MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

FIRST SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

EEE 217: CONTROL SYSTEMS 1

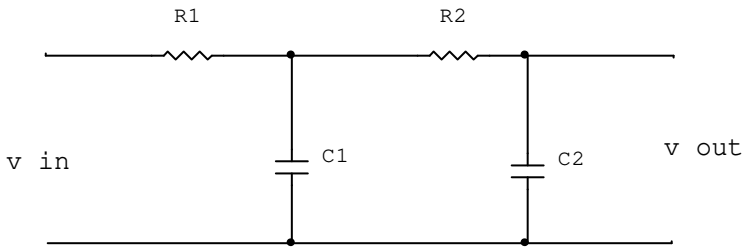
DATE: 9/8/2016 **TIME: 8:30 – 10:30 AM**

INSTRUCTIONS

Answer Question One And Any Other Two Quistions

QUESTION ONE (COMPULSORY)

(a) Determine the transfer function of the network shown below



(10 marks)

(b) With an aid of sketches describe the following types of test signals

i) step input

ii) impulse

iii) ramp input (6 marks)

(c) With an aid of a canonical block diagram of a closed loop system derive

(i) closed loop tranfer function

(ii) error ratio

(iii) primary feed back ratio. (9 marks)

(d) Define the following terms

(i) a system

(ii) a control system (2 marks)

(e) State any three advantages of a feedback in a control system. (3 marks)

QUESTION TWO

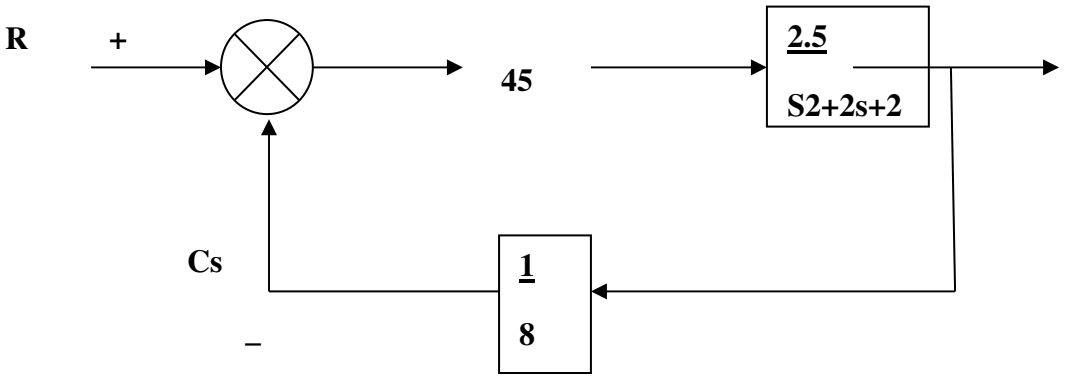
(a) For the system shown below, determine

i) open loop transfer function

ii) closed loop transfer function

iii) error ratio

iv) feed back transfer function.



(20 marks)

QUESTION THREE

Using the block diagram algebra,reduce the block diagram of figure below to its canonical form and hence determine

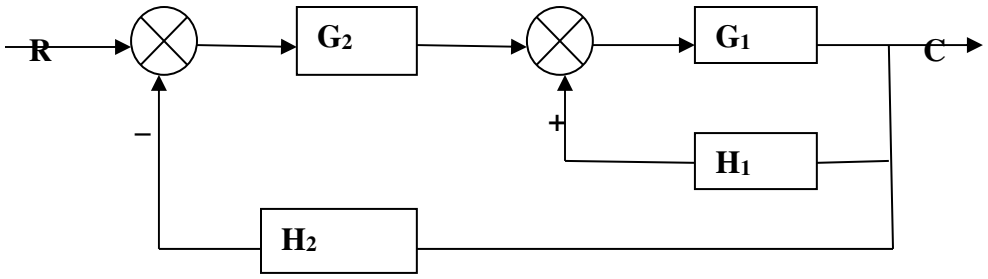
i) forward transfer function

ii) feed back transfer function

iii) error ratio

iv) primary feedback ratio

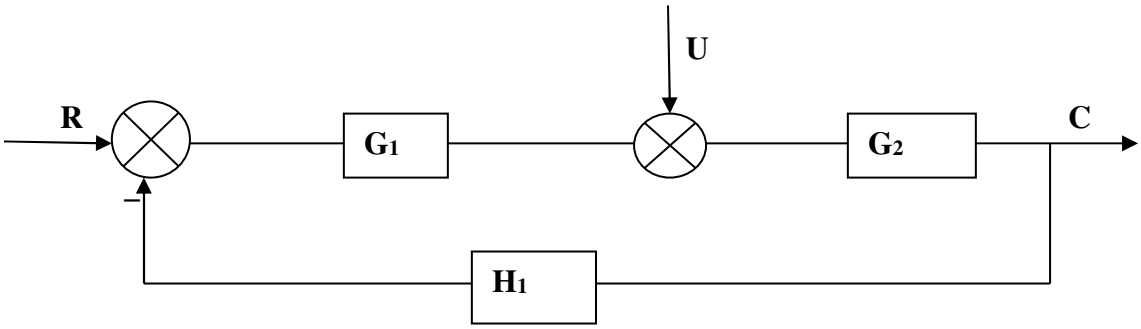
v) open loop transfer function



(20 marks)

QUESTION FOUR

(a) For the multi input system below, obtain the transfer function



(10 marks)

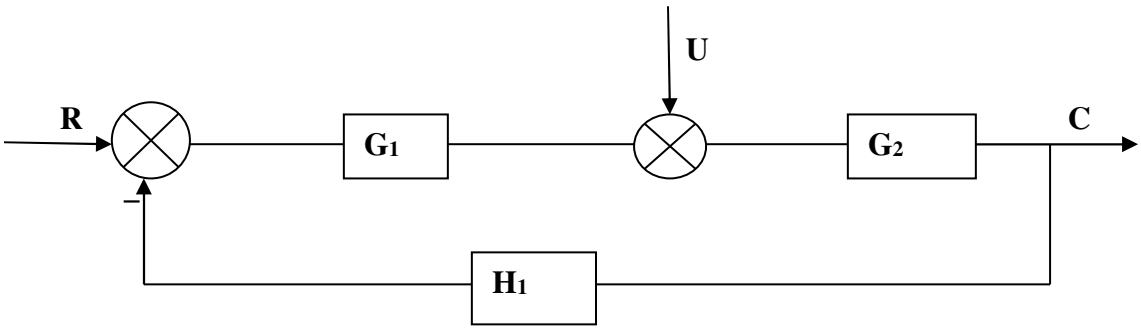
(b) Differentiate between the following (i) manipulated variable

(ii) feedback element and feedback path

(10 marks)

QUESTION FIVE

(a) For the multi input system below, obtain the transfer function



(10 marks)

(b) Differentiate between the following (i) manipulated variable

(ii) feedback element and feedback path

(10 marks)