5 Fig. 5.1 shows a simple transformer.

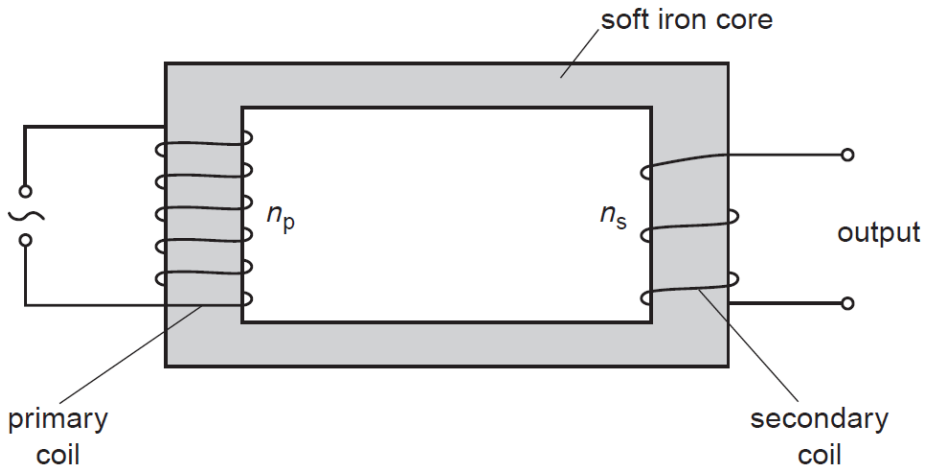

Fig. 5.1

The transformer with 4200 turns in the primary coil is connected to a 230 V mains supply. The e.m.f. across the output is 12 V. Assume the transformer is 100% efficient.

(a) Calculate the number of turns in the secondary coil.

number of turns = …….. [2]

(b) The transformer output terminals are connected to a lamp using leads that have a total resistance of 0.35 Ω. The p.d. across the lamp is 11.8 V. Calculate

(i) the r.m.s. current in the leads connected to the lamp,

current = …….. A [2]

(ii) the maximum power dissipated in the leads.

power = …….. W [2]

[Total: 6]

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