

II B.Tech II Semester Examinations, April/May 2012**BASIC ELECTRONICS****Common to Mechanical Engineering, Production Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

1. (a) Explain how the negative feedback can be used to reduce the output impedance of an amplifier. Derive an expression for the output impedance of a negative feedback amplifier in terms of the output impedance and gain of the amplifier without feedback and feedback factor.
(b) An amplifier has a gain of 1000 and output impedance of $10\text{ k}\Omega$ when no feedback is employed. Determine the value of feedback factor required to have an output impedance of 600Ω when negative feedback is employed. [10+6]
2. (a) Explain why CE configuration is commonly used in amplifier circuits.
(b) Draw the structure of J F E T and explain in detail the effect of gate-source voltage on the channel under the condition of [4+12]
 - i. No bias
 - ii. small reverse bias
 - iii. large reverse bias such that pinch-off occurs.
3. (a) Explain the application of Dielectric heating for
 - i. Food processing and
 - ii. Pre heating of Plastic Preforms.
(b) Classify mechanical generators for generating Ultrasonic waves and indicate the frequency of the waves generated by the above methods. [8+8]
4. (a) Name different methods of turning-on of SCR.
(b) What are the important points to be noted while designing the gate-control circuit of SCR.
(c) Draw and explain the V-I characteristics of SCR. [2+6+8]
5. (a) Explain why a semiconductor acts as an insulator at 0° K and why its conductivity increases with increase of temperature.
(b) Draw the circuit of Bridge rectifier and explain the working of it. Give its merits and de-merits. [4+12]
6. (a) What are the conditions required for an electronic circuit to oscillate.
(b) The frequency determining network of an RC-phase shift oscillator is having $R=2\text{K}\Omega$. Determine the value of C required for frequency of oscillation of the oscillator to be 1.6 k Hz . Derive any formula you use. [4+12]

Code No: R05220301

R05

Set No. 2

7. Write short notes on:

(a) Counter type ADC devices.

(b) R-2R Digital to Analog converter.

[8+8]

8. (a) Explain the following types of Timers

i. Electro-mechanical Timers.

ii. Electronic Timers.

(b) Explain Projection Welding process.

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R05

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[8+8]

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R05

Set No. 1

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