UIET, Panjab University, Chandigarh

Control Systems (Minor –1) 6th semester (Section- 1 & 2)

Time: 1.5 hrs **Max. Marks: 30**

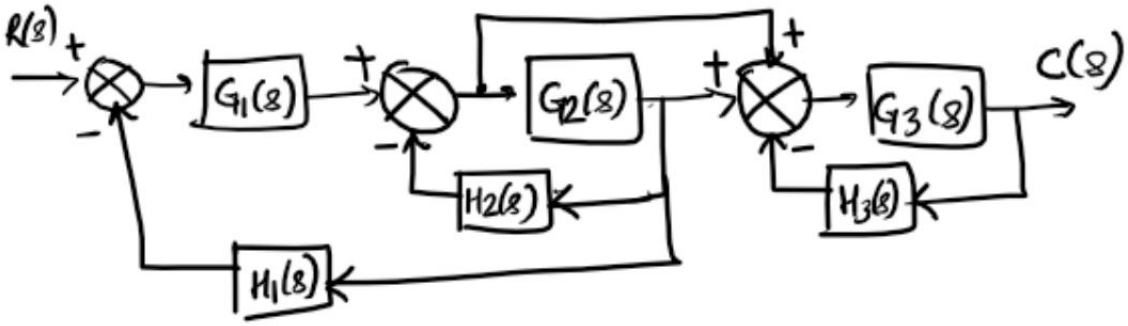
Note: 1. **Attempt all questions.**

2. **For root locus question, you can use a graph paper (if available), otherwise draw it.**

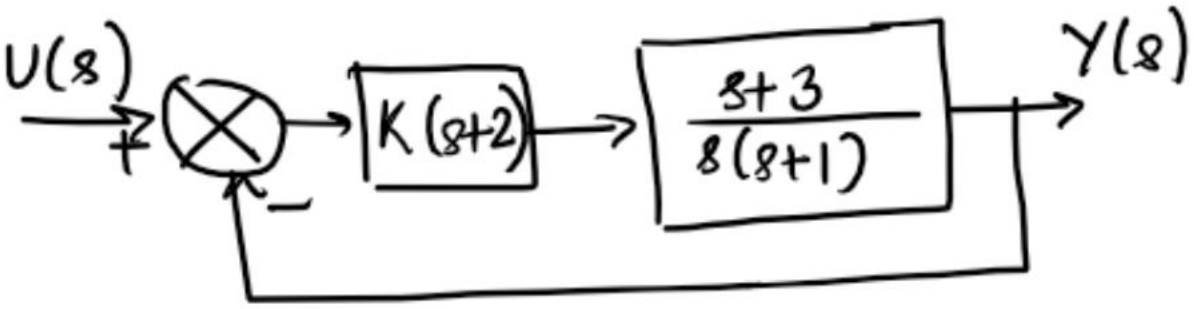
Q1. (i) **Define a control system. What are the components of a feedback control system? Explain using suitable labeled diagram. (2)**

(ii) **Explain in detail the working of a closed-loop traffic light control system. (2)**

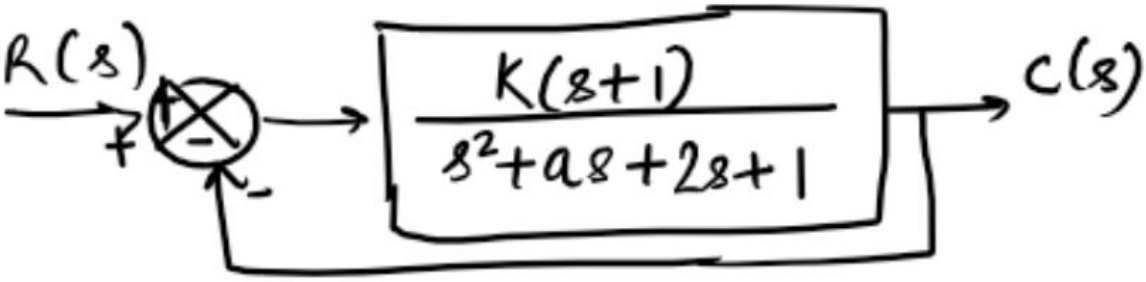
Q2. **Find the overall transfer function using block diagram reduction method. (5)**



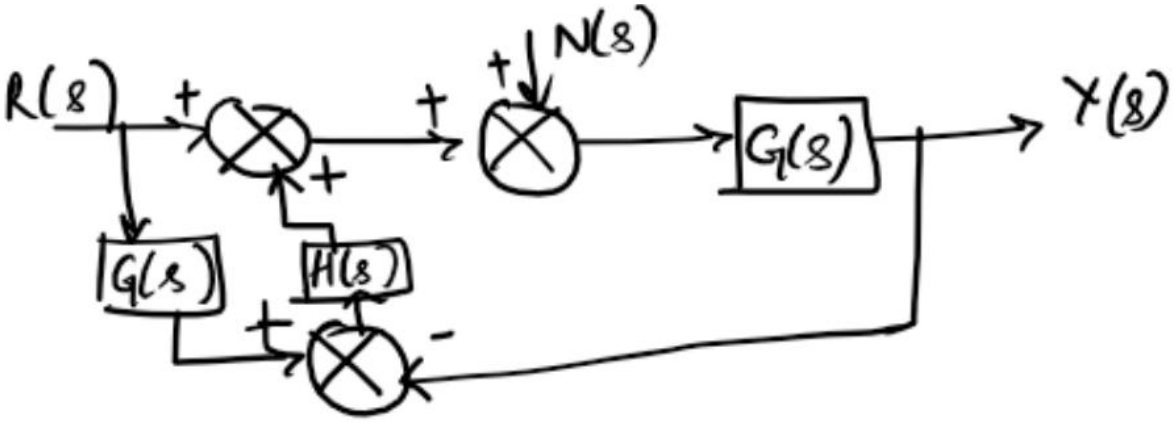
Q3. **For a control system shown in figure, draw the root locus showing all relevant steps. (6)**



Q4. **The feedback system shown below oscillates at 2 rad/sec. Find the value of 'K' and 'a'. (5)**



Q5. **For the block diagram shown, find the Y(s) when N(s) = 0, If G(s) = 100 / [(s+1) (s+5)] and H(s) = 1. Use SFG if needed.** **(5)**



Q6. **Obtain the differential equations for the system shown and draw the analogous electrical circuit using T-v analogy.** **(5)**