

B.E./Insem/Oct.-560
B.E. (Electrical)
Control System - II
(2015 Pattern) (Semester - I)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer any one question from each pair of questions : Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.

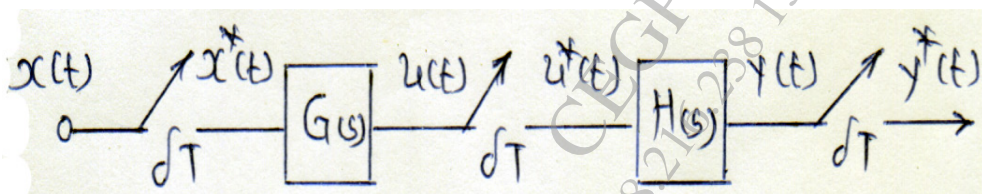
- Q1)** a) Draw and explain configuration of Basic Digital Control System. [6]
 b) What is holding device? Explain the operation of zero order hold circuit. [4]

OR

- Q2)** a) What are the advantages and limitations of Digital Control System? [6]
 b) Discuss various practical aspects of choice of sampling rate. [4]
- Q3)** a) Calculate $y(k)$ if $y(0)=1$ and $y(1)=0$ and $y(k)$ satisfies the difference equation $Y(k+2)+3y(k+1)+2y(k)=u(k)$. Where $u(k)$ is unit step sequence. [6]
 b) State and prove Linearity and Time shifting property of Z-transform. [4]

OR

- Q4)** a) Find pulse transfer function of cascaded elements shown [6]



- b) Derive an expression for Pulse Transfer Function of ZOH using transfer function of ZOH. [4]

P.T.O.

- Q5)** a) Explain 'Direct digital programming' of realization of digital controller. [6]
b) Illustrate stability analysis of closed loop system in Z-plane using Jury's test. [4]

OR

- Q6)** a) Determine the stability using Bilinear transformation of the system whose characteristic equation is [6]

$$5Z^2 - 2Z + 2 = 0$$

- b) Discuss mapping between S-Plane and Z-Plane. [4]

