



MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY,
JAMSHORO.

ID.No./Seat No.

SECOND TERM FIRST YEAR (2ND TERM) B.E.(ELECTRICAL) REGULAR
EXAMINATION 2009 OF 09-BATCH.

ELECTRICAL ENGINEERING-II

Dated: 11-12-2009.

Time Allowed: 03 Hours.

Max.Marks 80

NOTE: ATTEMPT ANY FIVE QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q.No.

01. (a) Describe use full and Leakage fluxes in a Transformer.
(b) A Transformer has a primary winding of 800 turns and secondary winding of 200 turns. When the load current on the secondary is 75 amp at 0.8 p.f lagging, the primary current is 25 amp at 0.707 P.f lagging. Determine graphically or other wise the no-load current of the transformer and its phase with respect to the voltage.
02. A 75 KVA, 4800-240 volts, 60 Hz, single-phase transformer has the following Parameters expressed in ohms.
 $R_1 = 0.00600$ $R_2 = 2.488$ $R_c = 44202$
 $X_1 = 0.0121$ $X_2 = 4.8384$ $X_m = 778.6$
The transformer is operating in the step-son mode, delivering one half rated load At rated voltage and 0.96 p.f lagging. Determine
(i) Equivalent impedance of Transformer referred to the high-voltage side.
(ii) Input impedance of the combined transformer and load.
(iii) Actual input voltage at the high-voltage side.
(iv) Input impedance if the load is disconnected.
(v) Exciting current for the condition (iv).
03. (a) What do you mean by the voltage regulation and efficiency of a transformer? Derive the formula for regulation and efficiency.
(b) A 100 KVA, 2 winding transformer has an Iron loss of 1 KW and a cu loss on normal Output Current Of 1.5 Kw. Calculate the KVA Loading at which the efficiency is max. and Its efficiency at this Loading
(i) at unity p.f (ii) at 0.8 p.f lagging.
04. How the 3-phase voltage is generated? Explain and derive the relationship between Line voltage and phase voltage and current in delta connected system and star Connected system.
05. (a) Three non-Inductive resistances, each of 100 Ω are connected in star across 400 volt supply. Calculate the current through each. What would be the current Through each, if they were connected in delta across the same supply.
(b) Three Impedances each of magnitude $(15+j20) \Omega$ are connected in mesh across A 3-phase, 400 volts a.c supply. Determine the phase current, line current, active Power and reactive power drawn from the supply.
06. (a) What do you mean by power factor? Write the disadvantages of low power factor. How Can we improve the power factor?
(b) An inductive circuit draws 10A and 1KW from a 200V, 50 Hz A.C supply. Determine
(i) Impedance in Cartesian form (a+jb) (ii) Impedance in polar form
(iii) Power factor (iv) Reactive power (v) Apparent power
07. (a) Explain the principle of operation of one type of moving Iron instrument.
(b) The torque of an ammeter varies as the square of the current through it. If a current of 6 Amp produces a deflection of 90° , what deflection will occur for a current of 2.5 A When the instrument is (i)Spring Controlled (ii)Gravity Controlled.
08. Discuss the following.
(i) Permanent Magnet Moving Coil Instrument (PMMC)
(ii) Equivalent circuit of T/F
(iii) Controlling and damping devices in measuring Instruments.

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