

A.D.PATEL INSTITUTE OF TECHNOLOGY

FIRST YEAR-SEMESTER-2 (EE/EC/CP)

ACADEMIC YEAR 2008-2009

ELEMENTS OF ELECTRICAL ENGINEERING

INTERNAL TEST

Date: 31/03/2009

Time: 8 am to 9am

Total marks: 20

Q-1 Tick (✓) correct answer from given Choices.

Total 4 Marks

(1) For R-C series circuit impedance is

- i) $R+jX$ ii) $R-jX$ iii) X_c

(2) The current through resistor of $5K\Omega$ is 10 mA absorbs power of

- i) 5mW ii) 50mW iii) 500mW

(3) Form factor is a ratio of

- i) Average value to Peak value ii) RMS value to Average value

- iii) Peak value to RMS value

(4) The Reactive power in A.C. Circuit is

- i) $VI \cos\Phi$ ii) $VI \sin\Phi$ iii) $V_m I_m \cos\Phi$

Q-2 Define the following terms:

Total 4 Marks

- 1) R.M.S. Value 2) Average Value 3) Peak factor 4) Ohm's Law

Q-3 Attempt any two.

Total 6 Marks

1) Find R equivalent between P & Q points for figure 1.

3 marks

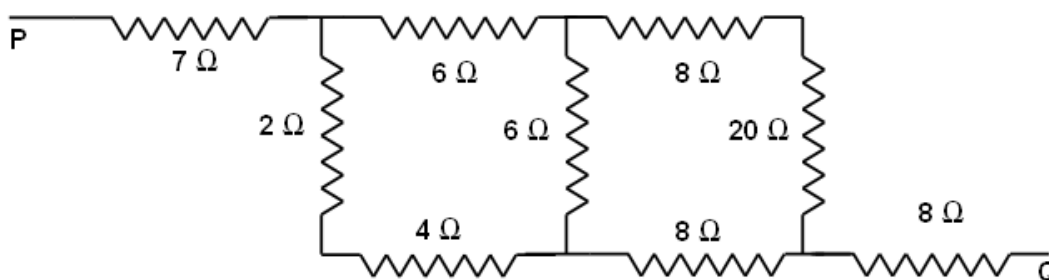


Figure 1

2) The Capacitor having capacitance of $4 \mu\text{F}$ is connected in series with a resistance of $1 \text{ M}\Omega$ across 200 Volt D.C. Supply. 3 marks

Determine 1) The time constant

2) The initial Charging current

3) The time taken by capacitor to rise up to 160 volt.

3) A resistance of 10Ω , inductance of 0.1 H and capacitance of $100 \mu\text{F}$, are connected in series across 100 volts, 50 Hz A.C. Supply. 3 marks

Determine 1) Current

2) Power factor

3) Active Power

4) Draw vector diagram for Voltages.

Q-4 Attempt any two.

Total 6 Marks

1) Explain resonance in R-L-C series circuit. Also show graphical representation of each quantity variation with respect to frequency. 3 marks

2) Derive the expression for Δ -Y (Delta to Star) transformation for 3 Delta connected resistors. 3 marks

3) Derive the expression for equivalent capacitance of 3 parallel plate capacitor connected in (1) Series (2) Parallel. 3 marks

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