Total No. of Questions : 6]

SEAT No. :

P218

[Total No. of Pages : 2

Oct./BE/Insem.-534

B.E. (Electrical)

CONTROL SYSTEM - II

(2015 Pattern) (Semester - I)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.***
2) ***Draw Neat diagram wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) a) With a neat block diagram, explain in detail Analog to Digital Conversion process. **[6]**

b) What is ZOH? Derive its transfer function. **[4]**

OR

Q2) a) State Shannon's Sampling theorem and explain the concept of aliasing. **[6]**

b) With a neat block diagram, explain the configuration of basic digital control system. **[4]**

Q3) a) Solve following difference equation using Z-transform. **[6]**

$$y(k+2)+4y(k+1)+3y(k)=2^k$$

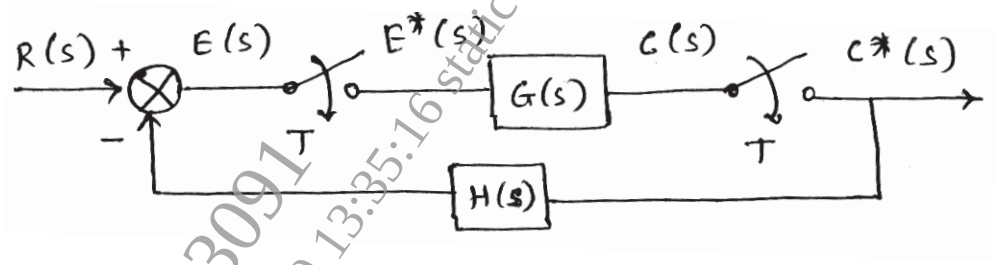
Given that $y(0) = y(1) = 0$

b) Obtain X(Z) if $x(k) = k\,(-2)^k$ **[4]**

OR

P.T.O.

Q4) a) Obtain the closed loop pulse transfer function C(z)/R(z) for the following system. **[6]**



b) Obtain inverse Z-transform by long division method, if F(z) is non-casual and given as $F(Z)=\dfrac{1}{\frac{1}{4}z^{-2}-\frac{2}{4}z^{-1}+1}$. Obtain 3 terms in the quotient and write sequence *f*(*k*). **[4]**

Q5) a) Apply Jury Stability Test and comment on stability of the discrete time system described by the characteristic equation $z^3-1.4z^2+0.53z-0.04=0$. **[6]**

b) Using parallel digital programming technique, obtain block diagram for the system with Z transfer function $D(Z)=\dfrac{z^2+z-2}{z^2+4z+3}$. **[4]**

OR

Q6) a) Using cascade digital programming technique, obtain block diagram for the system with Z transfer function $D(Z)=\dfrac{(z-1)(z^2+z+2)}{z^3+3z^2+5z+3}$. **[6]**

b) Write a short note on mapping of s-plane into z-plane. **[4]**