22503

11920

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Use of Non-programmable Electronic Pocket Calculator is permissible.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: **10**

a) State mode of measurement for following items of work as per I.S.1200 -

(i) Inspection chamber

(ii) Ironwork in truss

(iii) Timbering of trenches,

(iv) PCC in foundation.

b) State any four purposes of preparing approximate estimate.

c) Define

(i) Administrative approval

(ii) Technical sanction

d) State the meaning of work charged establishment and give its general percentage.

Marks

e) Define

(i) Lead and

(ii) Lift

f) Suggest the method of approximate costing for -

(i) Steel bridges

(ii) Highway and Roads

(iii) RCC Retaining Wall

(iv) Irrigation Canal

g) Draw section of two legged stirrup and state formula for finding total length of stirrup.

2. Attempt any <u>THREE</u> of the following: **12**

a) State the rules of deduction in plastering as per I.S. 1200.

b) State and explain data required for preparing detailed estimate.

c) Prepare approximate estimate for a Government office building having -

(i) Total No. of rooms = 14

(ii) Area of each room = 60 Sq. M and

(iii) Area of other facilities = 150 Sq. M.

Similar office building with similar specifications and having built up area = 1100 Sq. M. was constructed at Rs. 3.55 Crores.

d) State the desired accuracy in taking measurements of items of works as per I.S. 1200.

3. Attempt any <u>THREE</u> of the following: **12**

a) Prepare a preliminary estimate of a building project with a total plinth area of all building of 1400 Sq. M.

Given-

(i) Plinth area rate = Rs. 3800/- per Sq. M.

(ii) Special architectural treatment = 1.5% of the building cost.

(iii) Water supply and sanitary installations = 5% of the building cost.

Marks

(iv) Internal installations = 14% of building cost.

(v) Other services = 6% of the building cost.

(vi) Contingencies = 3%

(vii) Supervision charges = 8%

b) Explain the term - 'Spot items' and give any two examples of it.

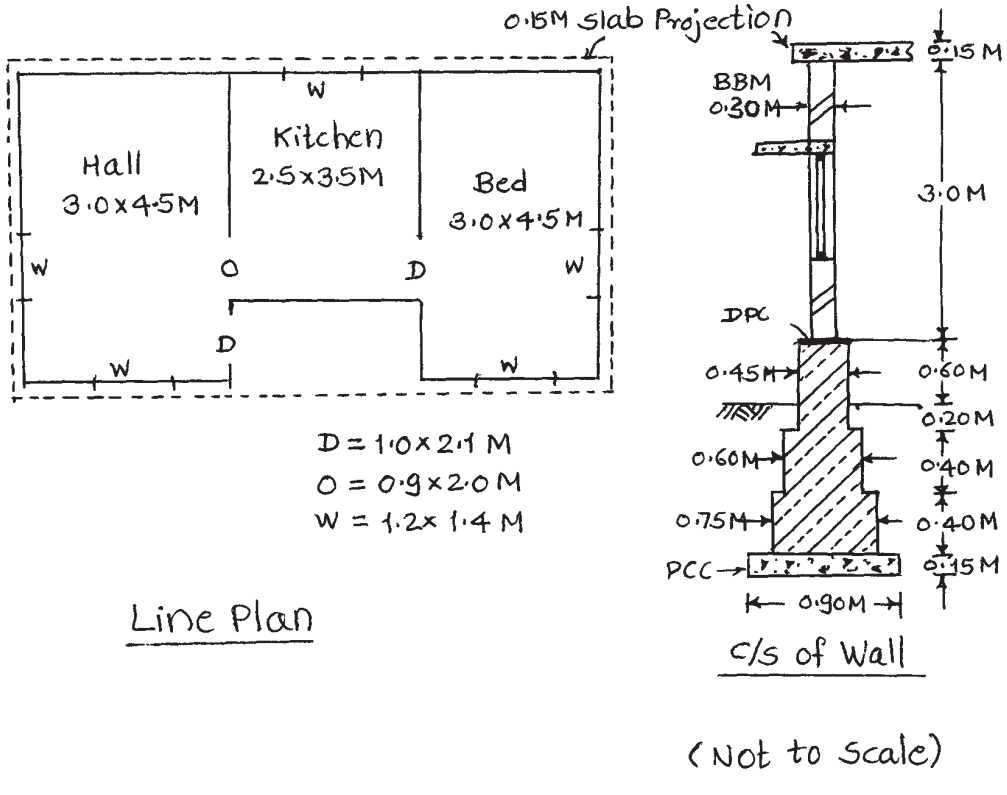
c) Destinguish between Long Wall - Short Wall method and centre line method (any- four points of differences)

d) For a RCC framed structure, there are six columns of size 230 x 300 mm and length of column 3.60 m each. Work out the total approximate quantity of steel required for all columns.

4. Attempt any <u>THREE</u> of the following: **12**

a) Calculate the quantity of excavation for foundation for structure shown in Figure No. 1.

b) Calculate the quantity of BBM in CM 1:6 for structure shown in Figure No. 1



<u>Fig. No. 1</u>

Marks

c) Explain the following terms in brief

(i) Contingencies

(ii) Provisional Sum

d) Describe the general procedure of carrying out rate analysis.

e) Calculate the volume of earthwork for a proposed road having formation width 10 m and side slopes 2:1 using mid sectional area method. Assume formation level as 115.50 m with no longitudinal slope.

Chainage	400	420	440	460	480	500
G.L. (m)	111.50	111.60	111.85	111.45	111.20	110.90

5. Attempt any TWO of the following: **12**

a) Figure No. 2 shows c/s of a square RCC column footing. Work out the quantities of following items-

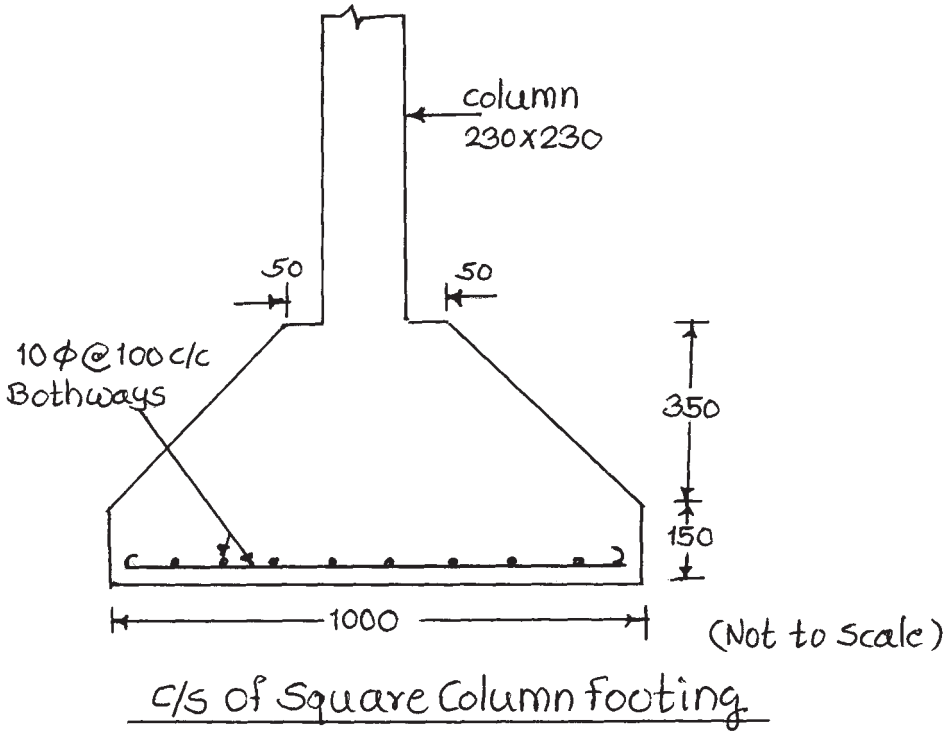


Fig. No. 2

(i) Concrete M20 in footing and

(ii) Quantity of steel in footing

Marks

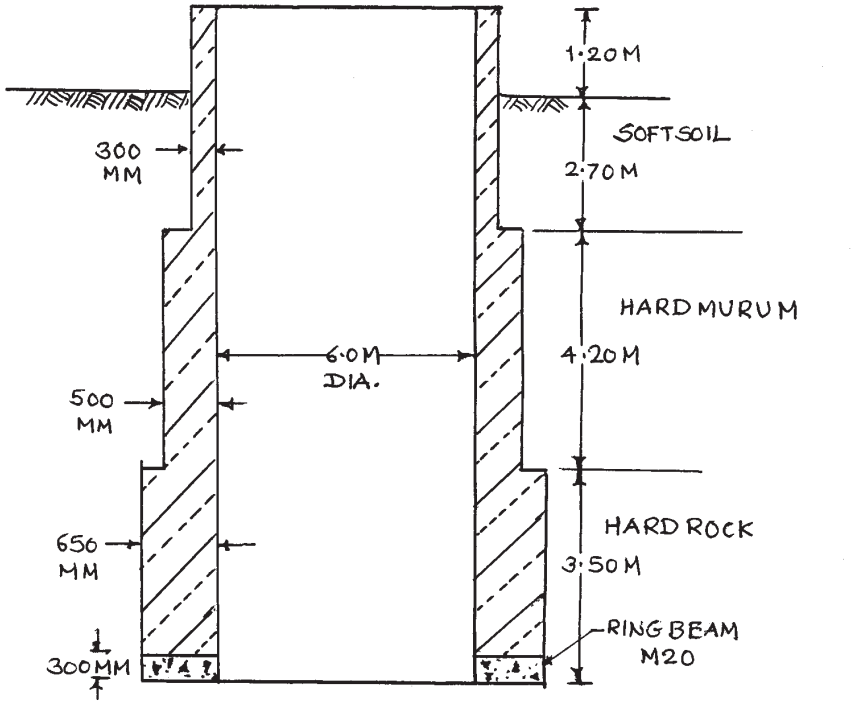
b) Workout the quantities of plainsteel for the beam in following and prepare bar bending schedule-
   (i) Overall length of beam - 4m long
   (ii) Main bars - Total 04 Nos of 12mm dia, out of which, 02 bent up.
   (iii) Size of beam - 230mm x 300mm
   (iv) Anchor bars - 02 Nos. of 10mm dia.
   (v) Stirrups - 6mm dia. at 150 mm c/c

c) Prepare rate analysis for 12mm plaster in CM 1:4

6. Attempt any TWO of the following: **12**

a) Calculate the quantities of materials required for -
   (i) 60 Cu.M. Brick masonry in CM (1:6)
   (ii) 100 Sq. M Pointing in CM (1:3)

b) Calculate the quantity of excavation in standard measurement sheet with brief description of item for community well shown in Figure No. 3.



C/S OF COMMUNITY WELL

(Not to Scale)

Fig. No. 3

c) Calculate the quantity of U.C.R. masonry and ring beam concrete M20 for above community well as shown in Figure No. 3.