

First/Second Semester B.E. Degree Examination, June/July 08
Basic Electrical Engineering

Time: 3 hrs.

Max. Marks:100

Note : Answer any FIVE full questions, choosing at least two questions from each part.

Part - A

- 1 a. State and explain Ohm's law, mention its limitations. (04 Marks)
 b. Find the currents in all the resistors of the network shown in fig Q 1 (b). Also find the voltage across AB.

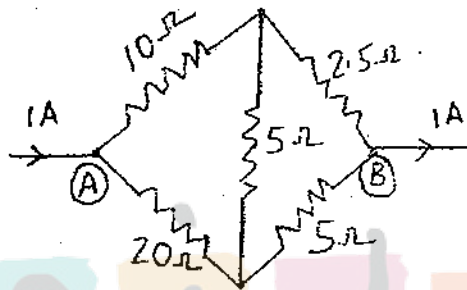


Fig Q 1 (b)

(06 Marks)

- c. With examples, clearly differentiate between statically induced emf and dynamically induced emf. (05 Marks)
- d. A coil of resistance $150\ \Omega$ is placed in a magnetic field of $0.1\ \text{m wb}$. The coil has 500 turns and a galvanometer of $450\ \Omega$ is connected in series with it. The coil is moved in $0.1\ \text{sec}$ from the given field to another field of $0.3\ \text{m wbs}$. Find the average induced emf and the average current through the coil. (05 Marks)
- 2 a. Obtain the form factor of a half rectified sine wave. (05 Marks)
 b. A non inductive resistor of $10\ \Omega$ is in series with a capacitor of $100\ \mu\text{F}$ across a 250 Volts, 50 Hz, A.C. supply. Determine the current taken by the capacitor and p.f. of the circuit. (05 Marks)
 c. A current of average value $18.019\ \text{A}$ is following in a circuit to which a voltage of peak value $141.42\ \text{V}$ is applied. Determine i) Impedance in the polar form ii) Power. Assume voltage lags current by 30° . (05 Marks)
 d. An ac current is given by $i = 10 \sin wt + 3 \sin 3wt + 2 \sin 5wt$ Find the rms value of the current. (05 Marks)
- 3 a. Obtain the relationship between the phase and line values of voltages and currents in a balanced delta connected system. (10 Marks)
 b. Calculate the active and reactive components of each phase of Y connected $10\ \text{KV}$, $3\ \phi$ alternator supplying $5\ \text{MW}$ at $0.8\ \text{pf}$. If the total current remains the same, when load pf is raised to 0.9 , calculate the new output and its active and reactive components per phase. (10 Marks)