Enrolment No._____

HASMUKH GOSWAMI COLLEGE OF ENGINEERING, VAHELAL

MID SEMESTER EXAMINATION, SEPTEMBER-2016

Subject Code: 2150909 **Date: 28/09/2016**

Subject Name: CSE **Sem: 5TH**

Time: 10:00 TO 10:50 **Total Marks: 20**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

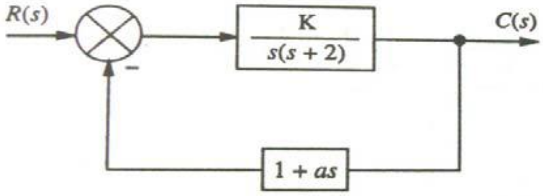
QUE.1 **(A)** Define following terms: **3**

1. Sink node
2. Source node
3. Non- touching loops

(B) Derive equation for Peak time. **3**

QUE.2 **(A)** Explain closed loop system with suitable examples. **3**

(B) Determine the value of 'K' and 'a' such that the system has a damping ratio of 0.7 and an undamped natural frequency of 4 rad/sec for the system shown below **4**



OR

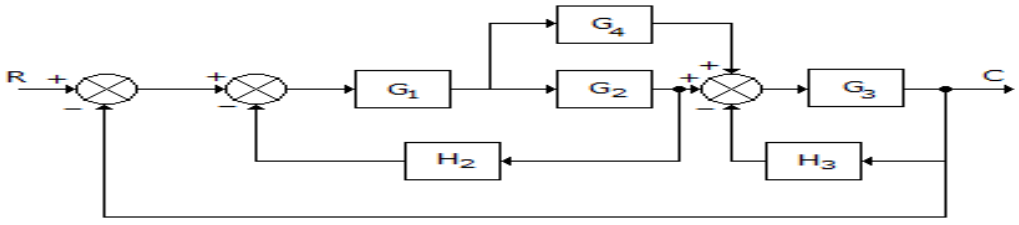
(B) What is analogous system? Explain force-voltage analogy with suitable example. **4**

QUE.3 **(A)** Brief Root locus rules. **3**

(B) $S^6 + 4S^5 + 3S^4 - 16S^2 - 64S - 48 = 0$ Check stability using Routh's method. **4**

OR

(A) **3**



Find the transfer function of the given graph using masson's gain formula.

(B) A unity feedback control system has G(s)= K/s(s+6)(s+9) draw its root locus. **4**

********** ALL THE BEST **********