



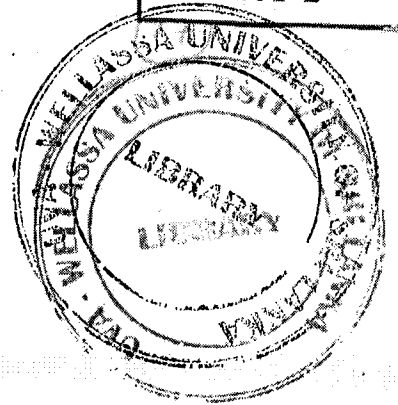
Uva Wellassa University, Sri Lanka

Btech./B.Sc. Degree Programmes

End Semester Examination- (Repeat)

January -2009

ENG 201-2 Electricity and Basic Electronics



Answer All questions.

Time: Two (02) hour

1.

- I. State Thevenin's theorem
- II. A Wheatstone bridge ABCD is arranged as follows. $AB=110\Omega$, $BC=109\Omega$, $CD=2000\Omega$ and $DA=2000\Omega$. A battery of e.m.f. 12V and negligible internal resistance is connected between A and C with A positive. A galvanometer of resistance 60Ω is connected between B and D. Determine galvanometer current using Thevenin's theorem.
- III. For the above circuit determine galvanometer current using Norton's theorem.

2.

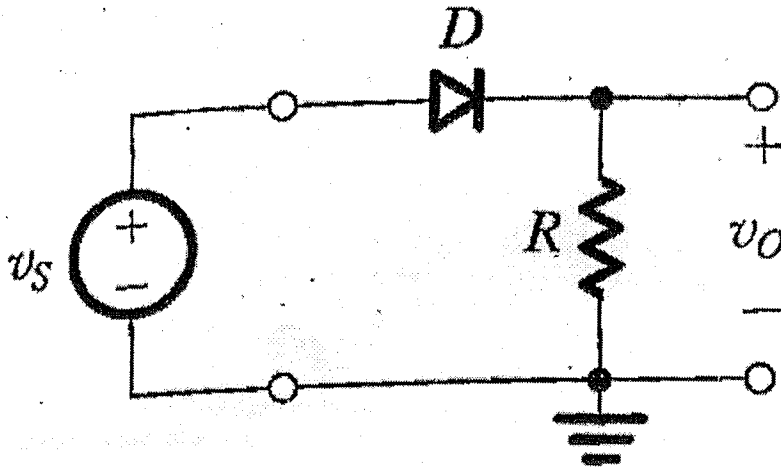
- I. What is armature reaction of a generator?
- II. Draw circuit diagrams of
 - a) Series generator
 - b) Shunt generator
- III. The resistance of field circuit of a shunt-excited d.c. generator is 200Ω . When the output of the generator is 100 kW, the terminal voltage is 500V and generated e.m.f. 525V. Calculate,
 - a) The armature resistance.
 - b) The value of generated e.m.f. when the output is 60kW and the terminal voltage is 520V.

3.

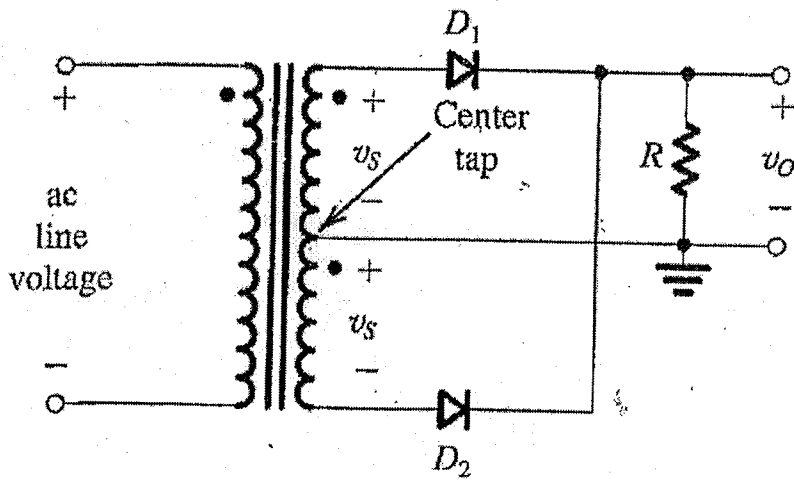
- I. Compare DC motor with DC generators
- II. Briefly explain the working of a DC motor.
- III. A 4-pole, 460V shunt motor has its armature wave-connected with 880 conductors. The useful flux per pole is 0.02Wb and armature resistance is 0.7Ω . If the armature current is 40A, calculate,
 - a) Speed
 - b) Torque

4.

1. Write down diode equation.
2. Prove that a real diode can be modeled by an ideal diode in series with a voltage source.
3. According to the diode model described in part 2, draw the expected output of following circuit.



4. Draw the waveform of the expected output of following circuit



5. Explain how a Bipolar Junction Transistor (BJT) can be used as a dark detector along with a Light Dependent Resistor (LDR). Draw the complete circuit diagram.