

Code.No: R05012302

R05

SET-1

I - B.TECH EXAMINATIONS, DECEMBER – 2010
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(BIO-TECHNOLOGY)

Time: 3hours**Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

- 1.a) Define the following:
 - i) Alternating Quantity ii) R.M.S Value
 - iii) Average Value iv) Form factor.
- b) A coil having a resistance of 10 ohms and an inductance of 0.2H is connected in series with a $100 \times 10^{-6} F$ capacitor across a 230V, 50 Hz supply, Calculate:
 - i) The active and reactive components of the current
 - ii) The voltage across the coil, Draw the phasor diagram. [8+8]
2. Explain with the help of suitable diagrams how rotating magnetic field is produced in a three phase induction motor. [16]
- 3.a) Discuss the classification of electrical instruments.
- b) Explain the significance of controlling torque and damping torque relevant to the operation of indicating instruments. [8+8]
- 4.a) In a bridge rectifier, the transformer is connected to 220V, 60Hz mains and the turns ratio of the step down transformer is 11:1. Load resistance is 800Ω . Assuming the diode is ideal, find:
 - i) I_{dc} ii) Voltage across the load iii) PIV.
- b) Draw the circuit diagram of full wave rectifier having two diodes and explain its operation. [8+8]
- 5.a) What are the bias compensation techniques? Explain the operation of one among them.
- b) Define FET parameters and derive the relationship between them. [8+8]
- 6.a) Draw the circuit of a transformer coupled amplifier and explain its operations.
- b) Draw the circuit of a class B push-pull amplifier and derive expression for the output power. [8+8]
- 7.a) Draw the internal diagram of OP-AMP. Explain the function of each block.
- b) What do you understand about the term "Virtual ground"? Give the circuit diagram for differentiate circuit using OP-AMP and prove that a triangular waveform with frequency 5 KHz is converted into rectangular waveform of the same frequency. [8+8]
- 8.a) Explain how a shift register is used as a Ring counter. Draw the O/P waveform from each flip-flop of a 3-stage unit.
- b) Prove that if $w'x + yz = 0$, then $wx + y'(w' + z') = wx + xz + x'z' + w'y'z$
- c) Represent the given negative numbers in sign-magnitude, 1's and 2's complement representation in 12-bit format.
 - i) -64 ii) -512 [6+6+4]

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8. Explain with the help of suitable diagrams how rotating magnetic field is produced in a three phase induction motor. [16]

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