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15ENG46

Fourth Semester B.Arch. Degree Examination, Jan./Feb. 2021 Specification, Quantity and Costing in Buildings

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Follow written dimension, do not scale the drawing.*

Module-1

- 1 a. What is an Estimate? (03 Marks)
 b. Explain the following types of Estimate:
 i) Preliminary Estimate
 ii) Detailed Estimate or item rate estimate
 iii) Revised Estimate
 iv) Supplementary Estimate. (12 Marks)
 c. Carpet area of building is 70m^2 . Wall area of building is 12m^2 . Cost of construction of building is 1,08,000 Rs./ m^2 . Determine the cost per sq mt by Plinth Area method. (05 Marks)

OR

- 2 Write detailed Technical specification for the following:
 i) Earthwork excavation for foundation in hard soil. (07 Marks)
 ii) Providing and Constructing Burnt brick masonry is CM 1:6 using table moulded bricks for super structure. (07 Marks)
 iii) Providing and laying 600mm \times 600mm vitrified tile flooring in CM1:6 on a bed of PCC 1:4:8. (06 Marks)

Module-2

- 3 Accompanying Fig.Q.3 shows the details of 3 bed room unit. By centre line method estimate the below mentioned items of work.
 i) Calculate of net length of below mentioned items from the central line diagram. (08 Marks)
 ii) Calculate the Quantity of Earthwork for excavation. (04 Marks)
 iii) Providing and laying PCC 1:4:8 for foundation. (03 Marks)
 iv) Providing and laying PCC 1:2:4 for Roof slab using 20mm and down size coarse aggregates. (05 Marks)

OR

- 4 Refer Fig.Q.3, using centre line method
 i) Calculate Quantity of size stone masonry for foundation in CM1:6. (09 Marks)
 ii) Calculate Quantity of Burnt Brick Masonry in CM 1:6 for super structure (only main walls). (11 Marks)

Module-3

- 5 a. What is Rate analysis? What are factors considered, when rate of item of work is analyzed? (06 Marks)
 b. Why is "BASIC PRICE" of materials specifically mentioned in TENDER. Explain the significance. (06 Marks)
 c. How is "Non tendered item" in a project dealt. (03 Marks)
 d. The basic price of cement and steel was Rs.350 per Bag and Rs.52000/MT respectively. Duration of the project was 18 months. Purchase price of cement and steel after the commencement was Rs.380/Bag and Rs.58000/MT. And total quantity of cement and steel used in the project was 4500 Bags and 40MT of steel. In the above situation the owner is obligated to pay/receive from the vendor and how much. (05 Marks)

OR

- 6 From the 1st principles arrive at the rate for below mentioned items of work.
- Providing and laying PCC 1:4:8 for foundation using 40mm and down size coarse aggregates. (06 Marks)
 - Providing and constructing Burnt brick masonry in CM 1:6 for super structure using table moulded bricks. (07 Marks)
 - Providing and constructing coarsed Random Rubble Masonry in CM 1:6 for foundation using hammer dressed stones. (07 Marks)

Module-4

- 7 The details of 6 No's column footing and column. Calculate the Quantity of steel required diameter wise given weight of bar.
- Per metre is 8mm → 0.39 kg/mt
 10mm → 0.61 kg/mt
 20mm → 2.50 kg/mt
- Column footing size → 2.0mt × 2.0mt × 1.50mt
 for Earthwork
 P/L PCC 1:4:8 for foundation → 0.15mt depth.
 Footing depth → 0.50mt.
 Footing Reinforcement → 10mm Φ @ 100mm c/c both ways.
 Clear cover for footing → 50mm.
 Development length of column bar → 500mm.
 Height of column above the ground → 5.50mts.
 Cross section of column → 300mm × 300mm.
 Main Reinforcement of column → 8 No's – 20mm Φ .
 Lateral ties 8mm Φ bars @ 150mm c/c.
 Clear cover for column = 40mm. (20 Marks)

OR

- 8 For the above details, calculate the following:
- Earthwork excavation for foundation is hard soil. (04 Marks)
 - Providing and laying PCC 1:4:8 for foundation. (04 Marks)
 - Providing and laying M20 grade concrete for column footing. (04 Marks)
 - Providing and laying M20 grade concrete for column. (04 Marks)
 - Refilling the excavated to the trenches. (04 Marks)

Module-5

- 9 Estimate the quantity of earthwork for portion of a road with width equal to 8mts. Side slopes are 2H:1V in filling and 1.5H:1V in cutting. "Mean Area Method" is used to calculate the volume of Earthwork.

Chainage in mts	600	630	660	690	720	750	780	810	840	870	900
RL of ground	61.20	61.25	60.90	61.25	60.80	60.45	60.20	60.35	59.10	59.45	59.70
Formation level	60.0	← Upward gradient 1 in 200 →									

(20 Marks)

10

OR

Fig.Q.10 shows the plan and section of septic tank. Estimate below mentioned items of work.

- | | | |
|------|--|------------|
| i) | Earth work Excavation for foundation | (04 Marks) |
| ii) | P/c PCC 1:4:8 for foundation | (03 Marks) |
| iii) | P/c BBM in CM 1:4 for side walls | (08 Marks) |
| iv) | P/L M20 grade concrete for cover slab. | (05 Marks) |

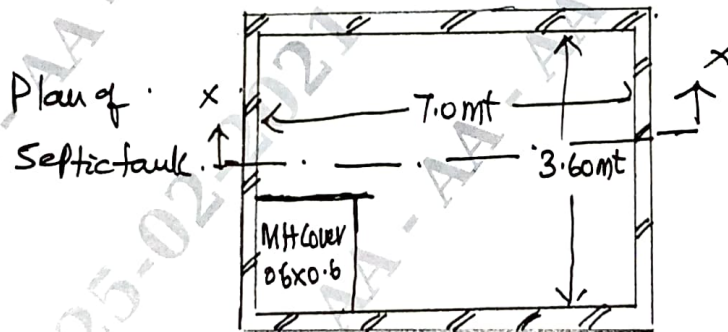
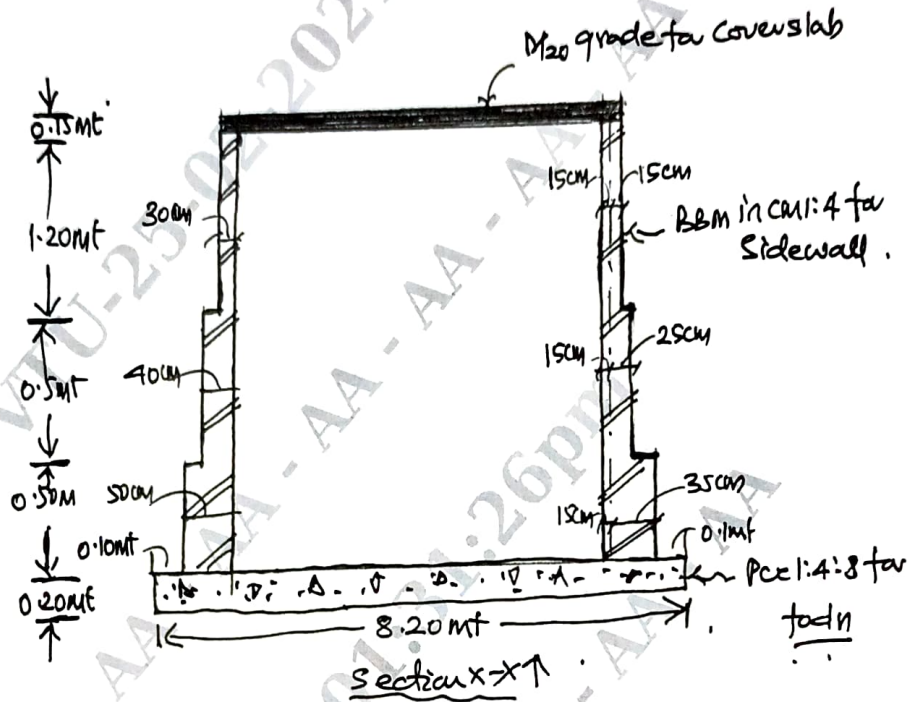
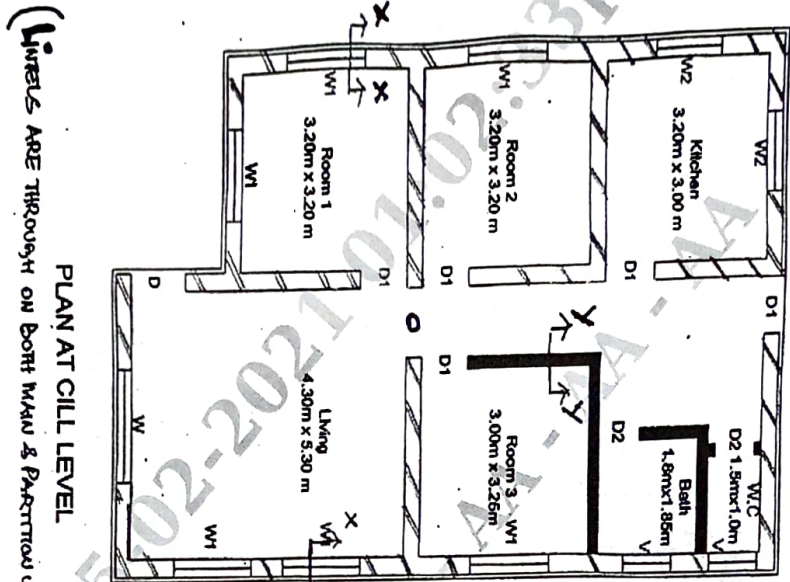


Fig.Q.10



PLAN AT CILL LEVEL

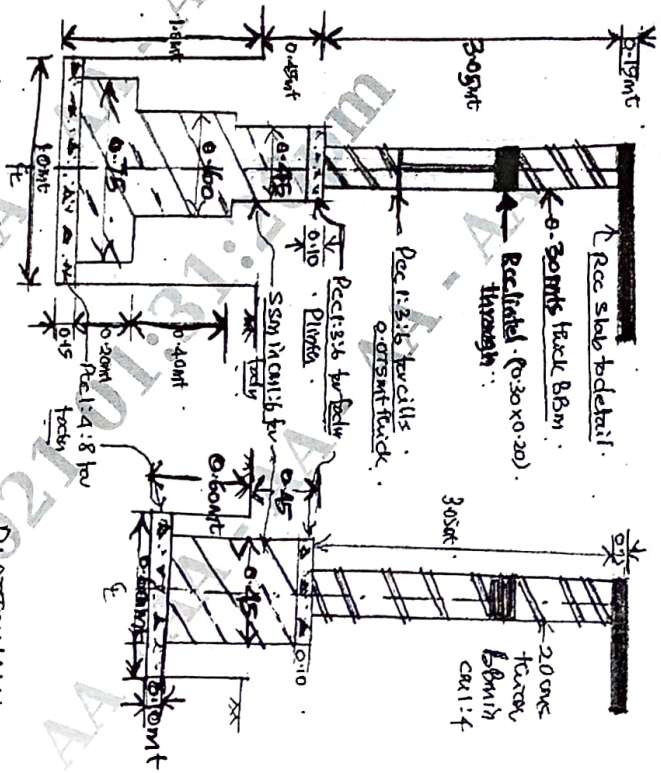
(Windows ARE THROUGH ON BOTH MAIN & PARTITION WALL)

open → ○ → 0.90 x 2.10 → INO

SCHEDULE OF OPENING

- D₁ → 1.05 x 2.10 → IAD.
- D₁ → 0.80 x 2.10 → SNO.
- D₂ → 0.75 x 2.10 → 2NO.
- W → 0.90 x 2.10 → INO
- W₁ → 1.80 x 1.20 → W0.
- W₁ → 1.52 x 1.20 → 6NO.
- W₂ → 1.20 x 1.05 → 2NO.
- V → 0.90 x 0.60 → 2NO.

MAIN WALL FORMING DETAIL



PARTITION WALL FORMING DETAIL

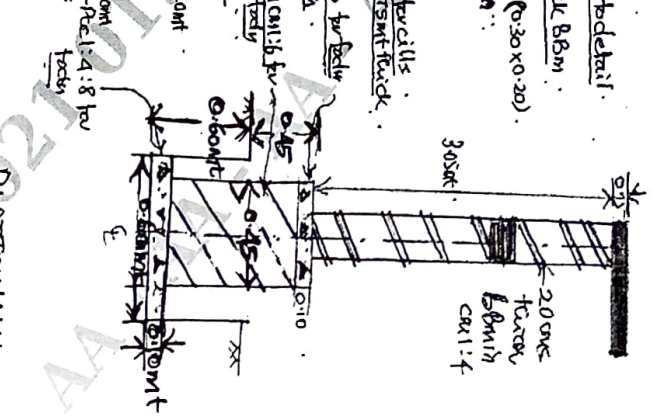


Fig.Q.3
