INSTRUCTIONS

1. Attempt all questions.
2. All workings must be clearly shown.

a) For the system shown below (Figure(a), do the following:
   i. Find the transfer function \( G(s) = X(s) = F(s) \). [2 Marks].
   ii. Find \( \zeta, W_n, \% OS, T_s, T_p \) and \( Tr \). [5 marks].

![Figure (a)](image)

b) For the unit step response shown below, find the transfer function of the system of Figure (b) [7 Marks].

![Figure (b)](image)
c) Find the range of $K$ to keep the system shown below (Figure (c)) stable [6 Marks];

Figure (c)