

**IV B.Tech I Semester Supplementary Examinations, April/May 2005**  
**MECHANICAL MEASUREMENTS & CONTROL SYSTEMS**  
 ( Common to Mechanical Engineering, Mechatronics and Production Engineering)

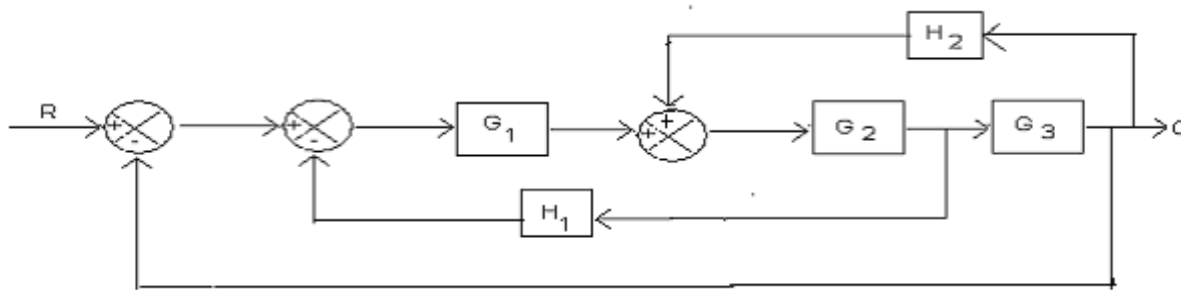
Time: 3 hours

Max Marks: 70

Answer any FIVE Questions  
 All Questions carry equal marks

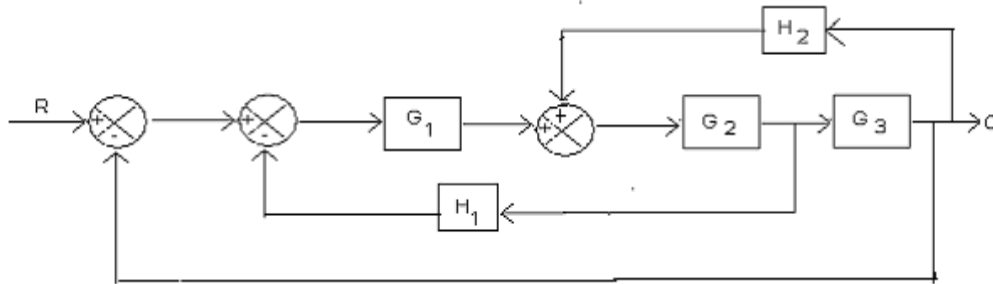
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1. (a) Define and explain the transfer function.
- (b) Reduce the following block diagram to the basic form.



2. (a) Explain how thermocouples can be used to measure the average temperature of a given volume.
- (b) Explain the principle behind the temperature measurement by radiation methods.
3. (a) Briefly describe the working principle of Bourdon type pressure gauge and its areas of application.
- (b) What are the different types of Bellow-diaphragm gauges? Explain how they can be used for pressure measurement.
4. (a) Explain the use of stroboscope for speed measurement.
- (b) State various types of transducers used in instrumentation. State the advantages of using electrical transducers compared to mechanical transducers.
5. (a) Explain different direct methods available for level management.
- (b) Explain the construction and working of a Bubbler level indicator.
6. (a) What is the principle behind the working of Hot wire anemometer? Explain its working.
- (b) Describe with a suitable sketch, the principle of working of a seismic pickup for the measurement of vibration amplitude.
7. (a) State the importance of strain measurement connected to mechanical instrumentation. Derive gauge factor equation for an electrical resistance strain gauge.

- (b) How can a strain guage be used for torque measurement.
8. (a) Define and explain the transfer function.
- (b) Reduce the following block diagram to the basic form.



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