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**ET-202(B)**

**B.Tech. Civil (Construction Management)/**
**B.Tech. Civil (Water Resources Engineering)**

00381

**Term-End Examination**

**December, 2014**

## ET-202(B) : PRINCIPLES OF ELECTRICAL SCIENCES

*Time : 3 hours* *Maximum Marks : 70*

***Note :*** *Answer any* ***five*** *questions. Symbols and abbreviations have their usual meaning. Use of calculator is permitted.*

**1.** (a) State and explain Maximum power transfer theorem. 7

(b) Explain the different types of dependent sources. 7

**2.** (a) Explain the term active power, apparent power and power factor. How is the power factor corrected ? 6

(b) A voltage $200\sqrt{2}$ sin (314t+60) is applied across a load comprising R = 60 Ω and L = 200 mH in series. Find the power drawn by the load and its power factor. 8

3. (a) Write short notes on any ***two*** of the following : *2×3=6*

(i) Difference between power transformer and instrument transformer

(ii) Errors in measurement

(iii) Range and extension of moving iron ammeter and voltmeter

(b) Explain the basic features of an analog indicating instrument. What is the need of damping torque in an analog indicating instrument ? *8*

4. (a) Explain different types of D.C. machines and derive its e.m.f. equation. *7*

(b) Explain slip torque characteristics of 3-phase induction motor. *7*

5. (a) What are the advantages and disadvantages of MOSFET over BJT ? Describe the operation of MOSFET and its characteristics with suitable diagram. *7*

(b) Explain how a bipolar junction transistor can be used as a switch. Explain the factor which determines the switching speed of BJT. *7*

6. (a) Write the disadvantages of RC Phase shift oscillator. Draw the circuit diagram of RC Phase shift oscillator. Derive the expression for frequency. *7*

(b) Explain the basic principle of C.R.O. and give its applications. *7*

7. (a) Explain the addressing modes of 8085 with the help of an example. 7

(b) What is micro-processor ? Draw the architecture of micro-processor and differentiate between micro-processor and CPU. 7

8. (a) Write short notes on any ***two*** of the following : $2 \times 3\frac{1}{2} = 7$

(i) Digital to Analog Converter

(ii) Digital Counter

(iii) Multiplexer

(b) Explain the successive approximation type Analog to Digital Converter. 7