A.D.PATEL INSTITUTE OF TECHNOLOGY
FIRST YEAR-SEMESTER-1 (IT/ME/AE/FT)
ACADEMIC YEAR 2008-2009
ELEMENTS OF ELECTRICAL ENGINEERING

INTERNAL TEST-2 Date: 16/10/2008
Time: 8 am to 9am Total marks: 20

Q-1 √ Tick the correct answer. Total 6 Marks

1) The unit of specific resistance is
(i) Ω/m (ii) Ω-m (iii) Ω/m^2

2) The impedance of R-L-C series circuit at resonance is
(i) ZL-ϕ (ii) ZL+ϕ (iii) RL0

3) The apparent power of an a.c. circuit is given by
(i) VISinϕ (ii) $V_m I_m COS\phi$ (iii) VI

4) Ohms law is applicable to
(i) only linear devices & circuits (ii) nonlinear devices & circuits
(iii) None of this

5) The unit of active power & energy is respectively
(i) KVA & KW-hour (ii) watt & Joules (iii) KVAR & Joules

6) The total capacitance of two similar value capacitors connected in series is
(i) Doubled (ii) Halved (iii) Zero

Q-2 Answer any two. Total 6 Marks

1) Explain R-L series circuit applied with a.c. supply; also show its vector diagram & waveforms for voltage, current & power. 3 marks

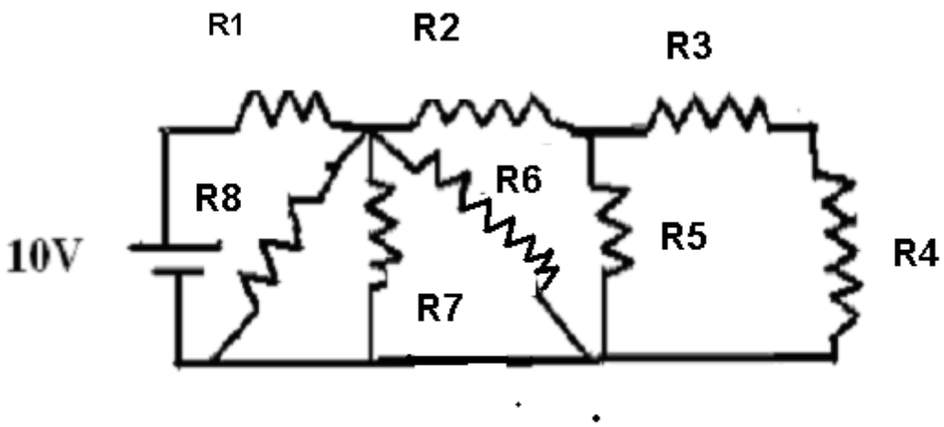
2) Define the terms i) Average value ii) R.M.S. value iii) Laws of electrostatics. 3 marks

3) Derive an expression of voltage when capacitor is discharging. 3 marks

Q-3 Solve any two. Total 8 Marks

1) Find current I of the circuit shown in fig if battery voltage is 10 v where $R_2=R_3=R8=2\ \Omega$, $R_1=3\ \Omega$, $R_4=R_7=R_6=6\ \Omega$, $R_5=12\ \Omega$.

4 marks



(2) The R-L-C series circuit is applied with voltage 230v, 50 Hz supply where capacitor is of 20µf. The current taken by the circuit is 8A, Power consumed is 200W. Calculate inductance if power Factor of a circuit is i) leading ii) lagging.

4 marks

3) An alternating voltage is given by v=141.4sin314t. Find i) Frequency ii) R.M.S. Value iii) average value iv) the instantaneous value at 3msec v) the time taken for voltage to reach 100v for first time after passing through zero value.

4 marks

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