

A.D.PATEL INSTITUTE OF TECHNOLOGY

FIRST YEAR-SEMESTER-1 (IT/ME/AE/FT)

ACADEMIC YEAR 2008-2009

ELEMENTS OF ELECTRICAL ENGINEERING

INTERNAL TEST

Date: 25/9/2008

Time: 8 am to 9am

Total marks: 20

Q-1 ✓ Tick the correct answer.

Total 6 Marks

1) The RMS value of single phase a.c. domestic supply voltage is

(i) 110V (ii) 230V (iii) 415V

2) The impedance of R-L series circuit is

(i) $Z_L - \phi$ (ii) $Z_L + \phi$ (iii) Z_L

3) The active power input of an a.c. circuit is

(i) $V I \sin \phi$ (ii) $V_m I_m \cos \phi$ (iii) $V I \cos \phi$

4) The resistance temperature coefficient of metals is

(i) Positive (ii) Zero (iii) Negative

5) In series & parallel connection following quantities are same respectively

(i) voltage & current (ii) current & voltage (iii) power & power factor

6) The resistance of metals at -234.5°C temperature is

(i) Maximum (ii) Minimum (iii) Zero

Q-2 Answer any two.

Total 6 Marks

1) Derive an expression for resonance frequency in R-L-C series circuit; also show graphical representation of variation in all the quantities with frequency.

3 marks

2) Derive an expression for the charging current of capacitor & plot the graph of charging current versus time.

3 marks

3) State & briefly explain KVL & KCL also write Current divider rule & Potential divider rule.

3 marks

Q-3 Solve any two.

Total 8 Marks

1) Find R_{xy} of the circuit as shown in fig 1.

4 marks

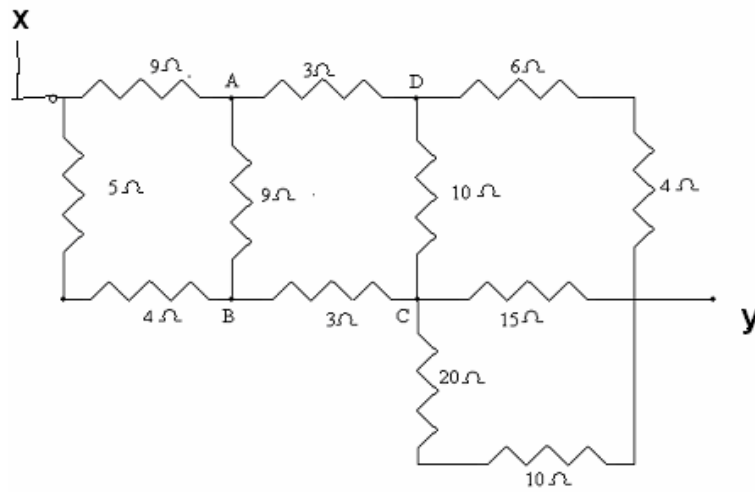


Fig 1

2) Calculate impedance of circuit shown in fig 2 it's power factor & Current when it is applied with voltage 220v, 50 Hz a.c.

4 marks

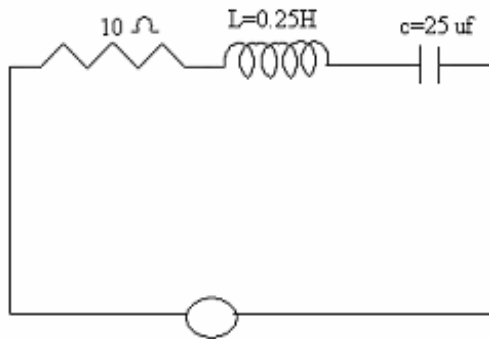


Fig 2

3) Calculate the following.

4 marks

i) $Z_1 * Z_2$ ii) Z_1 / Z_2 iii) $Z_1 - Z_2$ iv) $Z_1 + Z_2$

Where $Z_1 = 20 + j30$, $Z_2 = 25 - j100$

----- Best of Luck -----

