

**II B.Tech I Semester(RR) Supplementary Examinations, May/June 2010**  
**INSTRUMENTATION COMPONENTS**  
**(Common to Electronics & Instrumentation Engineering and Electronics & Control Engineering)**

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

\*\*\*\*\*

1. (a) Explain automobile clutch mechanism?  
(b) Differentiate belt and chain drives? [8+8]
2. (a) What is a Booster relay.  
(b) When is it used?  
(c) What are the limitations? [6+6+4]
3. (a) What are the essential characteristics required of a switch.  
(b) Mention different types of switches based on the number of circuits they can switch and the number of outlets for each circuit.  
(c) Can active elements like diode and transistor be used as switch - Explain. [4+4+8]
4. (a) Discriminate between ordinary electric motors and Servo motors.  
(b) Briefly explain the working of D.C and A.C servomotors with neat sketches. [6+10]
5. (a) With neat sketches explain the construction and working principle of a Junction Field Effect Transistor.  
(b) Draw and explain the V-I characteristics of an N-channel JFET. [8+8]
6. (a) Draw and explain the functional diagram of a 555 timer.  
(b) What are the different modes of operation of a 555 timer? Explain the function of reset. [8+8]
7. (a) Explain how light energy is converted into electrical energy in photo detector?  
(b) What are the materials used for manufacturing light dependent resistor? Explain the process briefly.  
(c) Explain how a photodiode can be used in an alarm system. [4+6+6]
8. Write short notes on the following.
  - (a) Beam splitter
  - (b) Optical flat
  - (c) Prism
  - (d) Grating [4+4+4+4]

\*\*\*\*\*