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→ civil dept.

→ Summer 2020

→ Estimation

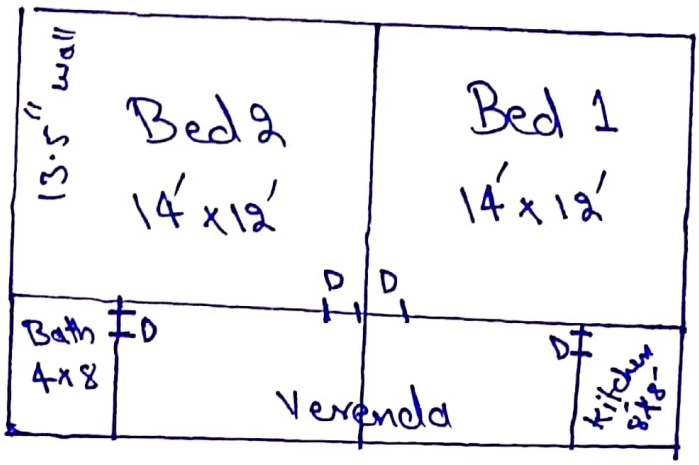
→ 28 - 09 - 2020

→ A

Q No #1 :→ (Part – i)

Solution :→

(1) Plinth Area of the building



- External length of Building

$= 14' + 14' + 2\,(1.125) + 0.75$

$= 31$ feet

- External bredth of building

$= 12' + 8' + 2\,(1.25) + 0.75$

$= 23$ feet

- Plinth Area of the building

$= 31 * 23$

$= 713\ ft^2$

(P – T – O) ⇒

- Rate of construction = 300/sqft
- Cost of construction = 713 x 300
  = 213900/-
- water supply = $\frac{213900 \times 10}{100}$
  = $\frac{213900}{100}$ = 21390/-
- Cost of electric supply = $213900 \times 10/100$
  = $\frac{2139000}{100}$ = 21390/-
- Cost Gas supply = 5%
  = $213900 \times 5/100$
  = $\frac{1069500}{100}$ = 10695/-
- Total cost = rate of construction +
  + cost of water & sanitry + Cost of Gas supply + + costo of electric
- Total cost = 213900 + 21390 + 21390 + 10695
  = 267375
- Contingencies = $267375 \times 3/100$

(P-T-O) ⟹

$$= \frac{802125}{100} = 8021.25$$

Grand total = 267375 + 8021.25

Answer : ⟶ = 275396.25/-

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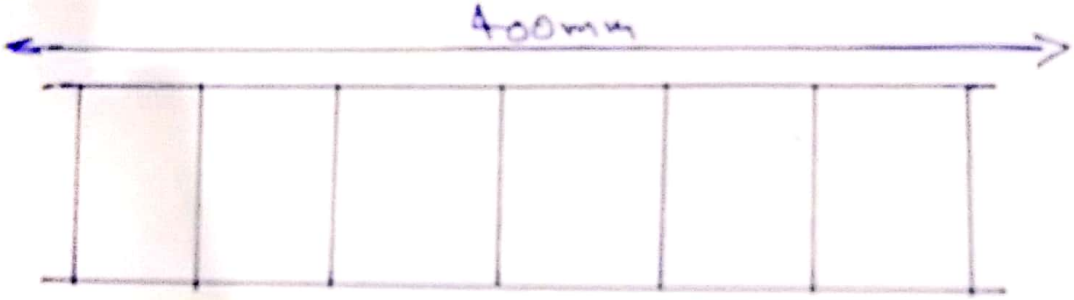
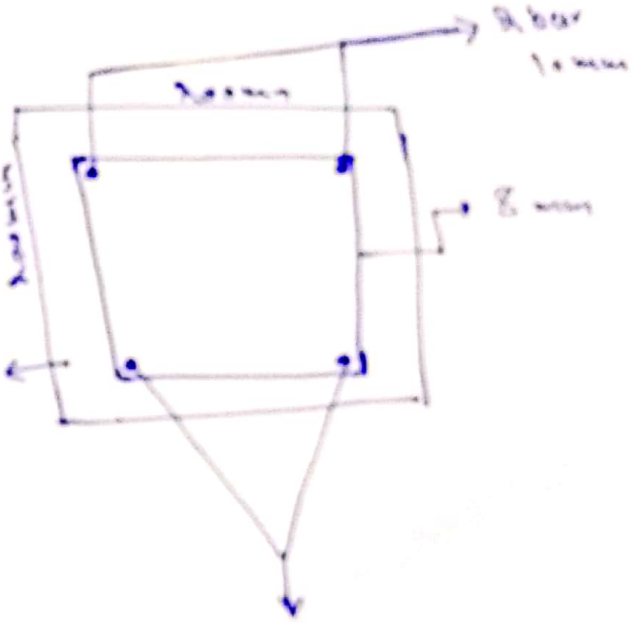
Q No #2: ⟶

Answer: ⟶



clear cover 30 mm



- Step #1: →

→ Length of bar (12 mm) bottom bars.

→ Length of steel 12mm = (length of beam - (cover) X

X No of bars

= (400 - 2(30)) X 2

= 7888 mm or 7.88m

- Step #2: → Length of bar (10mm) top bar

Length of steel 10mm = (length of beam - cover) X No of bar

= (4000 - 2(30)) X 2

= (3880) X 2

(P - T - a) ⟹

$= (3880) \times 2$

7880 mm or 7.88m

Step # 3:→

weight of (12mm) bottom bar

$= \left(\frac{d^2}{16^2}\right) \times L$

$= \left(\frac{(12)^2}{16^2}\right) \times 7.88.$

$= \left(\frac{144}{162}\right) 7.88 \Rightarrow (0.888)\,7.88$

$= 7.004$ KG

Step #4: → weight of 10mm top bar

$= \left(\frac{d^2}{16^2}\right) L$

$= \left(\frac{10^2}{16^2}\right) \times 7.88$

$= \left(\frac{100}{162}\right) \times 7.88 = (0.617)\,7.88$

$= 4.864$ KG

(P-T-O)⇒

Step #5 :⟶

for Stirrup

= (Length of beam/spacing) + 1

= (4000/200) + 1

= (20) + 1

= 21 Nos

Step #6 :⟶

Cutting length of stirrup

= (2(x)) + (2(y)) + hook (Qd) − bend (2 dif 90 degree)

= (2 × 132) + (2 × 132) + (2 × 10 × 8) − (5 × 2 × 8)

= 264 + 264 + 160 − 80

= 688 − 80

= 608 mm or 0.608 m

(P-T-O) ⇒

Step #7 :⟶ Total (length of stirrups)

(cutting length × No of stirrups).

$(0.608 \times 21) = 12.768\ m$

Step #8 :⟶ (weight of stirrups)

$= \left(d^2/16^2\right)L \Rightarrow \left(8^2/16^2\right) \times 12.768$

$= \left(\frac{64}{162}\right) 12.768 \Rightarrow (0.39506)\, 12.768$

$= 5.044\ KG$

Sr.No	Types of bar	No.s	Length of meter	Unit weight of 1kg	Total weight	Notes
1	10mm	21	7.88 m	4.861 kg		
2	12mm		7.88 m	7.004 kg		
				11.841		

(P-T-O) ⇒

wastage of steel 5 %

i) weight of bar is 12 mm

$7.004 \times 5/100 = 0.350$

$-7.004 + 0.352 = \boxed{7.35}$

(2) weight of 10 mm bar.

$= 4.864 \times 5/100 = 0.3502$

$= 0.3502 + 4.864 = \boxed{5.2142}$

(3) weight of stirrup.

$= 5.044 \times 5/100$

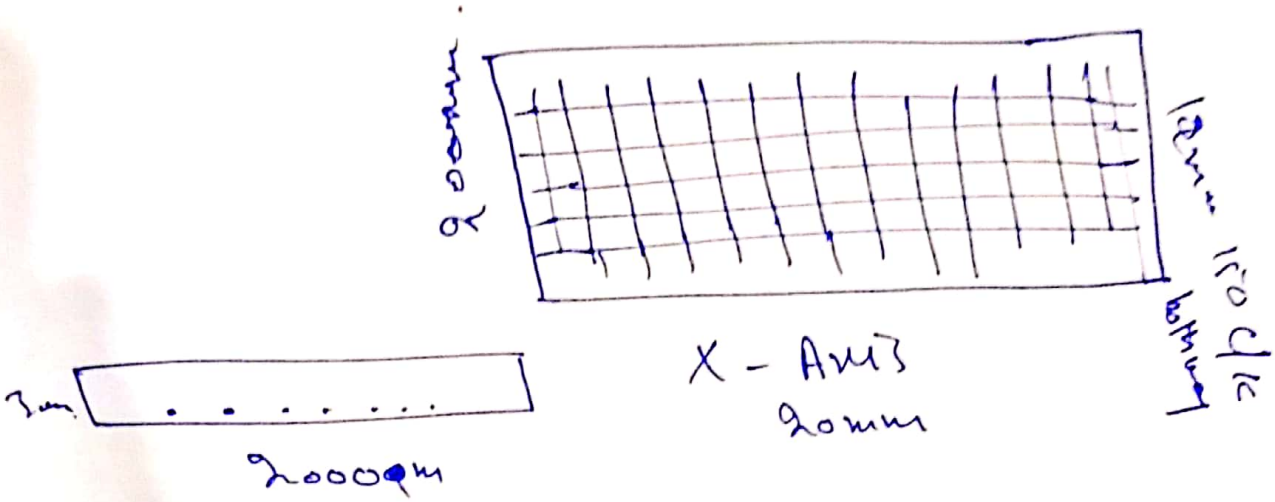
$= 0.2522 + 5.044$

$= \boxed{5.2962}$

(P - T - O) =>

Q No #3:→

Solution:→ (step #1)



Step #1:→ Find the effective length.

Effective length of (x) = length − both sides cover.

$2000 - 2(50) = 1900$ mm

Effective length of y axis = 2000 − 2(50) / 1900 mm

Step #2:→ Find the no of bars.

(Effective length (x) / spacing + 1)

$= 2(1900/150) + 1 = 38 + 1 = 39$ Nos.

$(1900/150) + 1 = 12.666 + 1 = \boxed{13.666}$

No of bar in y axis

$\boxed{(1900/1500) + 1 = 13.666}$

(P − T − O) ⇒

Step #3 :→ Find the cutting lengths

Along (x) = 1900 + 2(300 − 50 − 50) − 2(2×12)

= 2252 mm or 2.25 m

Along (y) = 1900 + 2(300 − 50 − 50) − (2(2×12))

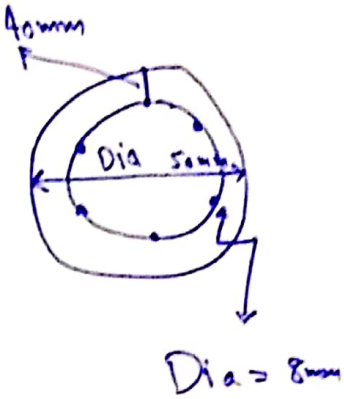
= 2252 mm or 2.25 m

S.No	Type of Bar	Dia (mm)	No	length mm	Total length	weight kg/m	Total weight kg	Notes
1	(x) 1-2 Direction	12	13.666 or 14	2.25	22.5	0.89	20	$d^2/16^2$ $12^2/16^2$ = 0.84
2	y-Direction	12	14	2.25	22.5	0.89	20	12/162 = 0.84
Total							40 kg	
Add 5% wastage							2	
Gross weight							42 KG	

Q No #4 (i): →

Solution:→

Cutting length for the circular strips.



Circular Column

- Dia of column = 500 mm
- Dia of strip c/c = 500 − (2×40) − (4+4)

= 500 − 80 − 8

= 412 mm

- Parameter of stirrup = πd

= 3.145 × 412 = 1294.504 mm

- Hook length = 10D = 10×8 = 80×2 = 160 mm
- Cutting length for stirrup = parameter of stirrup + Hook length

= 1294.504 + 160

= 1454.504 mm

1m = 1000 mm

Now we convert mm to m

$$\frac{1454.504}{1000} = 1.45454 \text{ m}$$

Required Answer. = **1.45454 meter**

Q no #4: (ii) ⟶

Solution: ⟶

- Value of Plot = 350000/-
- Rate of rent = 6%
- Annual rent for plot = $35000,0 \times 6/100$

  = 21000/-
- Value of building structure = 42000/-
- Rate of rent = 8%
- Annual rent for structure = $420000 \times 8/100$

  = 33600/-
- Total Annual rent = 21000 + 33600

  = 54600
- Monthly rent = 54600/12 = 4550/-
- one day rent = 4550/30 = 151.666/-

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Q No # 5: ⟶

Answer: ⟶ Types of ADR :-→

(1) Arbitration :-→ "Arbitration is the adjudication of a dispute by one or more specially appointed experts or lawyers".

Arbitration involves an independent third party who actually makes suggestions and actually imposes a decision on the parties.

Abitration is governed by the Arbitration Act 1996.

Arbitration is binding.

(2) Mediation :-⟶ Parties in a dispute may refer their dispute to an independent third party who will act as a go-between.

Mediation involves an impartial third party who listens and directs discussion but does not suggest outcomes.

The mediator will help the parties discuss their dispute in order to try to settle it.

Mediation is not binding.

(P-T-O) ⇒

(3) Negotiation :→ Negotiation requires parties to bargain without outside assistance, exchanging compromises to reach a solution. In this approach parties can bargaining discussions at the beginning of a dispute without the presence of legal representation.

(4) Conciliation →

Similar to mediation but the conciliator may suggest a way to settle to the dispute.

If parties in litigation refuse an offer of conciliation without good reason then even if they win their case, the judge can refuse to award some or all of their legal costs. Conciliation is not binding.

Arbitration Act – 1996 s.1 :→

(a) The object of arbitration is to obtain the fair resolution of disputes, by an impartial tribunal without unnecessary delay or expense;

(b) The parties should be free to agree how their disputes are resolved, subject only to such safeguards as are necessary in the public interest.

(P-T-O)⇒

(C) In matters governed by this part the court should not intervene except as provided by this part.

⇒ **Arbitration Act – 1996 S.9:→**

When a party tries to ignore an arbitration clause agreed in a contract, the court in which he or she is trying to make his claim will order a "stay" (i.e. a stop) of proceeding so that the matter may be referred to arbitration as agreed in the contract.

⇒ **Arbitration Act – 1996 S.18:→**

Where there is no agreement a party can apply to a court under the Arbitration Act 1996 s.18 to have one appointed by the court.

⇒ Advantages & Disadvantages :—→

Irrespective of the industry sector settlement requires communication and a willingness to compromise. ADR can assist with both. The process set out above give the parties in any commercial dispute the opportunity to communicate their understanding of the dispute to each other, and to seek if they want an objective evaluation by an independent party of the strength. ADR is private, confidential, quick and flexible, or we're as generally inexpensive. ADR is the fact -that many courts around the world offer ADR as an adjunct to their own trial processes. Court annexed mediation is prevalent, and the courts in a number of countries offer judicial early natural evaluation.