LAGOS CITY POLYTECHNIC, IKEJA

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

DEPARTMENT OF ELECT/ELECT COMPUTER ENGINEERING

2015/2016 SEMESTER EXAMINATION

COURSE TITLE: ELECTRICAL MACHINE II NO OF QUESTION : 6
COURSE CODE: EEC 233 TIME ALLOWED: 2 HRS
FOR WHOM: ND YR 2 E/E ENG P/T INSTRUCTIONS: ANSWER ANY FOUR

QUESTIONS

1. (a) With the aid of a block diagram describe the linked energy of an electromechanical machine.
   (b) Give two differences between generators & motors
   (c) State the energy conversion of the following:
   (i) Battery (ii) Thermocouple (iii) Solar cell
   (iv) Thermal plant

2. (a) State the principle of Alignment
   (b) With the aid of circuit diagram illustrate Faradays Law of electromagnetic induction.
   (c) State Lenzs Law
   (d) Give any 4 examples of Interaction devices.

3. (a) Mention the 3 main causes of heat dissipation in a electromechnical system.
   (b) A 4 pole generator has a magnetic flux of 12 mwb per pole, calculate the average value of the emf generated in one of the armature conductors while it is moving through the magnetic flux of one pole, if armature is driven at 900r.p.m.
   (c) Mention 5 sources of magnetic field.
   (d) What is electromagnetic Induction?

4. (a) What is a Magnetic field?
   (b) State the energy balance equation
   (c) Explain the parallel operation of three phase transformers
   (d) Explain the working principle of a Transformer.

5. (a) Develop the emf equation for the primary and secondary windings respectively for a transformer
   (b) Draw the symbols of the following components of an electrical power system.
   (i) Turbine (ii) Couple (iii) Transformer
   (iv) Alternator (v) Bus bar
   (c) Mention & state the functions of the parts of a Transformer.
   (d) State the Law of conservation of energy.

6. (a) With the aid of a connection diagram, describe a 3 single phase transformers.
   (b) Give any 3 differences between star connection & Delta Connections.
   (c) What are Distribution transformers?
   (d) Describe the oil cooling method for transformers.