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TEST-1

B.Tech. ECE, [BACK-LOG]

COURSE NAME: Electrical Machines & Instruments MAX. MARKS: 15

COURSE CODE: 10B11EC311 MAX. TIME: 1 Hr

Note: Using of mobile phone in examination shall be treated as a case of unfair means.

Q-1: (a) Define reluctance of magnetic circuit and compare it with the resistance in electric circuit.

(b) What do you mean by the leakage of flux?

[2+1=3]

Q-2: (a) Give the construction detail and basic working prenciple of the step-up transfer? [2.5]

(b)What do you mean by the hysteresis loss in tranformer? [2.5]

Q-4: (a) Draw the relation between load on transformer and efficiency of transformer. Also give the curve beween the load and efficience. [2]

(b)Derive that rms voltage induced by a single phase transformer is given by:

$$4.44 f N \Phi_m$$

Where; f is suppy frequency, N of turns in primary/secondary of transformer, ϕ_m maximum value of flux. [2]

Q-5: A single-phase, 50-Hz transformer has 30 primary turns and 350 secondary turns. The net cross-sectional area of the core is 250 cm^2. If the primary winding is connected to a 230-V, 50-Hz supply, calculate [3]

(*a*) the peak value of flux density in the core,

(*b*) the voltage induced in the secondary winding, and

(*c*) the primary current when the secondary current is 100 A. (Neglect losses.)