

Day: Monday
Date: 26/11/2018

W-2018-2570

Time: 02.30 PM TO 05.30 PM
Max Marks.: 60

N.B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data, if necessary.
- 4) Use of non-programmable calculator is allowed.

Q.1 Comment on stability of following close loop transfer function: (10)
 $S^5 + S^4 + 2S^3 + 2S^2 + 3S + 15 = 0.$

OR

Q.1 Consider the polynomial $S^5 + 3S^4 + 2S^3 + 6S^2 + 6S + 9.$ Comment on stability. (10)

Q.2 Reduce the control system shown in figure-1 and find its transfer function. (10)

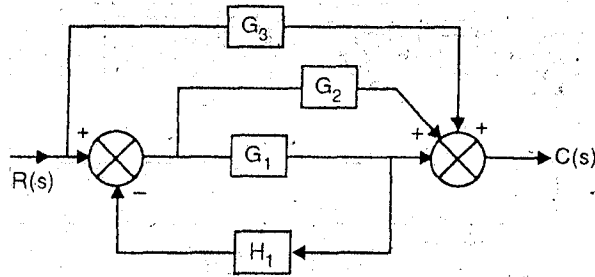


Figure - 1

OR

Q.2 Find the single block equivalent by block diagram reduction rules for the control system shown in figure - 2. (10)

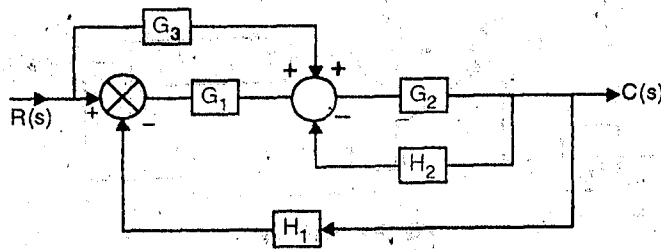


Figure - 2

Q.3 State and explain the four standard test signals used for control system analysis. (10)

OR

Q.3 Explain in detail instantaneous, lagging and delay response. (10)

Q.4 Write a short note on following: (10)

- i) Timing diagrams ii) Sequential logic

OR

Q.4 Explain working of J-K flip-flop and D-type flip-flop. (10)

Q.5 Classify the control systems with their applications. (10)

OR

Q.5 Draw a block diagram of mechatronics system and explain function of each block. (10)

Q.6 What is meant by latching circuit? Also explain concept of internal relay. (10)

OR

Q.6 Write a short note on 'counters' used in PLC (10)

* * * * *