

Code No: R05220301

R05**Set No. 2****II B.Tech II Semester Examinations, December 2010****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) List different methods of turning-on of SCR and explain one of the methods.
(b) Discuss important features of TRIAC. [10+6]
2. (a) Draw the circuit of Hartley oscillator employing transistor and explain the working of it. Derive the expression for frequency of oscillation f_o .
(b) Calculate the frequency of oscillation of a transistor Hartley oscillator having $L_1 = 25 \mu\text{H}$, $L_2 = 100 \mu\text{H}$, Mutual Inductance $M = 20 \mu\text{H}$, and $C = 100 \text{ p f}$. [10+6]
3. (a) Describe the features of 8085 CPU?
(b) Explain various functions of control unit. [8+8]
4. (a) Discuss with mathematical expressions, how the negative feedback in amplifiers reduces the distortion and increases the band width of the amplifier.
(b) Calculate
 - i. voltage gain
 - ii. output impedance.
 - iii. Band width of a feedback amplifier with parameters of the internal amplifier as $A=250$, $Z_o=30 \text{ k } \Omega$, Bandwidth = 50 kHz and having feedback factor $\beta = 0.02$. [8+8]
5. (a) Explain the concept of "hole" in a semi conductor.
(b) Explain the difference between Ideal Diode and commercial diode with the help of V-I Characteristics .
(c) Draw the circuit of Half wave rectifier with L- section filter and explain the working of it. [4+4+8]
6. (a) Explain why the transistors are current sensitive.
(b) Draw the circuit diagram of CB amplifier with an NPN transistor and explain the working of it.
(c) A transistor has $\alpha = 0.98$. The transistor is connected with its emitter grounded. If the base current is changed by 0.2 mA, calculate the change in collector current. [3+8+5]
7. (a) Classify timers according to the function and the techniques used.

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(b) Draw the circuit and explain the working of “Magnetic Energy Storage Welder”.
[8+8]

8. (a) Explain the application of Dielectric heating for

- i. wood gluing and
- ii. pre heating of Plastic Preforms.

(b) Give the necessary block diagram and explain the working of Pulse echo ultrasonic flaw detector.
[8+8]

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R05**Set No. 4****II B.Tech II Semester Examinations, December 2010****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) Discuss with mathematical expressions, how the negative feedback in amplifiers reduces the distortion and increases the band width of the amplifier.
(b) Calculate
 - i. voltage gain
 - ii. output impedance.
 - iii. Band width of a feedback amplifier with parameters of the internal amplifier as $A=250$, $Z_0=30 \text{ k } \Omega$, Bandwidth = 50 kHz and having feedback factor $\beta = 0.02$. [8+8]
2. (a) Explain the concept of “hole” in a semiconductor.
(b) Explain the difference between Ideal Diode and commercial diode with the help of V-I Characteristics.
(c) Draw the circuit of Half wave rectifier with L- section filter and explain the working of it. [4+4+8]
3. (a) Describe the features of 8085 CPU?
(b) Explain various functions of control unit. [8+8]
4. (a) Draw the circuit of Hartley oscillator employing transistor and explain the working of it. Derive the expression for frequency of oscillation f_o .
(b) Calculate the frequency of oscillation of a transistor Hartley oscillator having $L_1 = 25 \text{ } \mu\text{H}$, $L_2 = 100 \text{ } \mu\text{H}$, Mutual Inductance $M = 20 \text{ } \mu\text{H}$. and $C = 100 \text{ p f}$. [10+6]
5. (a) Explain why the transistors are current sensitive.
(b) Draw the circuit diagram of CB amplifier with an NPN transistor and explain the working of it.
(c) A transistor has $\alpha = 0.98$. The transistor is connected with its emitter grounded. If the base current is changed by 0.2 mA, calculate the change in collector current. [3+8+5]
6. (a) Explain the application of Dielectric heating for
 - i. wood gluing and
 - ii. pre heating of Plastic Preforms.
 (b) Give the necessary block diagram and explain the working of Pulse echo ultrasonic flaw detector. [8+8]

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7. (a) Classify timers according to the function and the techniques used.
(b) Draw the circuit and explain the working of “Magnetic Energy Storage Welder”.
[8+8]
8. (a) List different methods of turning-on of SCR and explain one of the methods.
(b) Discuss important features of TRIAC. [10+6]

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R05**Set No. 1****II B.Tech II Semester Examinations, December 2010****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 why the transistors are current sensitive.
 (b) Draw the circuit diagram of CB amplifier with an NPN transistor and explain the working of it.
 (c) A transistor has $\alpha = 0.98$. The transistor is connected with its emitter grounded. If the base current is changed by 0.2 mA, calculate the change in collector current. [3+8+5]
2. (a) Discuss with mathematical expressions, how the negative feedback in amplifiers reduces the distortion and increases the band width of the amplifier.
 (b) Calculate
 - i. voltage gain
 - ii. output impedance.
 - iii. Band width of a feedback amplifier with parameters of the internal amplifier as $A=250$, $Z_0=30 \text{ k } \Omega$, Bandwidth = 50 kHz and having feedback factor $\beta=0.02$. [8+8]
3. (a) Explain the application of Dielectric heating for
 - i. wood gluing and
 - ii. pre heating of Plastic Preforms.
 (b) Give the necessary block diagram and explain the working of Pulse echo ultrasonic flaw detector. [8+8]
4. (a) Explain the concept of "hole" in a semi conductor.
 (b) Explain the difference between Ideal Diode and commercial diode with the help of V-I Characteristics .
 (c) Draw the circuit of Half wave rectifier with L- section filter and explain the working of it. [4+4+8]
5. (a) Classify timers according to the function and the techniques used.
 (b) Draw the circuit and explain the working of "Magnetic Energy Storage Welder". [8+8]
6. (a) Describe the features of 8085 CPU?
 (b) Explain various functions of control unit. [8+8]

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7. (a) Draw the circuit of Hartley oscillator employing transistor and explain the working of it. Derive the expression for frequency of oscillation f_o .
(b) Calculate the frequency of oscillation of a transistor Hartley oscillator having $L_1 = 25 \mu\text{H}$, $L_2 = 100 \mu\text{H}$, Mutual Inductance $M = 20 \mu\text{H}$, and $C = 100 \text{ p f}$.
[10+6]
8. (a) List different methods of turning-on of SCR and explain one of the methods.
(b) Discuss important features of TRIAC. [10+6]

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R05**Set No. 3****II B.Tech II Semester Examinations, December 2010****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 the application of Dielectric heating for
 - i. wood gluing and
 - ii. pre heating of Plastic Preforms.
- (b) Give the necessary block diagram and explain the working of Pulse echo ultrasonic flaw detector. [8+8]
2. (a) Discuss with mathematical expressions, how the negative feedback in amplifiers reduces the distortion and increases the band width of the amplifier.
- (b) Calculate
 - i. voltage gain
 - ii. output impedance.
 - iii. Band width of a feedback amplifier with parameters of the internal amplifier as $A=250$, $Z_0=30 \text{ k } \Omega$, Bandwidth = 50 kHz and having feedback factor $\beta = 0.02$. [8+8]
3. (a) Describe the features of 8085 CPU?
- (b) Explain various functions of control unit. [8+8]
4. (a) Classify timers according to the function and the techniques used.
- (b) Draw the circuit and explain the working of "Magnetic Energy Storage Welder". [8+8]
5. (a) Draw the circuit of Hartley oscillator employing transistor and explain the working of it. Derive the expression for frequency of oscillation f_o .
- (b) Calculate the frequency of oscillation of a transistor Hartley oscillator having $L_1 = 25 \mu\text{H}$, $L_2 = 100 \mu\text{H}$, Mutual Inductance $M = 20 \mu\text{H}$. and $C = 100 \text{ p f}$. [10+6]
6. (a) List different methods of turning-on of SCR and explain one of the methods.
- (b) Discuss important features of TRIAC. [10+6]
7. (a) Explain the concept of "hole" in a semi conductor.
- (b) Explain the difference between Ideal Diode and commercial diode with the help of V-I Characteristics .
- (c) Draw the circuit of Half wave rectifier with L- section filter and explain the working of it. [4+4+8]

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8. (a) Explain why the transistors are current sensitive.
- (b) Draw the circuit diagram of CB amplifier with an NPN transistor and explain the working of it.
- (c) A transistor has $\alpha = 0.98$. The transistor is connected with its emitter grounded. If the base current is changed by 0.2 mA, calculate the change in collector current. [3+8+5]

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