

Tutorial sheet - 10  
Electrical Science-1 (15B11EC111)

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Q1. A Single phase 2300/230 V, 50 Hz core type transformer has core section area of  $0.05 \text{ m}^2$ . If the maximum flux density is  $1.1 \text{ wb/m}^2$ . Calculate the number of turns on primary and secondary

Q2. A single phase transformer has 400 primary and 1000 secondary turns. The cross sectional area of the core is  $60 \text{ cm}^2$ . If the primary winding is connected to a 50 Hz supply at 520 V. calculate:-

- a) Peak value of flux density in core.
- b) Transformation ratio.
- c) voltage induced in the secondary.

Q3. A 220/400 V, 10 kVA, 50 Hz Single phase transformer has full load copper loss of 120 W. It has an efficiency of 98% at full load unity power factor. Determine iron loss and also determine efficiency of transformer at half of full load at 0.8 power factor lagging.

Q4. The efficiency of a 400 kVA Single phase transformer is 98.77% when delivering full load at 0.8 PF and 99.13% at half of the full load and unity power factor, calculate  
a) The iron-loss b) Full load copper loss

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Q5. A single phase 50 kVA, 440/220V, transformer taking no load current of 0.6 A with a power factor of 0.65 (lagging). Calculate the load parameters  $I_m$ ,  $I_w$ ,  $R_0$  and  $X_0$ .