Code No: NR221802 **NR** **Set No. 2**

II B.Tech II Semester Examinations,December 2010
BASIC ELECTRONICS
Common to Production Engineering, Metallurgy And Material Technology
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain how a transistor can be used as a switch.
   (b) Define the following in CE configuration:
      i. Large-signal current gain.
      ii. d.c. current gain and
      iii. Small-signal current gain.
   (c) Explain how S C R can be used as a controlled rectifier. [5+6+5]
2. (a) Explain magnetic deflection system employed for deflecting the beam in C R O. Derive the expression for magnetic deflection sensitivity.
   (b) Explain the need of coating the screen with fluorescent materials and list different fluorescent materials commonly used. [8+8]
3. (a) Explain the basic principle and working of hot wire anemometers using bridge circuit.
   (b) Explain the construction and features of different form of metal foil strain gauges with diagram. [8+8]
4. (a) Give the principle of Induction heating. What are the merits of Induction heating.
   (b) Explain the application of Induction heating for:
      i. surface hardening of steel.
      ii. Annealing of brass and iron. [8+8]
5. (a) Draw the circuit of single stage RC coupled Amplifier and explain its principle of operation.
   (b) Derive an expression for sensitivity of feedback Amplifier. [10+6]
6. (a) Explain two methods of generation of ultrasonic waves.
   (b) Give the application of ultra sonic waves in industry and communication system. [8+8]
7. (a) What is the law of mass action. A p-type germanium at 300^0k has conductivity of 300 mho/cm. Calculate the concentration of impurity atoms, holes and electrons. Assume that $\mu_p = 1800\ cm^2$/sec volt and $n_i = 2.5 \times 10^{13}\ cm^{-3}$.
   (b) Define the following for a rectifier:

i. RMS value
ii. Ripple factor
iii. Regulation
iv. PIV. [6+10]

8. (a) Classify the timers according to the function and the technique used to achieve the industrial timing.
(b) List the electronic welding controls used in resistance welding. [8+8]

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Code No: NR221802 **NR** **Set No. 4**

II B.Tech II Semester Examinations,December 2010
BASIC ELECTRONICS
Common to Production Engineering, Metallurgy And Material Technology
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is the law of mass action. A p-type germanium at 300^0k has conductivity of 300 mho/cm. Calculate the concentration of impurity atoms, holes and electrons. Assume that $\mu_p = 1800\ cm^2$/sec volt and $n_i = 2.5 \times 10^{13}\ cm^{-3}$.
   (b) Define the following for a rectifier:
      i. RMS value
      ii. Ripple factor
      iii. Regulation
      iv. PIV. [6+10]
2. (a) Explain two methods of generation of ultrasonic waves.
   (b) Give the application of ultra sonic waves in industry and communication system. [8+8]
3. (a) Explain the basic principle and working of hot wire anemometers using bridge circuit.
   (b) Explain the construction and features of different form of metal foil strain gauges with diagram. [8+8]
4. (a) Draw the circuit of single stage RC coupled Amplifier and explain its principle of operation.
   (b) Derive an expression for sensitivity of feedback Amplifier. [10+6]
5. (a) Explain magnetic deflection system employed for deflecting the beam in C R O. Derive the expression for magnetic deflection sensitivity.
   (b) Explain the need of coating the screen with fluorescent materials and list different fluorescent materials commonly used. [8+8]
6. (a) Give the principle of Induction heating. What are the merits of Induction heating.
   (b) Explain the application of Induction heating for:
      i. surface hardening of steel.
      ii. Annealing of brass and iron. [8+8]
7. (a) Classify the timers according to the function and the technique used to achieve the industrial timing.
   (b) List the electronic welding controls used in resistance welding. [8+8]

8. (a) Explain how a transistor can be used as a switch.
   (b) Define the following in CE configuration:
      i. Large-signal current gain.
      ii. d.c. current gain and
      iii. Small-signal current gain.
   (c) Explain how S C R can be used as a controlled rectifier. [5+6+5]

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Code No: NR221802 **NR** **Set No. 1**

II B.Tech II Semester Examinations,December 2010
BASIC ELECTRONICS
Common to Production Engineering, Metallurgy And Material Technology
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain magnetic deflection system employed for deflecting the beam in C R O. Derive the expression for magnetic deflection sensitivity.
   (b) Explain the need of coating the screen with fluorescent materials and list different fluorescent materials commonly used. [8+8]
2. (a) Give the principle of Induction heating. What are the merits of Induction heating.
   (b) Explain the application of Induction heating for:
      i. surface hardening of steel.
      ii. Annealing of brass and iron. [8+8]
3. (a) Draw the circuit of single stage RC coupled Amplifier and explain its principle of operation.
   (b) Derive an expression for sensitivity of feedback Amplifier. [10+6]
4. (a) Classify the timers according to the function and the technique used to achieve the industrial timing.
   (b) List the electronic welding controls used in resistance welding. [8+8]
5. (a) Explain how a transistor can be used as a switch.
   (b) Define the following in CE configuration:
      i. Large-signal current gain.
      ii. d.c. current gain and
      iii. Small-signal current gain.
   (c) Explain how S C R can be used as a controlled rectifier. [5+6+5]
6. (a) Explain the basic principle and working of hot wire anemometers using bridge circuit.
   (b) Explain the construction and features of different form of metal foil strain gauges with diagram. [8+8]
7. (a) What is the law of mass action. A p-type germanium at 300^0k has conductivity of 300 mho/cm. Calculate the concentration of impurity atoms, holes and electrons. Assume that $\mu_p = 1800\ cm^2$/sec volt and $n_i = 2.5 \times 10^{13}\ cm^{-3}$.
   (b) Define the following for a rectifier:

i. RMS value
ii. Ripple factor
iii. Regulation
iv. PIV. [6+10]

8. (a) Explain two methods of generation of ultrasonic waves.
   (b) Give the application of ultra sonic waves in industry and communication system. [8+8]

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Code No: NR221802 **NR** **Set No. 3**

II B.Tech II Semester Examinations,December 2010
BASIC ELECTRONICS
Common to Production Engineering, Metallurgy And Material Technology
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain how a transistor can be used as a switch.
   (b) Define the following in CE configuration:
      i. Large-signal current gain.
      ii. d.c. current gain and
      iii. Small-signal current gain.
   (c) Explain how S C R can be used as a controlled rectifier. [5+6+5]
2. (a) Explain magnetic deflection system employed for deflecting the beam in C R O. Derive the expression for magnetic deflection sensitivity.
   (b) Explain the need of coating the screen with fluorescent materials and list different fluorescent materials commonly used. [8+8]
3. (a) Draw the circuit of single stage RC coupled Amplifier and explain its principle of operation.
   (b) Derive an expression for sensitivity of feedback Amplifier. [10+6]
4. (a) Classify the timers according to the function and the technique used to achieve the industrial timing.
   (b) List the electronic welding controls used in resistance welding. [8+8]
5. (a) What is the law of mass action. A p-type germanium at 300^0k has conductivity of 300 mho/cm. Calculate the concentration of impurity atoms, holes and electrons. Assume that $\mu_p = 1800\ cm^2$/sec volt and $n_i = 2.5 \times 10^{13}\ cm^{-3}$.
   (b) Define the following for a rectifier:
      i. RMS value
      ii. Ripple factor
      iii. Regulation
      iv. PIV. [6+10]
6. (a) Explain two methods of generation of ultrasonic waves.
   (b) Give the application of ultra sonic waves in industry and communication system. [8+8]
7. (a) Give the principle of Induction heating. What are the merits of Induction heating.

(b) Explain the application of Induction heating for:

i. surface hardening of steel.

ii. Annealing of brass and iron. [8+8]

8. (a) Explain the basic principle and working of hot wire anemometers using bridge circuit.

(b) Explain the construction and features of different form of metal foil strain gauges with diagram. [8+8]

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