

**DIPLOMA - ELECTRICAL ENGINEERING
(DELVI)****Term-End Examination****December, 2013****BIEE-035 : CONTROL SYSTEMS***Time : 2 hours**Maximum Marks : 70*

Note : Question No. 1 is compulsory. Attempt any four out of question No. 2 to 8.

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1. Write True / False and justify. 2x7=14
 - (a) In a linear control system the cause and effect is proportionally related.
 - (b) Time domain signals cannot be converted into frequency domain.
 - (c) Servo system is a position control system.
 - (d) Stepper motor runs on continuous signal.
 - (e) Laplace transform of $S(t)$ is 1.
 - (f) Negative feedback increases the stability.
 - (g) Bode plot is not a logarithmic plot.

 2.
 - (a) Explain the closed loop control system with its block diagram. 7
 - (b) Explain poles and zeros of a transfer function. Write the steps to determine transfer function of a control system. 7

 3.
 - (a) Differentiate between Linear time varying and Time invaring system. 7
 - (b) What do you mean by steady state and transient response ? 7

4. (a) Describe the time response of a first order control system subjected to unit step input function. 7
- (b) What is damping? Explain critical damping. 7
5. (a) A closed loop control system has the characteristics equation given by $S^3 + 4.5 S^2 + 3.5 S + 1.5 = 0$. Investigate the stability using Routh-Henwitz Criterion. 7
- (b) Define stability. Differentiate between absolute and relative stability. 7
6. (a) What is the need of controllers? Explain proportional control action with its block diagram. 7
- (b) How synchro can be used as error detector? 7
7. (a) Explain the concept of robotics with its functional block diagram. 7
- (b) Find the transfer function for the block diagram in Fig.1. 7

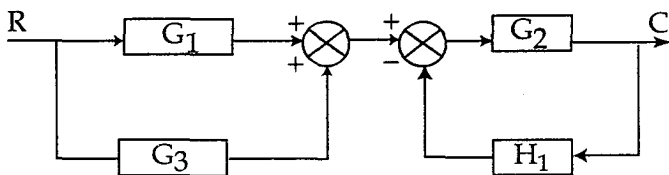


Fig. 1

8. Write short notes on **any four** of the following :

- (a) PD controller **3.5x4=14**
 - (b) End effector
 - (c) Disadvantages of Robotics
 - (d) Bode plot
 - (e) Ramp test input signal
 - (f) Differential equation of RC circuit
 - (g) Unstable region on S - plane
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