Unit 5: Power System Components & Electrical Machines

Reference Questions

1. Discuss the construction, working principle, and application of DC motors.
2. Classify the different types of DC motors.
3. Discuss the construction, working principle, and application of a 3-phase squirrel cage induction motor.
4. Discuss the construction, working principle, and application of a 3-phase slip ring (phase wound) induction motor.
5. Explain the double-revolving field theory. Describe the working of a 1-phase induction motor based on it?
6. Explain capacitor start, 1-phase induction motor with the help of a phasor diagram.
7. Discuss the construction, working principle, and application of synchronous motor.
8. Explain the operation of a transformer. Obtain the expressions for primary and secondary induced EMF in a transformer.
9. How are transformers classified? Elaborate.
10. With the help of the transformer circuit representation, write a brief note of losses in a transformer.
11. With a neat schematic, explain how energy consumption is monitored using a 1-phase digital energy meter.
12. With a neat schematic, explain how energy consumption is monitored using a 3-phase digital energy meter.
13. Draw the one-line diagram of the power system network architecture. Tabulate the voltage levels at various stages in the network.
14. Short numerical problems based on transformer turns ratio, emf equation, etc., and induction motor slip, frequency, speed, etc.