ANNA UNIVERSITY – 2007

B.E/B.TECH MODEL EXAMINATION

ELECTRICAL ENGINEERING

(ALL BRANCH)

TIME-3HOUR
MARK-100

ANSWER ALL QUESTIONS

PART A (10 X 2 = 20)

1. State Kirchoff's laws.

2. The resistance of a conductor 1 mm2 in cross–section and 20 m long is 0.346 ?. Determine the specific resistance of the conductor material.

3. Define power factor in terms of power components and load parameters.

4. A 120 V a.c. circuit contains 10 ? resistance and 30 ? reactance in series. What would be average power in the circuit?

5. Draw the speed–torque characteristics of a shunt motor and a series motor.

6. What are the advantages of a three phase transformer motor over three single phase transformers?

7. A 6 pole a.c. generator is running and producing the frequency of 60 Hz. Calculate the revolutions per minute of the generator. If the frequency is reduced to 20 Hz, how many number of poles will be required if the generator is to be run at the same speed.

8. Mention the drawbacks of single phase induction motor.

9. State the advantages of moving coil instrument.

10. What is creeping?

PART B (5 X 16 = 80)

11. Explain the principle of operation of any one type of moving iron instrument.

12. (a) Explain the following in connection with an a.c. circuit.

(i) RMS value

(ii) Form factor

(iii) Reactive power

(iv) Periodic time.

Or

(b) (i) Explain the concept of three phase emf generation.

(ii) Derive the relationship between phase and line voltages for a star connected balanced load across a 3–phase balanced system.

13. (a) Explain the principle of operation and performance characteristics of d.c. shunt motor.

Or

(b) Explain the principle of operation of a single phase transformer and derive the EMF equation.

14. (a) (i) Explain the principle of operation of a three phase synchronous generator.

(ii) Write a note on synchronous motor.

Or

(b) (i) Why single phase induction motor is not self starting? Explain.

(ii) Discuss how does the rotor rotates in a three phase induction motor.

15. (a) Explain the principle of operation of a dynamometer type wattmeter and its advantages.

Or

(b) Explain the construction and principle of operation of a single phase energy meter