



c09-c-607

**3728**

**BOARD DIPLOMA EXAMINATION, (C-09)**

**OCT/NOV—2013**

**DCE—SIXTH SEMESTER EXAMINATION**

**STRUCTURAL ENGINEERING DRAWING**

*Time : 3 hours ]*

*[ Total Marks : 60*

**PART—A**

4×5=20

**Instructions :** (1) Answer **all** questions.

(2) Each question carries **four** marks.

(3) To be drawn not to scale.

(4) Assume suitable data, if necessary.

1. State any four guiding principles to be considered in location of stairs in a structural planning of multistoried building.
2. Draw the layout plan indicating the position of beams and columns as per column grid reference scheme for the plan shown in Fig. 1 :

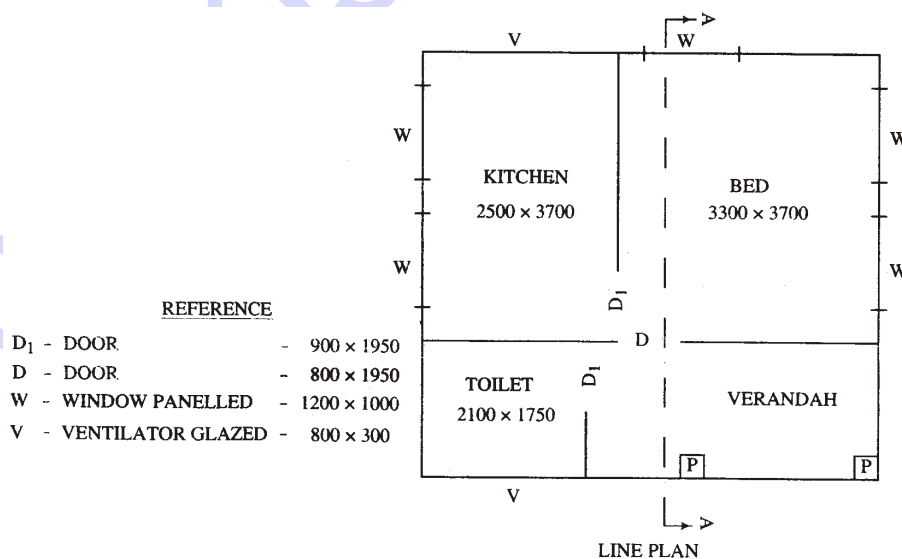


Fig. 1

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- 3.** Sketch the sectional elevation of an isolated footing with column from the following data :

Column :

Size of column : 400 mm×400 mm  
Reinforcement : 4 Nos of 12 mm dia with lateral ties 6 mm dia at 150 mm c/c

Footing :

Size of footing : 1500 mm×1500 mm  
Reinforcement : 12 mm dia at 150 mm c/c both directions

The horizontal lap length of column reinforcing bars is 300 mm each.

Thickness : 450 mm uniform  
Thickness of PCC bed : 150 mm  
All covers : 50 mm

- 4.** The longitudinal section and cross-section of simply supported beam is given in Fig. 2 (Page 5). Prepare the barbending schedule and workout the total quantity of steel :

(Weight of bars 20 mm dia—2·47 kg/m, 8 mm dia—0·39 kg/m and 12 mm dia—0·89 kg/m)

- 5.** The plan and c/s of two-way slab are shown in Fig. 3 (Page 6). Specify the reinforcement details for the following :

- (a) Reinforcement details along shorter span  
(b) Reinforcement details along longer span  
(c) Overall depth of slab  
(d) Draw the shape of crank bar

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**PART—B**

20×2=40

- Instructions :** (1) Answer **all** questions.  
 (2) Each question carries **twenty** marks.  
 (3) Assume suitable data, if necessary.

- 6.** Draw the longitudinal section of the staircase showing details of reinforcement in longitudinal section. Scale 1:20 for the following specifications. Draw for single slight only :

Size of staircase room	: 2100 mm×4000 mm
Level difference between floors	: 3300 mm
Width of staircase	: 1000 mm
Type of stair	: dog-legged
Thickness of waist slab	: 120 mm
Stair	: Tread-270 mm Rise-150 mm
Bearing of landing slab into the wall	: 150 mm

Reinforcement details :

Main steel	: 10 mm dia bars at 100 mm c/c
Distribution steel	: 8 mm dia bars at 200 mm c/c
Additional bars	: 10 mm dia at 100 mm c/c
Bearing on wall (full)	: 300 mm

- 7.** An RCC lintel-cum-sunshade has the following specifications :

(i) Lintel :

Clear span	: 1800 mm
Thickness of wall	: 230 mm
Size of lintel	: 230 mm×250 mm
Main bars	: 3 Nos of 12 mm dia out of which 1 bar is cranked
Anchor bars	: 2 bars of 10 mm dia 2-legged stirrups 6 mm dia @150 mm c/c throughout
Bearing on walls	: 150 mm

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(ii) Sunshade :

Clear projection from the face of the wall	: 600 mm
Thickness at face	: 80 mm
Thickness at free end	: 50 mm
Main bars	: 10 mm dia@150 mm c/c
Distribution bars	: 6 mm dia @150 mm c/c

Assume suitable covers.

Draw the following to a suitable scale : 10+5+5=20

- (a) Longitudinal section of the lintel
- (b) c/s of lintel and sunshade at midspan
- (c) c/s of lintel and sunshade near the support

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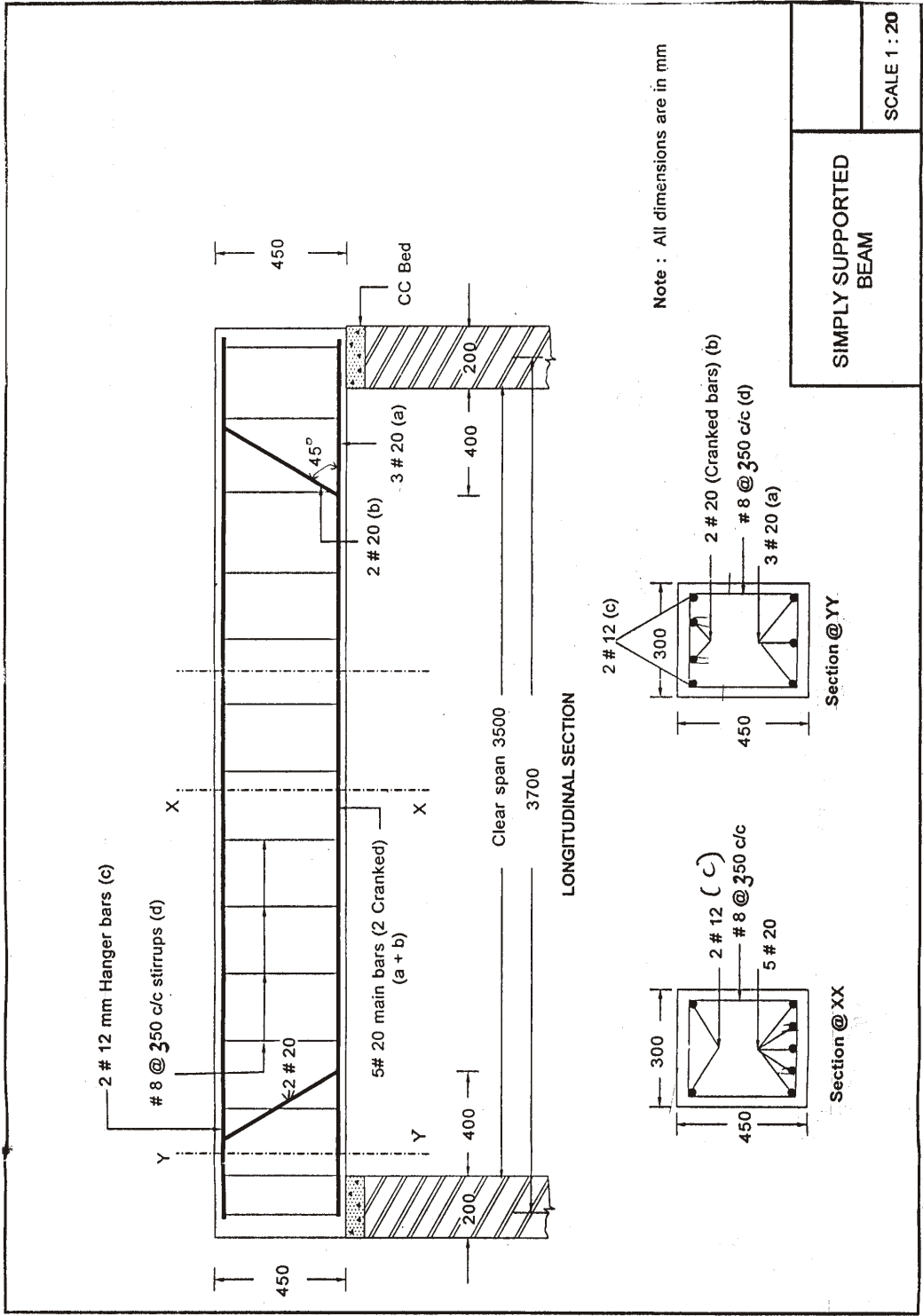


Fig. 2

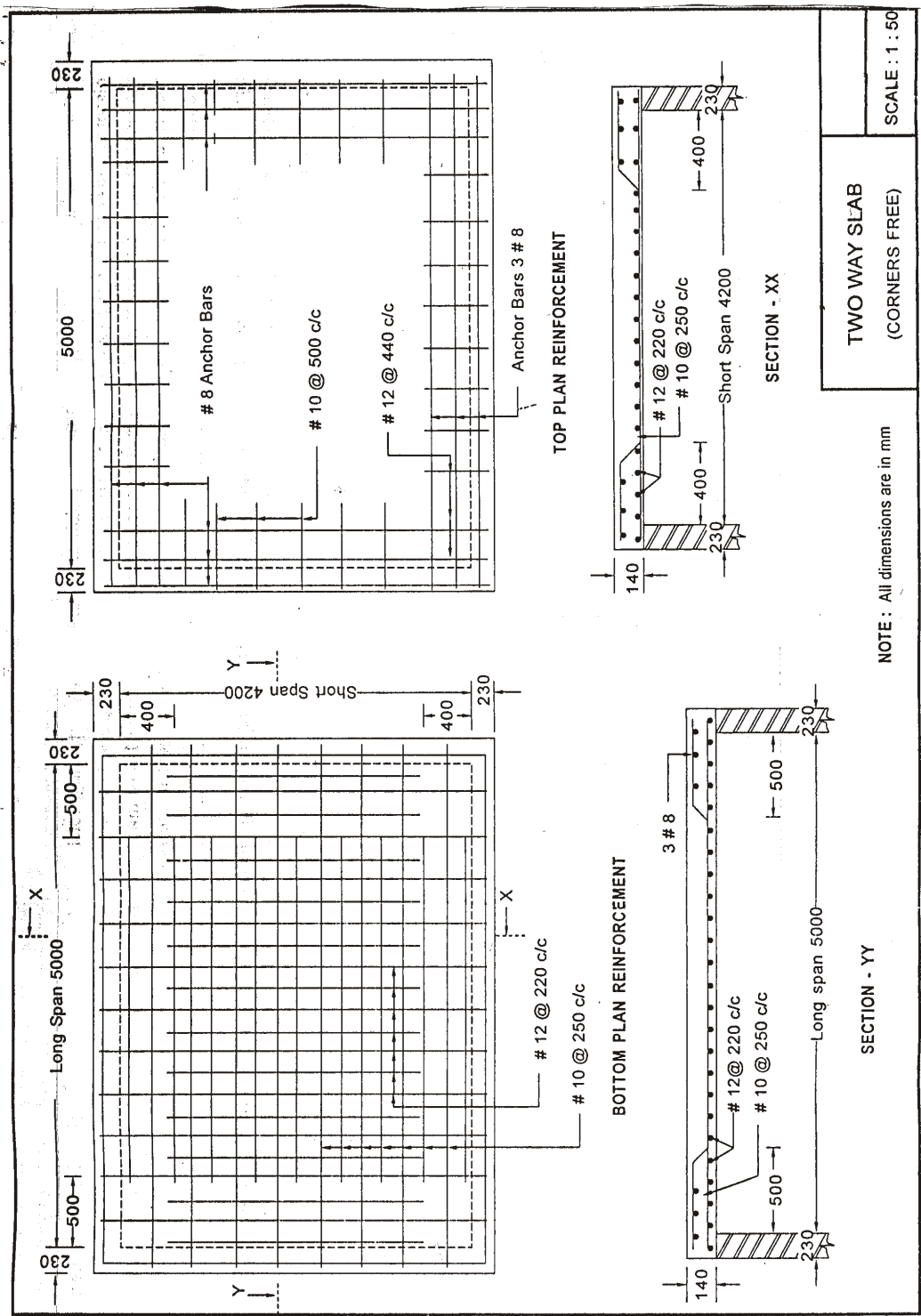


Fig. 3