

R09

Code: 9A02306

B.Tech II Year I Semester (R09) Supplementary Examinations June 2016

BASIC ELECTRICAL ENGINEERING

(Common to CSS, IT & CSE)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) The 4 ohm and 8 ohm resistors are connected in parallel 3 ohm & 5 ohm resistors are connected in series. If these two combinations are connected in parallel and connected to 20 V supply. Find the total current passing through the circuit.
(b) Explain circuit elements of inductance and capacitance.
- 2 (a) List out different types of sources and explain them in detail.
(b) A resistance of R ohm is connected in series with a parallel circuit comprising of two resistors of 12 ohm and 28 ohm respectively. The total power dissipated in the circuit is 70 W when the applied voltage is 20 V. Find the value of R.
- 3 (a) Derive the equation for power factor in a RLC series circuit.
(b) Derive the equation of impedance and power factor of RC series circuit.
- 4 (a) Compare between core type and shell type transformers.
(b) Derive the emf equation of a 1-Phase transformer and calculate the emf/turn, if the flux is 0.015 Wb at a frequency of 50 Hz.
- 5 A 440 V DC shunt motor draws a current of 250 A. The armature resistance is 0.02 ohm and shunt field resistance 50 ohm. Find the back emf. If the lap wound armature has 120 slots with 4 conductors per slot, at what speed will the motor run when the flux per pole is 0.04 Wb?
- 6 What is the aim of Swinburne's test? Explain the procedure with a neat circuit diagram.
- 7 The power input to the rotor of a 440 kV, 50 Hz, 3-phase, 6-pole induction motor is 50 kW. It is observed that the rotor emf makes 90 complete cycles per minute. Calculate
 - (a) Rotor frequency.
 - (b) Synchronous speed.
 - (c) Slip.
 - (d) Rotor speed.
- 8 (a) Explain how the electrical measuring instruments are classified?
(b) A moving coil instrument has a resistance of 10 Ω and gives a full-scale deflection when carrying 50 mA. Show how it can be adopted to measure voltage up to 750 V.
