INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
DEPARTMENT OF ELECTRONICS & ELECTRICAL ENGINEERING

EE 101: Electrical Sciences

Tutorial-9

*(First question is the **Pre-Tutorial Assignment problem** to be done in the space provided.)*

Name: Roll No.: Tutorial Group:

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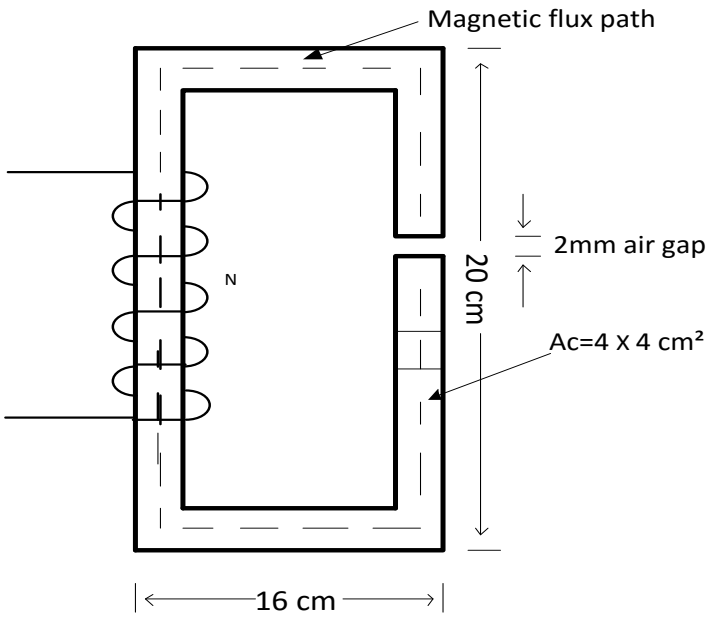
1. Fig. 1 shows a rectangular magnetic core with an air gap. Find the exciting current needed to cause a flux density of $B_g = 1.2T$ in the air gap. Given $N = 400\ turns$ and $\mu_r(iron) = 4000$.



2. Derive the output voltage expression for the following circuit (Fig.2).

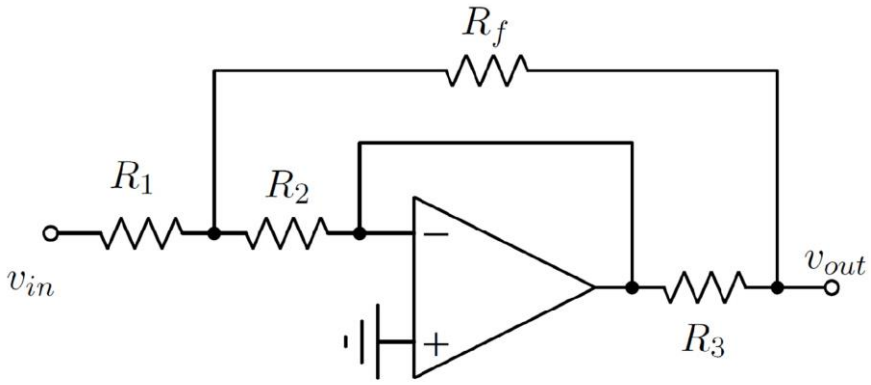


Fig. 2

3. In the circuit shown in fig.3, find the average power absorbed by (a) the source, (b) each of the two resistors, (c) each of the inductance, (d) mutual inductance.

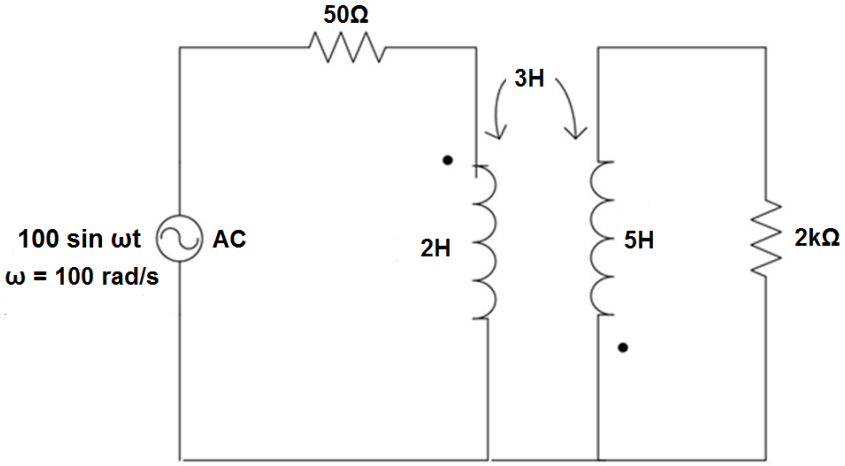


Fig. 3

4. Find the equivalent inductances seen at terminals 1 and 2 in the network of Fig. 4 if the following terminals are connected together: (a) none, (b) A to B, and (c) A to C.

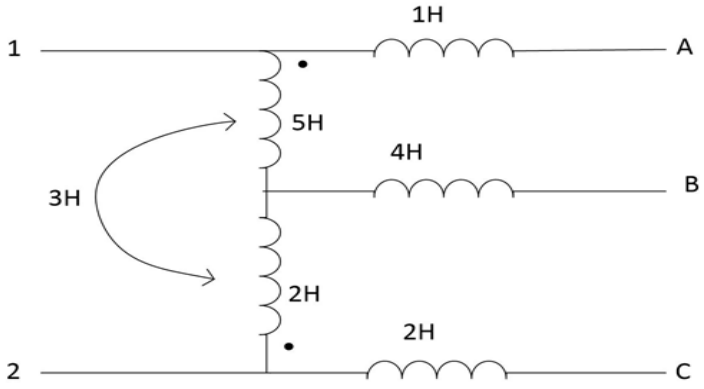


Fig. 4