, whose proposed bed slope is 1 in 4500, the following survey data was made available for a portion of the work: [7]

| **Chainage** | 0 | 150 | 300 | 450 | 600 |
|---|---|---|---|---|---|
| **Ground level (m)** | 97.5 | 98.0 | 98.4 | 98.9 | 99.4 |
| **Proposed Bed Level (m)** | 100.0 | -- | -- | -- | -- |

The bed width is to be maintained at 4.5 m with the section being fully in banking. The top width of the side banks is to be kept as 2.50 m, with the side slopes at 1:1.5. The full supply depth of water is 1.25 m with a free-board of 0.5 m. Calculate the quantity of earthwork using Full Sectional Area method.

   b) Prepare the quantity of reinforcement by preparing bar requirement schedule of a beam as per the drawing given below. [7]




4 a) Define the following terms: [7]
   i. Quotation
   ii. Tender
   iii. Security
   iv. Market Value

   b) (i) Explain about Depreciation method. [3]
   (ii) A building is situated on well-developed area costsRs.250,000/-, considering its scrap value as 10% of the cost and life as 80 years. Find out depreciated value if the life of the building is 20 years. [4]



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5 a) Calculate the quantity of earthwork for the construction of an approach road Length = 1.5 km Width of formation = 12 m Height of embankment = 75 cm Side slope = 1:2. Assume any other data suitably. [6]

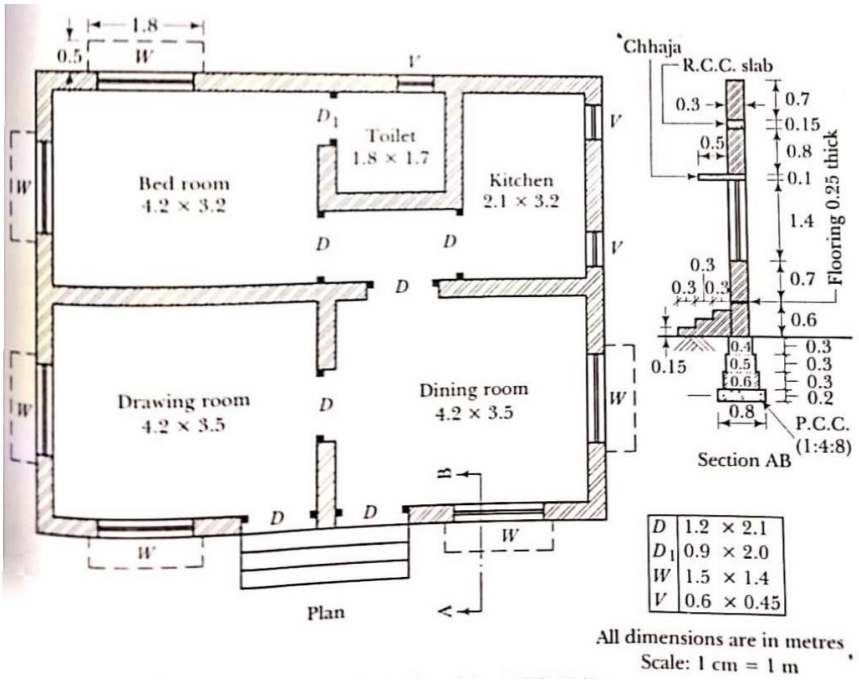
b) Prepare a preliminary estimate of a building project with a total plinth area as 1230 sq.m with the following details: Plinth area rate – Rs. 825 per sq.m; water supply and sanitary – 6% of the building cost, installation – 10% of the building cost; services – 6%; Contingency charges – 3.5%; Supervision charges – 7%. [8]

6 a) The plinth area and plinth area rate of a residential building are 120sq.m and Rs. 4500/- respectively. Determine the total cost of building assuming suitable provisions. [7]

b) Explain in detail about the Cost and Development based methods of determining the Value of any property. [7]

## PART–B *(1x28 = 28 Marks)*

7. Calculate the following items from the plan and section given in the figure below using Centre Line method:
(i) Earthwork Excavation for foundations.
(ii) Plain Cement Concrete (1:6:8) for foundations.
(iii) First Class Brickwork in cement mortar (1:6) in foundations and plinth.
(iv) Roofing – RCC (1:2:4)
(v) CC (1:4:8) for Flooring



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**ESTIMATION SPECIFICATIONS & CONTRACTS**

**(Civil Engineering)**

**Time: 3 hours** **Max. Marks: 70**

***Question paper consists of Part-A and Part-B***
***Answer any THREE questions from Part-A***
***Part-B is compulsory***
*****

## PART–A *(3x14=42 Marks)*

1. a) Classify and explain various types of estimates. [7]
   b) Prepare an Approximate estimate of building project with total plinth area of all building is 100 sqm. and from following data. [7]
   Plinth area rate Rs. 55,000 per sq.m.
   Cost of water supply @ 6.5%of cost ofbuilding.
   Cost of Sanitary andElectrical installations each @ 7.5% of costofbuilding. Cost of architectural features @1.5% of buildingcost.
   Cost of roads and lawns @5.7% of building cost.
   Cost of P.S. and contingencies @4% of building cost.
   Determine the total cost of building project.

2 a) Illustrate various miscellaneous cost along with their prescribed percentages to be included in preparation of rate analysis. [7]
   b) Calculate the materials and carry out the rate analysis for Cement concrete(C.C)(1:2:4) for RC work. [7]

3 a) The Formation level at chainage zero is 35 and having the rising gradient of 1 in 100 the top width is 10 m and the side slopes are 1.5H to 1V. Assuming transverse slope is level. Calculate the volume of earthwork with the following data: [7]

| **Chainage** | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
|---|---|---|---|---|---|---|---|---|
| **RL** | 25 | 25.5 | 26.5 | 27.0 | 27.9 | 27.2 | 28.3 | 29.0 |

   b) Explain the steps involved in estimating the earthwork for canals along with the applicable equations. [7]

4 a) Classify various types of Contracts. Explain any one in detail including all the constraints. [8]
   b) Calculate standard rent of a building with the following data: [6]
   Cost of land = Rs. 80,000/-
   Cost of building = Rs. 1,75,000/-
   Expected life of building = 70 years
   Return expected = 10% on land
   5% on building
   Annual repairs = @ 10% on the cost of building
   Sinking fund = @ 35 of the return from building

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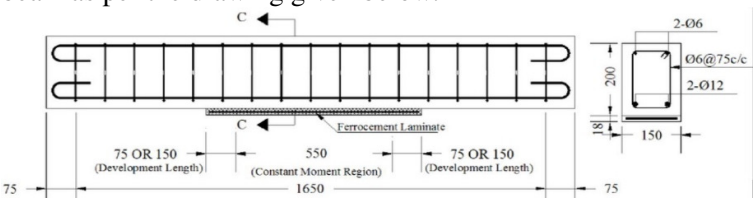
5 a) Prepare the quantity of reinforcement by preparing bar requirement schedule of a beam as per the drawing given below. [8]



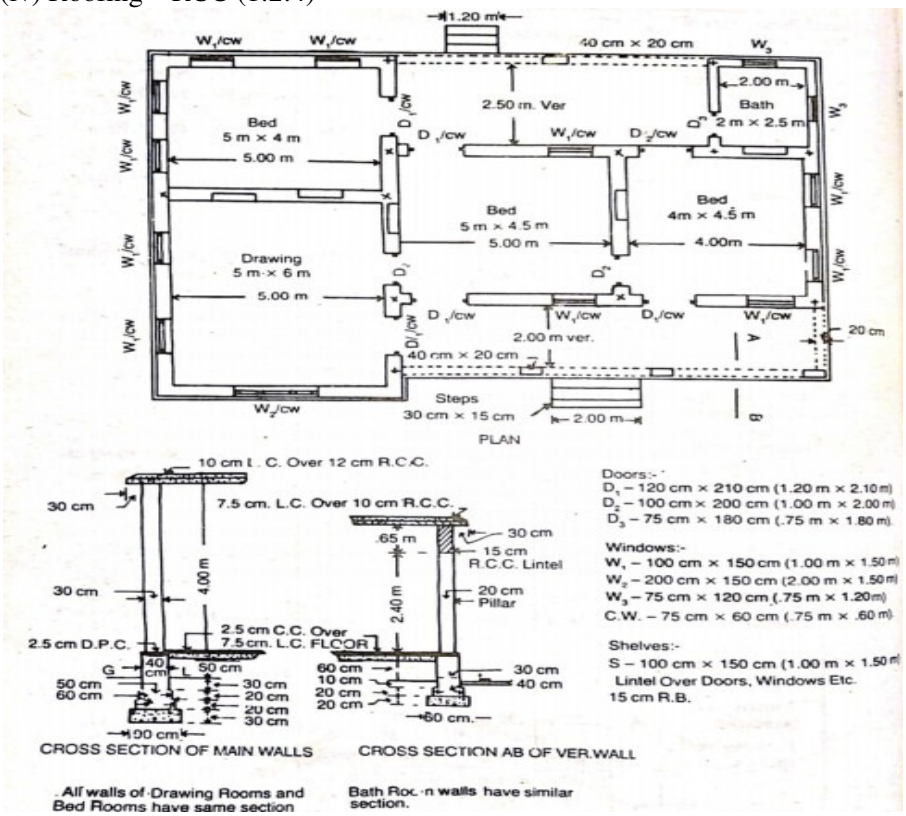

b) Discuss the various general specificationsof third-class buildings. [6]

6 a) Explain the Depreciation and Profit based methos. Also state the applicable equations and methodology. [8]

b) Discuss the principles adopted in deciding Unit of measurement with suitable applications. [6]

## PART–B*(1x28 = 28 Marks)*

7. Calculate the following items from the plan and section given in the figure below using Centre Line method:
(i) Earthwork Excavation for foundations.
(ii)Cement Concrete (1:4:8) bed for foundations.
(iii) RR masonry in CM (1:6) for footings and Basement
(iv) Brickwork in CM (1:6) in for superstructure
(iv) Roofing – RCC (1:2:4)



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**ESTIMATION SPECIFICATIONS & CONTRACTS**

**(Civil Engineering)**

**Time: 3 hours** **Max. Marks: 70**

***Question paper consists of Part-A and Part-B***
***Answer any THREE questions from Part-A***
***Part-B is compulsory***
*****

## PART–A *(3x14=42 Marks)*

1. a) Enlighten in detail about Approximate Estimate with the required salient features for its process. [8]
   b) Illustrate the steps in preparation of an Estimate. [6]

2 a) Show the various steps involved in rate analysis of Earthwork and Plastering. [8]
   b) Show the material estimates and rate analysis for Lime Concrete of 10 cu.m in foundation with 25 mm down brick chips (or jhama chips) with lime surki mortar (1:2:5½). Assume any other data suitably. [6]

3 a) Find the volume of earthwork using Mid-Sectional Area and Mean-Sectional method for the embankment of length 17.0m. Take Top width as 7.0 m, depth as 3.5m and the side slopes as2.5H:1V. [6]
   b) Write a detailed note on Task or Out-Turn work. [8]

4 a) What is a contract agreement? Explain the process, salient features and stakeholders involved in it. [6]
   b) Exemplify various methods adopted in estimating the Valuation of the building with one suitable application for each. [8]

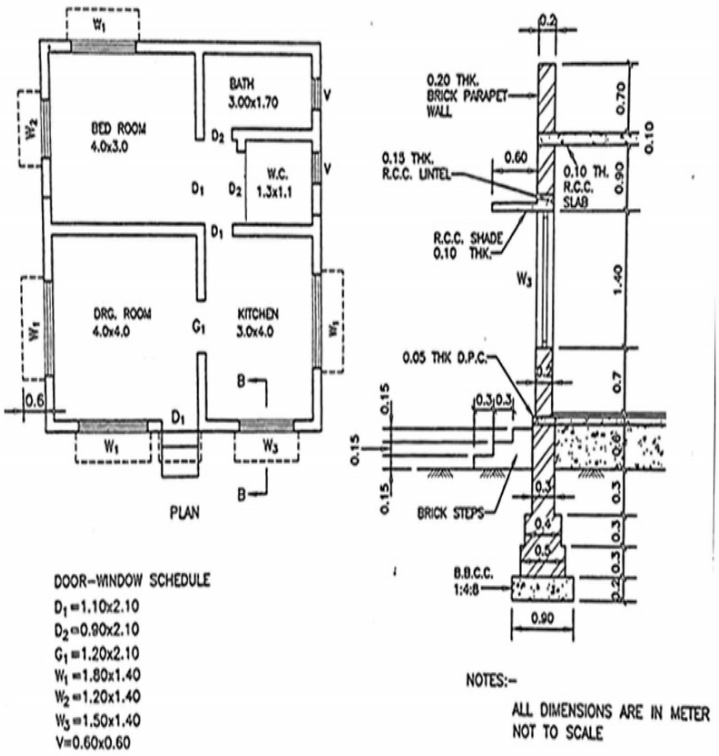
5 a) Prepare the rough estimate for a proposed commercial complex from the following data. [7]
   Plinth Area = 1000 $m^2$/floor
   Height of each storey = 3.5m and No. of storey's = G+1
   Cubical content rate = Rs. 1350 per $m^3$
   Provide the following as a percentage of structured cost water supply & Sanitary arrangement - 7% Electrification - 6% Fluctuation of rates - 6% Contractors profit - 9% and Petty supervision & contingencies – 3.5%
   b) Annual repairs are expected to be 0.75% of the cost construction and other out goings will be 30% of the gross rent. There is no proposal to set up a sinking fund.Calculate the annual rent of a building with the following data: [7]
   Cost of Land = Rs. 35,000/-
   Cost of building = Rs. 80,000/-
   Estimate life = 75 years
   Return expected = 5% on land
   6% on building

6 a) Write a detailed note about the following: [6]
(i) Lap length of Reinforcement.
(ii) Bent up bars

b) Discuss the various general specifications needed of first-class buildings. [8]

## PART–B *(1x28 = 28 Marks)*

7. Calculate the following items from the plan and section given in the figure below using Centre Line method:
(i) Earthwork Excavation for foundations.
(ii) Plain Cement Concrete (1:4:8) for foundations.
(iii) RR masonry in Cement mortar (1:5) in foundations and plinth.
(iv) Sand filling in basement
(v) Flooring with Mosaic tile set in CM (1:3)



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**IV B.Tech II Semester Regular/Supplementary Examinations, June - 2022**

**ESTIMATION SPECIFICATIONS & CONTRACTS**

**(Civil Engineering)**

**Time: 3 hours** **Max. Marks: 70**

***Question paper consists of Part-A and Part-B***
***Answer any THREE questions from Part-A***
***Part-B is compulsory***
*****

## PART–A *(3x14=42 Marks)*

1. a) Discuss the various standard methods adopted for measurement of building works. [7]
   b) Prepare the rough estimate for a proposed commercial complex from the following data. [7]
   Plinth Area = 500$m^2$/floor
   Height of each storey = 3.5m and No. of storey's = G+2
   Cubical content rate = Rs. 1000/$m^3$
   Provide the following as a percentage of structured cost water supply & Sanitary arrangement - 7% Electrification - 6% Fluctuation of rates - 6% Contractors profit - 9% and Petty supervision & contingencies – 3.5%

2 a) Explain in brief about rate analysis and the procedure adopted for rate analysis. [7]
   b) Estimate the rate per unit for carriage of materials like lime, ballast and kankar by truck for a head of 25.5 km. Take the loading capacity of truck as 3.0 cu.m of material. [7]

3 a) What is meant by lead statement? Explain in detail. [6]
   b) Prepare bar bending schedule and calculate the quantity of reinforcement in a R.C.C (1:2:4) lintel as per data given below: [8]
   Total Length of the lintel including bearing=1.25 m
   Thickness of wall=400 mm and thickness of lintel=150 mm;
   Main reinforcement 5 bars of 12 mm ϕ (out of which 2 bars are bent up near support)
   Top reinforcement 2 bars of 10 mm ϕ; 6 mm ϕ, 2 legged stirrups are provided @175mm c/c uniformly.

4 a) Illustrate the contents in any contract document? Also explain the conditions to be followed for any Contract. [7]
   b) What is meant by Valuation? Discuss in detail the necessity of Valuation. [7]

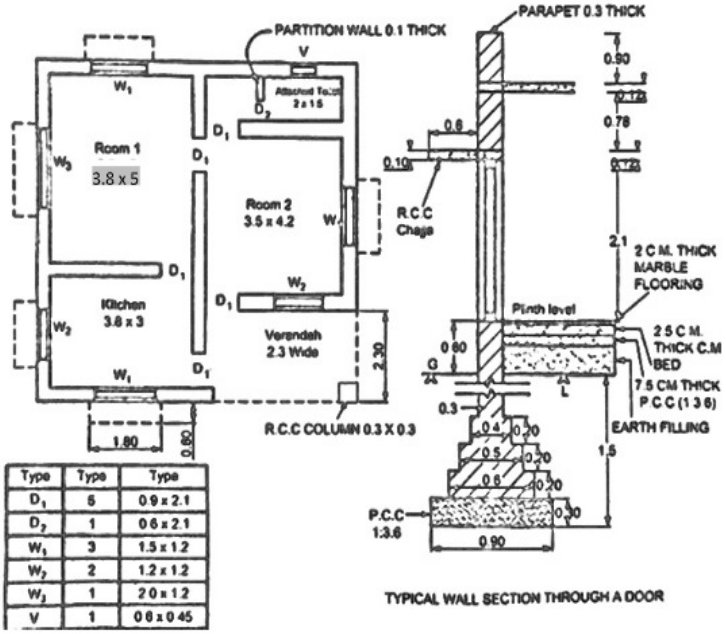
5 a) Differentiate between the general specificationsof second- and third-class buildings. [6]
   b) Estimate the materials required and rate analysis for the following: [8]
   (i) 25 mm thick cement concrete (1:2:4) damp proof course. The area of DPC is 120 sq.m
   (ii) Random Rubble Masonry in cement mortar (1:6) for 10cu.m volume in foundation and plinth.

6 a) An R.C.C framed structure building having estimated future life of 75years, fetches a gross annual rent of Rs.2500/- per month. The rate of compound interest for sinking fund may be 5%. The plot measures 450sq.mand cost of land may be taken as Rs.1500/- per sq.m [7]
The other out goings are:
i) Repair & maintenance = of gross income 1/12
ii) Municipal & property taxes = 25% gross income
iii) Management & miscellaneous = 7% gross income
The plinth area of the building is 700 sq.m and cost per sq.m may be taken as Rs.450/-.Work out its capitalized value on the basis of 5.5% net yield.

b) What are the different methods for computation of earthwork in road embankments? Explain in detail [7]

## PART–B *(1x28 = 28 Marks)*

7. Calculate the following items from the plan and section given in the figure below using Individual Wall method:
(i) Earthwork Excavation for foundations.
(ii)Cement Concrete in foundations (1:6:18)
(iii) Reinforced Cement Concrete (1:2:4) in lintels, sunshades and roof slab
(iv) Damp proof course,4 cmthick of cement concrete (1:2:4) with 2 coats




| Type | Type | Type |
|---|---|---|
| $D_1$ | 5 | 0.9 x 2.1 |
| $D_2$ | 1 | 0.6 x 2.1 |
| $W_1$ | 3 | 1.5 x 1.2 |
| $W_2$ | 2 | 1.2 x 1.2 |
| $W_3$ | 1 | 2.0 x 1.2 |
| V | 1 | 0.6 x 0.45 |