APPENDIX - I

Measurement of the transformer self capacitance C_t

The transformer capacitance C_t can be measured by applying a fast rising impulse voltage to the circuit of Figure-AI. Assuming that transformer acts as a capacitance for lightning impulses, the applied voltage U_a is divided capacitively between the two capacitances C and C_t. The voltage U_b appearing at the transformer terminal can be expressed as:

$$U_b = U_a * \frac{C}{C+C_t} \qquad \ldots\ldots\ldots \qquad (a-1)$$

By measuring voltages U_b and U_a using impulse CRO and damped capacitive voltage divider, the transformer capacitance C_t, can be evaluated as follow:

$$C_t = C \cdot \frac{U_a - U_b}{U_b} \qquad \ldots\ldots\ldots \qquad (a-2)$$

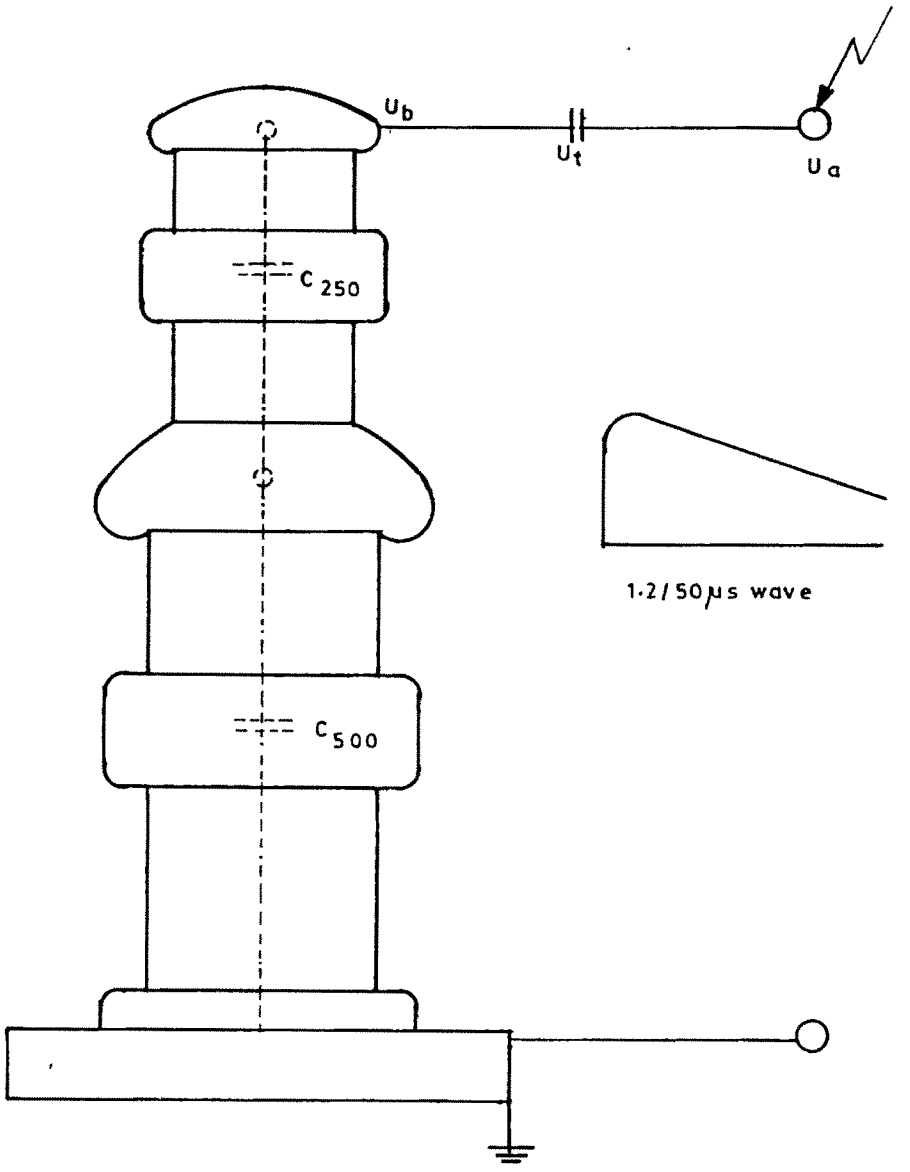

Figure - A1: Circuit for measurement of self capacitance of Transfomer