# I B.Tech Examinations,May 2011 <br> BASIC ELECTRICAL AND ELECTRONICS ENGINEERING Bio-Technology 

Time: 3 hours
Max Marks: 80

## Answer any FIVE Questions <br> All Questions carry equal marks

1. A Hartley oscillator is designed with $L_{1}=2 \mathrm{mH}, L_{2}=20 \mu \mathrm{H}$ and a variable capacitance. Determine the range of capacitance values is the frequency of oscillation is varied from 2050 KHz to 3050 KHz .
2. Draw the circuit diagram of single tuned class A power amplifier using NPN transistors and explain clearly its operation.
3. Explain how UJT works as a relaxation oscillator.
4. (a) Simplify the function using Karnaugh map:

$$
\begin{aligned}
& \mathrm{f}(\mathrm{~A}, \mathrm{~B}, \mathrm{C}, \mathrm{D})=\Sigma(0,2,6,10,11,12) \\
& \mathrm{f}(\text { Don't Care })=\Sigma(3,5,7,8) .
\end{aligned}
$$

(b) Realize the following function using EX.OR and EX-NOR gates:
$f(A, B, C, D)=A B C+A B C+A C D+A C D$.
5. Obtain the relationship between currents and the relationship between voltages in a delta connected system. Hence derive the equation for power in such a system.
6. With the help of a neat sketch explain the construction and operation of attraction type moving iron instrument.
7. Describe the constructional features of a dc machine with neat sketch.
8. Explain the construction and working of an SCR with relavant graphs.

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(b) Realize the following function using EX-OR and EX-NOR gates: $\mathrm{f}(\mathrm{A}, \mathrm{B}, \mathrm{C}, \mathrm{D})=\mathrm{ABC}+\mathrm{ABC}+\mathrm{ACD}+\mathrm{ACD}$.
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