

**I B.Tech Examinations, May/June 2012**  
**BASIC ELECTRICAL AND ELECTRONIC ENGINEERING**  
**Bio-Technology**

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

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1. (a) An inductor of 0.5 H and  $90 \Omega$  resistance is connected in parallel with 20  $\mu\text{F}$  capacitor. A voltage of 23 V at 50 Hz is maintained across the circuit. Determine the total power taken from the source.  
(b) A balanced star connected load of impedance  $(8+j6)\Omega$  per phase is connected to a 3-phase, 400 V, 50 Hz supply. Find the line current, power factor, RVA and total VA. [8+8]
2. (a) Draw the Decade counter logic diagram & explain its working.  
(b) Draw the OR gate circuit diagram using diodes & explain its working with truth table. [8+8]
3. (a) What is an audio power amplifier? Explain the difference between a voltage and power amplifier.  
(b) What do you understand by class A, B and C power amplifiers? [8+8]
4. What is rectifier? Differentiate between half wave and full wave rectifiers. Derive expressions for ripple factors. [16]
5. Describe the construction and working principles of
  - (a) Moving coil ammeter
  - (b) Moving iron ammeter.Also mention relative merits and demerits of the two. [16]
6. Derive the expression for e.m.f. generated at the secondary side due to the application of an A.C. signal at the primary side of the transformer. [16]
7. (a) What do you understand by closed loop and open loop gain of an OP-AMP, when a non inverting OP-AMP acts as voltage follower?  
(b) What is meant by slew rate in an OP-AMP?  
(c) Explain the virtual ground concept in an OP-AMP. [8+4+4]
8. (a) What are the two main types of field effect transistors? Give the position of superiority of FET over a conventional transistor.  
(b) Draw a family of common source drain characteristics of an N-channel JFET. Explain the shape of these curves qualitatively. [8+8]

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