Code No: R05410303 **R05** **Set No. 2**

IV B.Tech I Semester Examinations,November 2010
MECHATRONICS
Common to Mechanical Engineering, Production Engineering
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Conditional jump after comparison types instructions (CJNE) are useful in implementing the 'if' statement and 'case' statements in a program. Explain how. [16]

2. (a) What are the two forms of bipolar transistors? Explain briefly.
   (b) Discuss the following a.c. motors:
      i. single phase induction motor
      ii. three phase induction motor. [8+8]

3. Explain with a neat diagram construction and principle of operation of eddy current proximity sensor. [16]

4. (a) Discuss in brief variable frequency control of AC motors.
   (b) An induction motor is rated at 30 hp 1175 rpm. If the motor is connected to a variable frequency ac drive and operate the motor at 900 rpm, what is the maximum horsepower the motor can safely deliver? [8+8]

5. Discuss the following:
   (a) Real time control system
   (b) Graphical user interface
   (c) Simulation. [6+6+4]

6. (a) Explain the principle of pilot-operated valve.
   (b) Draw the sketches of straight roller, taper roller and needle roller bearing and explain its importance. [8+8]

7. Explain the reasons why analog to digital and digital to analog converters are used in input and output channels of a programmable logic controller. [16]

8. (a) With the help of simple sketches, explain low pass passive filter and low pass active filter.
   (b) Explain the importance of using signal conditioning. [10+6]

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Code No: R05410303 **R05** **Set No. 4**

IV B.Tech I Semester Examinations,November 2010
MECHATRONICS
Common to Mechanical Engineering, Production Engineering
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain the reasons why analog to digital and digital to analog converters are used in input and output channels of a programmable logic controller. [16]

2. (a) With the help of simple sketches, explain low pass passive filter and low pass active filter.
   (b) Explain the importance of using signal conditioning. [10+6]

3. (a) What are the two forms of bipolar transistors? Explain briefly.
   (b) Discuss the following a.c. motors:
      i. single phase induction motor
      ii. three phase induction motor. [8+8]

4. (a) Explain the principle of pilot-operated valve.
   (b) Draw the sketches of straight roller, taper roller and needle roller bearing and explain its importance. [8+8]

5. (a) Discuss in brief variable frequency control of AC motors.
   (b) An induction motor is rated at 30 hp 1175 rpm. If the motor is connected to a variable frequency ac drive and operate the motor at 900 rpm, what is the maximum horsepower the motor can safely deliver? [8+8]

6. Discuss the following:
   (a) Real time control system
   (b) Graphical user interface
   (c) Simulation. [6+6+4]

7. Explain with a neat diagram construction and principle of operation of eddy current proximity sensor. [16]

8. Conditional jump after comparison types instructions (CJNE) are useful in implementing the 'if' statement and 'case' statements in a program. Explain how. [16]

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Code No: R05410303 **R05** **Set No. 1**

IV B.Tech I Semester Examinations,November 2010
MECHATRONICS
Common to Mechanical Engineering, Production Engineering
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Discuss in brief variable frequency control of AC motors.
   (b) An induction motor is rated at 30 hp 1175 rpm. If the motor is connected to a variable frequency ac drive and operate the motor at 900 rpm, what is the maximum horsepower the motor can safely deliver? [8+8]

2. Discuss the following:
   (a) Real time control system
   (b) Graphical user interface
   (c) Simulation. [6+6+4]

3. (a) What are the two forms of bipolar transistors? Explain briefly.
   (b) Discuss the following a.c. motors:
      i. single phase induction motor
      ii. three phase induction motor. [8+8]

4. Explain the reasons why analog to digital and digital to analog converters are used in input and output channels of a programmable logic controller. [16]

5. Explain with a neat diagram construction and principle of operation of eddy current proximity sensor. [16]

6. (a) With the help of simple sketches, explain low pass passive filter and low pass active filter.
   (b) Explain the importance of using signal conditioning. [10+6]

7. (a) Explain the principle of pilot-operated valve.
   (b) Draw the sketches of straight roller, taper roller and needle roller bearing and explain its importance. [8+8]

8. Conditional jump after comparison types instructions (CJNE) are useful in implementing the 'if' statement and 'case' statements in a program. Explain how. [16]

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Code No: R05410303 **R05** **Set No. 3**

IV B.Tech I Semester Examinations,November 2010
MECHATRONICS
Common to Mechanical Engineering, Production Engineering
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) With the help of simple sketches, explain low pass passive filter and low pass active filter.
   (b) Explain the importance of using signal conditioning. [10+6]
2. (a) What are the two forms of bipolar transistors? Explain briefly.
   (b) Discuss the following a.c. motors:
      i. single phase induction motor
      ii. three phase induction motor. [8+8]
3. Conditional jump after comparison types instructions (CJNE) are useful in implementing the 'if' statement and 'case' statements in a program. Explain how. [16]
4. Discuss the following:
   (a) Real time control system
   (b) Graphical user interface
   (c) Simulation. [6+6+4]
5. (a) Explain the principle of pilot-operated valve.
   (b) Draw the sketches of straight roller, taper roller and needle roller bearing and explain its importance. [8+8]
6. Explain with a neat diagram construction and principle of operation of eddy current proximity sensor. [16]
7. (a) Discuss in brief variable frequency control of AC motors.
   (b) An induction motor is rated at 30 hp 1175 rpm. If the motor is connected to a variable frequency ac drive and operate the motor at 900 rpm, what is the maximum horsepower the motor can safely deliver? [8+8]
8. Explain the reasons why analog to digital and digital to analog converters are used in input and output channels of a programmable logic controller. [16]

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