C 59107 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2009

ME / AM 04 306—ELECTRICAL TECHNOLOGY

Time : Three Hours Maximum : 100 marks

Answer **all** *questions.*

I a) Compare different types of induction motor.

(b) What is the necessity of starter in an induction motor. Explain auto transformer starter.

(c) Draw the block diagram of an electrical drive and briefly explain each part.

(d) Explain briefly the various components of load torque.

(e) Explain the characteristics of DC to DC converter.

(f) List out the advantages and disadvantages of PWM inverters.

(g) Explain the phenomenon hunting.

(h) What is the effect of change in excitation in case of alternators.

(8 × 5 = 40 marks)

II (a) The power input to a 500V 50HZ, 6 pole, 3-phase squirrel cage induction motor running at 975 r.p.m. is 40KW. The stator losses are 1KW and friction and windage losses are 2 KW. Calculate slip, rotor copper loss, brake horse power, and efficiency.

(8 marks)

(b) Explain the principle of operation of 3-phase induction motor. (7 marks)

Or

(a) Explain the effect of harmonics in the stator voltage of an induction motor.

(10 marks)

(b) Compare induction motor with synchronous motor.

(5 marks)

III (a) Explain different types of converters used in electric drives.

(10 marks)

(b) What are the advantages of electric drives.

(5 marks)

Or

Turn over

(a) Explain multi quadrant operation of electric drives.

(b) What is load equalization Explain.

(7 marks)

IV Explain single pulse, multiple pulse and sinusoidal pulse modulations with neat sketches.

(15 marks)

Or

(a) Explain symbol and control characteristics of various power semiconductor devices.

(7 marks)

(b) Explain rotor voltage control of a 3-phase induction motor drive.

(8 marks)

V (a) Derive the emf equation of an alternator.

(7 marks)

(b) A 4-pole 50Hz 3-phase star connected alternator has 60 slots with 2 conductors per slot. The winding is short chorded by 2 slots. If the sinusoidally distributed flux per pole is 0.062 wb. Calculate the no load terminal voltage.

(8 marks)

Or

Write short notes:

1. Armature reaction of alternator.
2. Damper bars.
3. Power curves.

(15 marks)