

Code :R5100506

B.Tech I Year (R05) Supplementary Examinations, May 2011

BASIC ELECTRICAL ENGINEERING

(Common to Computer Science & Engineering, Information Technology, Computer Science & Systems Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. (a) What is meant by EMF of a source?
(b) Distinguish between ideal and practical voltage source? Give examples?
(c) Distinguish between ideal and practical current sources? Give example?
(d) The internal resistance of a 12v – battery is 0.9 ohms. What will be its terminal voltage when the current drawn from the battery is 2 Amps.
2. Deduce an expression for the equivalent capacitance of three capacitors connected in
 - (a) Parallel
 - (b) Series. Hence calculate the equivalent capacitance if three capacitors of capacitances 2, 4, and 8 Micro – Farads are connected in
 - i. Series.
 - ii. Parallel If a voltage of 10 V is connected, calculate the charge stored in each case.
3. (a) Define and explain the terms
 - i. self inductance of a coil
 - ii. mutual inductance between two coils
 (b) The mean diameter of a steel ring is 40 cm and a flux density of 0.8 tesla (Wb/m^2) is produced by 50AT/cm. If the cross section of the ring is 25 cm^2 and the number of turns is 800. Find the inductance in henries.
4. (a) Draw the impedance triangle and admittance triangle for inductive circuit and capacitive circuits.
(b) A series R – C circuit with resistance value of $R = 10$ ohms and Capacitive reactance of $X_c = 10$ ohms, is connected to an alternating sinusoidal voltage of RMS value 141.4 volts. Calculate the value of current, through the circuit, voltage drop across each element, and power consumed.
5. Explain the working of a transformer at no load and full load conditions with neat diagrams.
6. (a) Derive the expression generated emf in a dc generator.
(b) Calculate the emf generated by a 4 pole wave wound armature having 45 slots with 18 conductors per slot when driven at 1000 rpm. The flux per pole is 0.02 webers.
7. Explain with the help of suitable diagrams how rotating magnetic field is produced in a three phase induction motor.
8. With a neat sketch explain in detail moving iron attraction type instrument.
