KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food.Engg) 2012 Admission

II[nd] Semester Final Examination- July -2013

Cat. No: Elen.1201 **Marks: 80**

Title: Basic Electrical Engineering (2+1) **Time: 3 hours**

I. Answer All questions (10x1=10)

Fill in the blanks:

1. Specific resistance of metallic conductor ..... with rise in temperature.
2. In superposition theorem, other voltage sources are replaced by .....
3. Average value of a symmetrical alternating current over one cycle is.....
4. In the expression for three phase power ($\sqrt{3}V_L I_L cos\varnothing$), $\varnothing$ is the angle between .....voltage and .....current.
5. .....and ..... are called universal gates.

State True or False:

6. Kirchoff's current law is applicable to only junctions in a network.
7. Zener diode cannot do voltage regulation.
8. An XOR gate produces an output only when its two inputs are different.

Define:

9. RMS quantity in an AC circuit.
10. Cut-in voltage.

II. Answer <u>ANY TEN</u> (10x3=30)

1. Explain Superposition theorem.
2. What is self and mutual inductance of electromagnetic inductor.
3. Derive average value of AC signal.
4. Explain a method of three phase power measurement.
5. Write short notes on accessories for wiring.
6. State and explain Kirchoff's laws.
7. What you meant by extrinsic semiconductors? Give examples.
8. Write the theory of operation of NPN transistor.
9. Explain VI charecteristics of SCR.
10. What are the different types of number systems that are commonly used in digital circuits?
11. Explain NAND gate with truth table.
12. Implement the Boolean expression $\overline{(A+B)CD}$ using logic gates.

III. Answer any SIX of the following (6x5=30)

1. Explain Thevenins theorem with one example.
2. Explain how an AC quantity is represented vectorially.
3. Write notes on electrical tariff and safety.
4. Draw and explain the phasor diagram of RLC series circuit. Derive equation for impedance and current.
5. Distinguish between PN junction diode and zener diode.
6. Explain the operation of full wave rectifier with neat circuit diagram and waveforms.
7. State and prove DeMorgan's theorems.
8. Write notes on IC fabrication.

IV. Answer ANY ONE of the following (10x1=10)

1. a) Explain Star and Delta connection in three phase AC circuits.
   b) A balanced star connected load of 10 ohms/phase is connected to a balanced three phase 400V supply. Find the line current, phase current and power.
2. What are the different transistor configurations? Explain each in detail.