B.Tech. Degree VIII Semester Examination in Marine Engineering July 2013

MRE 805 FLUID CIRCUITS AND CONTROL

Time : 3 Hours | Maximum Marks : 100

I. Write short notes on: (5 x 5 =25)

(i) Float switch (ii) Thermostat (iii) Pipe coupling
(iv) Piping and fitting (v) Sealing and packing

OR

II. (a) Explain the different types of valves with the help of necessary diagrams. (15)

(b) Write a note on compressor. (10)

III. Compare between hydraulic and pneumatic systems with the help of transfer function and its properties. (25)

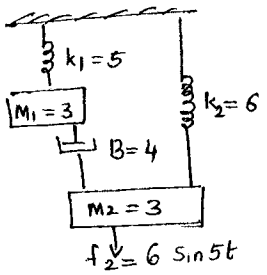
OR

IV. Explain:

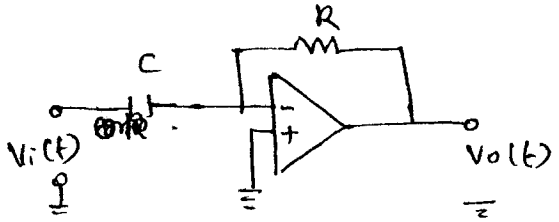
(i) Compressibility and inertia loading (10)
(ii) Hydraulic reservoir (5)
(iii) Properties of fluids (10)

V. (a) Compare open loop and closed loop systems. (6)

(b) Write the characteristic equation of the system shown below: (9)

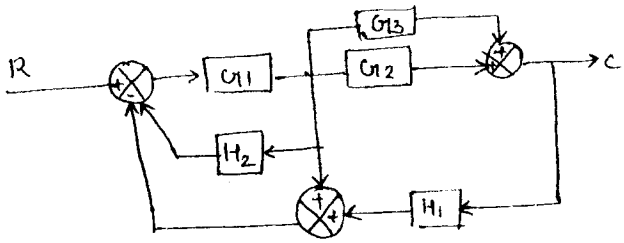


(c) Find the transfer function of the system shown below: (10)

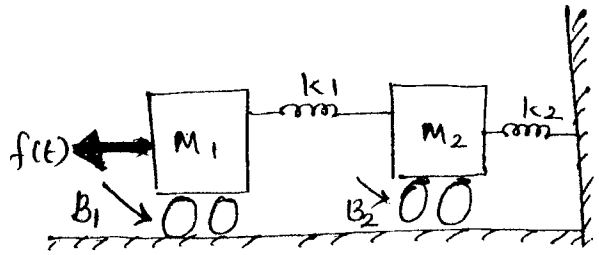


OR

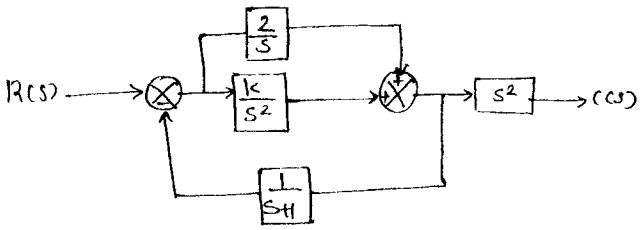
VI. (a) Reduce the block given below: (15)



(b) Find the transfer function of the system shown below. (10)



VII. (a) (15)



Find: (i) Closed loop system transfer function
(ii) Range of k value for stability.
(iii) If system is oscillatory, then find the frequency of oscillation.

(b) Write notes on: (10)

(i) Fluid coupling
(ii) Hydraulic lift

OR

VIII. (a) Draw the approximate root locus diagram for a closed loop system whose open loop T.F is given by. (15)

$$GH(S) = \frac{k}{S(S+5)(S+10)}$$

(b) Write notes on: (10)

(i) Hydraulic press
(ii) Hydraulic crane

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