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University Examinations 2013/2014

SECOND YEAR, SECOND SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL
ENGINEERING

EEE 0236: ELEMENTS OF POWER SYSTEMS I

DATE: APRIL 2014

TIME: 1 ½ HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE – (30 MARKS)

- (a) Define the following:
- (i) Maximum demand (1 Mark)
 - (ii) Demand factor (1 Mark)
- (b) Using a simple block diagram illustrate the general layout of a typical steam plant. (6 Marks)
- (c) Give three types of consumers who utilize electrical energy. (6 Marks)
- (d) What is meant by:
- (i) Power factor (2 Marks)
 - (ii) Apparent power (2 Marks)
 - (iii) Real power (2 Marks)
 - (iv) Reactive power (2 Marks)
 - (v) Diversity factor (2 Marks)
- (e) Differentiate between Francis and Kaplan turbines. (6 Marks)

QUESTION TWO – (15 MARKS)

- (a) State five requirements to consider when locating a hydropower plant. (5 Marks)
- (b) With the aid of a sketch illustrate the construction of flyball governing system. Name all parts. (10 Marks)

QUESTION THREE – (15 MARKS)

- (a) State five types of tariff in common use for a power utility. (5 Marks)
- (b) With the aid of a labelled diagram illustrate a brushless excitation system. (10 Marks)

QUESTION FOUR – (15 MARKS)

- (a) What is a load curve? (3 Marks)
- (b) State five possible uses of a load curve in power station. (5 Marks)
- (c) Using a labelled diagram show the layout of a high head hydro-electric plant. (7 Marks)