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ET-202(B)

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

Term-End Examination

June, 2012

ET-202(B) : PRINCIPLES OF ELECTRICAL SCIENCES

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any five** questions. Use of **calculator** is permitted.*

1. (a) What is power factor of an AC. circuit ? What are different methods of power factor correction ? **6**

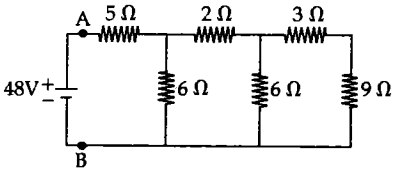
   (b) State and explain Thevenin's Theorem. Give an example using circuit diagram. **6**

   (c) Draw electrical symbols for independent current source and independent voltage source. **2**

2. (a) For the circuit shown below, find : **6**

   (i) the equivalent resistance across the terminal AB.

   (ii) the current and power supplied by battery.



(b) Name the main accessories of the commercial dc generator and motors. What do you mean by back e.m.f. and counter torque in an electrical machine ? 6

(c) Draw Torque-Speed curve of a D.C. Series Motor. 2

3. (a) Describe the basic constructional features and principle of working of Permanent - Magnet Moving Coil (PMMC) Instrument. How to construct an ammeter which measures large current from PMMC instrument. 6

(b) Explain the basic components used in electrical installations. 6

(c) Write expressions for synchronous speed (N_3) and slip (s) for an induction motor. 2

4. (a) Two wattmeters are connected to measure the input power to a balanced 3 phase load by the two-wattmeter method. If the instrument readings are 8 kW and 4 kW, determine (i) the total power input and (ii) the load power factor. 6

(b) Write short note on the following (*any* 2) **6**

(i) Wein Bridge Oscillator

(ii) Resistance, Inductance and capacitance

(iii) Multiplexer

(c) Write any 3 applications of a P-n junction diode. **2**

5. (a) Differentiate between machine language, assembly language and high level language. **6**

(b) Explain the working of C.R.O. **6**

(c) Explain any one application of op-amp with relevant circuit diagram. **2**

6. (a) Draw the block diagram, Circuit diagram, truth table and associated wave forms of an R-S clocked flip-flop. **6**

(b) An amplifier circuit has an input current of 20 μA flowing through 10 kΩ and an output current of 150 mA flowing through 5kΩ. What is the voltage gain ? **6**

(c) Explain phase shift oscillator. **2**

7. (a) Explain the working of ADC and DAC and give their examples. **6**

(b) What are the different types of instruction available in 8085 instruction set ? Give and explain at least two examples for each type. **6**

(c) Explain I-V characteristic of diode. **2**
