Exercise 6.1

Figure **6.1** below shows a cross section of one-way simply supported slab. The slab thickness is 150 mm and concrete cover is 30 mm. If the dead load of the slab (which includes self-weight, partition and services) is 6.5 kN/m^2, and live load is 2.0 kN/m^2 ;

(a) Calculate the moment and shear maximum on slab.

(b) Design all the reinforcement required for 1m slab width by using f_{yk} = 500 N/mm^2 and f_{ck} = 25 N/mm^2.

(c) Check the shear, deflection and cracking of the slab.

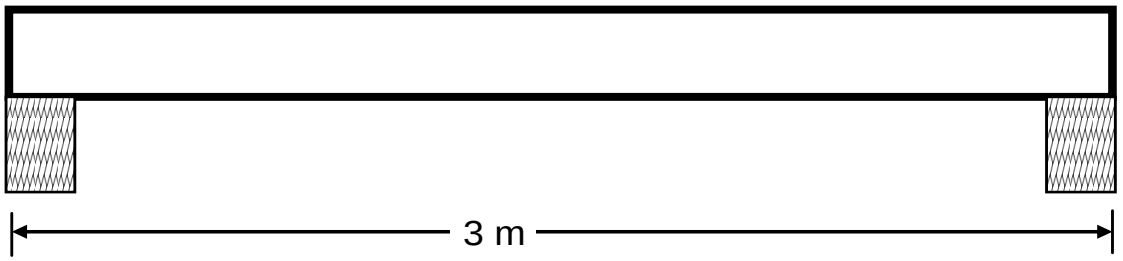

Figure **6.1**

Exercise 6.2

Figure **6.2** shows a first floor plan of school building which subjected to a dead load (including selfweight) and imposed load of 4.2 kN/m^2 and 4.5 kN/m^2 respectively. The characteristic strength of materials are f_{ck} = 30 N/mm^2 and f_{yk} = 500 N/mm^2.

(a) Using Table 3.12, BS 8110: 1: 1997. Determine the shear forces and bending moments of the whole slab if the slab thickness is 150 mm.

(b) Design the main reinforcement at support and mid span. Use the maximum moment obtained from (a). Assume Φ main bar = 12 mm.

(c) Check the deflection and cracking.

Exercise 6.2

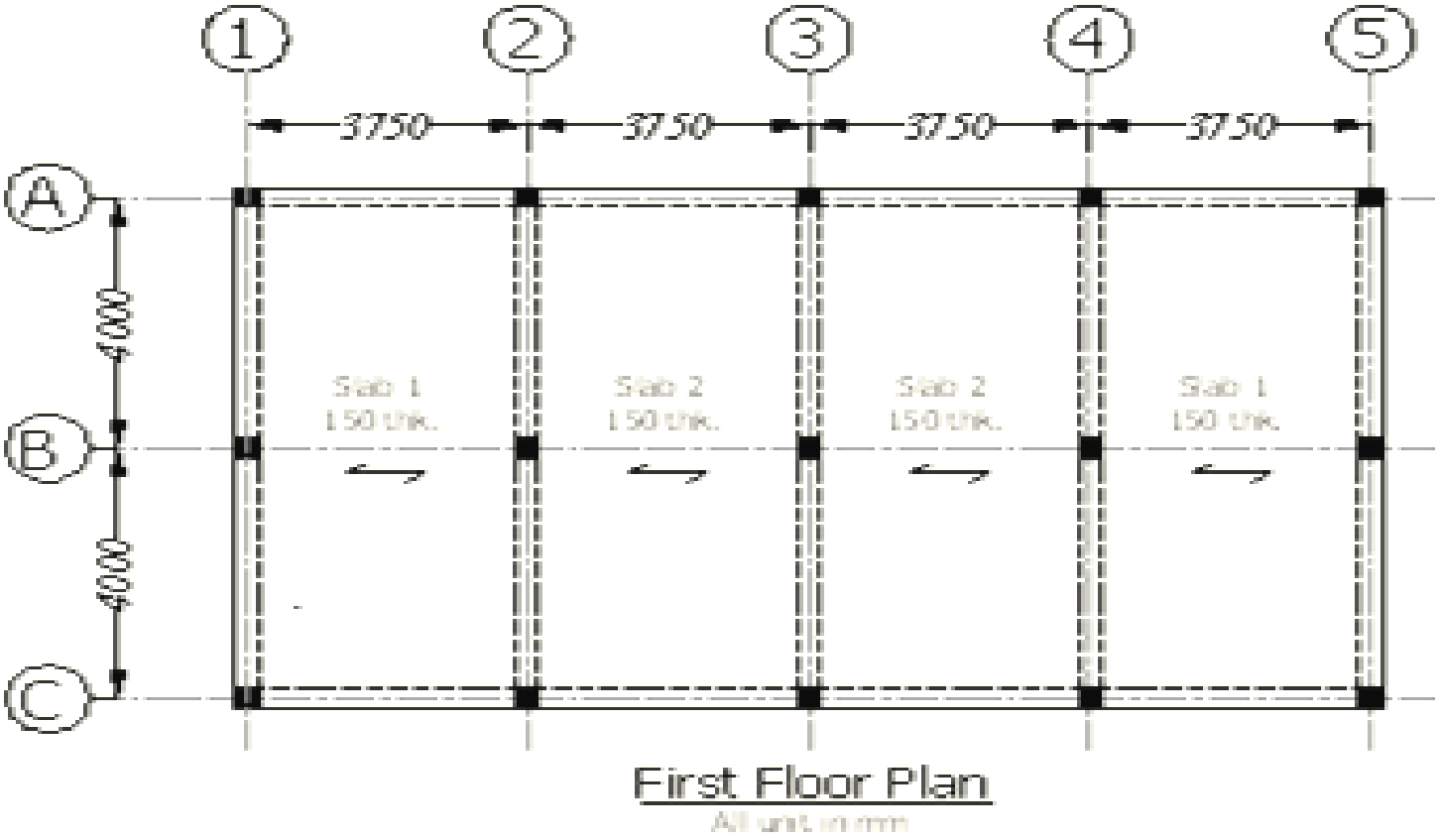

Figure **6.2**

Exercise 6.3

Figure **6.3** shows the layout plan of an office building. Given the following data:

Slab thickness	=	175 mm
Finishes (tiles)	=	2.0 kN/m^2
Grade concrete	=	C30/37
Grade steel	=	500
Concrete cover	=	30 mm
Main bar sizes	=	12 mm
Imposed load	=	Refer EN 1991

(a) Calculate the design load on slab.

(b) Design all the reinforcement required for slab C-D/4-3.

(c) Check the deflection and cracking for slab C-D/4-3. Propose the solution if

Exercise 6.3

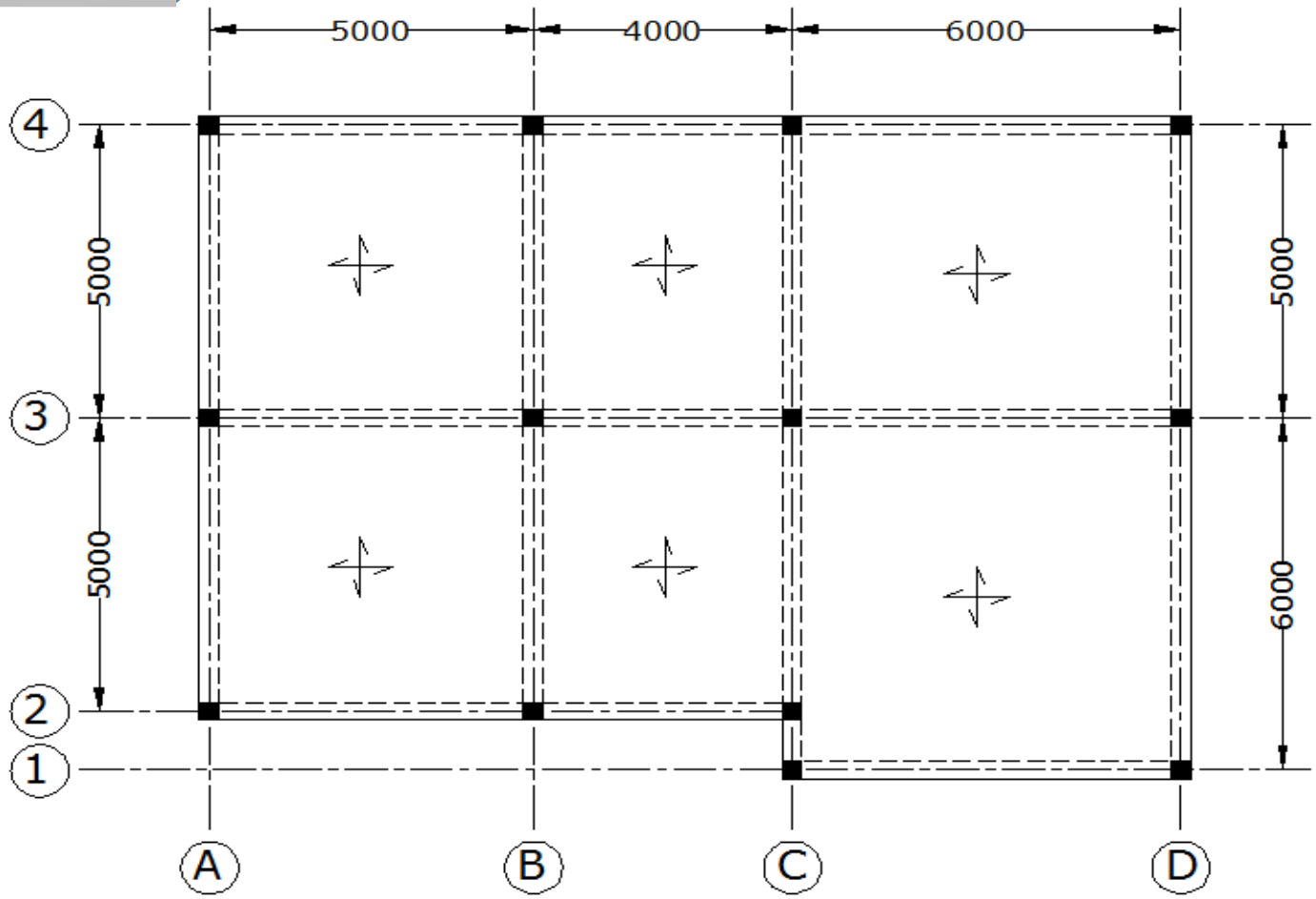

Figure **6.3**