

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. **Answer All questions** 2 x 10
 - a. Calculate the energy consumption per day in a house using 5 CFLs of 20 W each, 3 fans of 60 W each for 3 hrs a day.
 - b. Explain (i) Ideal current source (ii) ideal voltage source.
 - c. Define average value, RMS value.
 - d. Two identical resistors are first connected in parallel then in series. Determine the ratio of equivalent resistance of the parallel combination to series combination.
 - e. What is the importance of armature and yoke in DC machine?
 - f. Differentiate between Zener breakdown and Avalanche breakdown.
 - g. Establish the relation between α and β . If $\alpha=0.01$, Find the value of β .
 - h. Draw the basic block diagram of a communication system.
 - i. What is the use of trigger circuit and time base generator in CRO?
 - j. Why biasing is needed?
 2. **Answer Any Six Questions** 6 x 5
 - a. An alternating voltage is given by $V=230\sin 314t$. Calculate (i) frequency (ii) Maximum value (iii) Average value (iv) RMS value (v) Form factor
 - b. Describe various types self-excited of DC generator with their circuit layout.
 - c. A 10v battery is connected to parallel combination of two resistors 10Ω and 5Ω . Calculate the current through in each resistor and power consumed by them.
 - d. A transistor works as an Amplifier? Justify.
 - e. Write down the difference between analog and digital multimeter.
 - f. With proper V-I characteristics, explain the working of a Zener Diode.
 - g. What is Amplitude Modulation? Draw the required waveforms to demonstrate Amplitude Modulation process.
- Answer Any Three Questions**
3. With the help of phasor diagram, show that the current drawn by the R-L series circuit, lags the applied voltage by an angle ϕ with respect to voltage. 10
 4. Explain the working of a nuclear power plant with block diagram. 10
 5. (I) What is an Oscillator? (II) Explain the working of basic Oscillator with simple block diagram. 2+8
 6. Explain the working of a PN junction diode with neat diagram. 10
 7. A house is connected with following electrical loads 10
 - (i) 2 bulbs 100 watt each running 8hrs daily
 - (ii) 2 tube light 40 watt each running 6 hrs daily
 - (iii) One heater 2KW running 2 hrs daily
 - (iv) Four fan 60 Watt each running 8 hrs daily
 - (v) One motor 1.5H.P running 2 hrs daily .
- Calculate monthly electric bill for the month of September 2023 if the unit cost is Rs. 4.50.