Chapter 11

1. Explain how a rotating magnetic field is produced in a three-phase motor.
2. Explain how current is generated in the rotor of a squirrel-cage motor.
3. Explain how torque is generated in the rotor of a squirrel cage motor.
4. Explain why interchanging any two of the three line leads to a three-phase squirrel-cage motor causes it to run in the opposite direction.
5. Explain why a two-pole machine runs at a higher speed than a four-pole machine when both are connected to the same three-phase service.
6. What methods are used to change the speed of a three-phase squirrel-cage induction motor?
7. What factors determine whether or not a squirrel-cage induction motor can be started at full line voltage?
8. Define breakdown torque, locked-rotor torque, and pull-up torque as they pertain to squirrel-cage induction motors. Which NEMA-design motor develops the greatest locked-rotor torque?
9. Sketch a generalized torque-speed characteristic of a squirrel-cage motor. Mark and label the four significant points.
10. State the difference in construction details between the squirrel-cage rotor and the wound rotor as used in induction motors.
11. State the correct procedure for (a) starting a wound-rotor induction motor; (b) reversing a wound-rotor motor.
12. On a single sheet of graph paper, sketch and label the torque-speed characteristics of design A, B, C, D, and E motors. State an application for each.
13. What information is provided by the code letter on an induction-motor nameplate?