Exam No: _____

# GANPAT UNIVERSITY

## B. TECH SEM- IV (BME) CBCS REGULAR EXAMINATION– APRIL -JUNE 2017

## 2BM 402: CONTROL SYSTEM ENGINEERING

**TIME: 3 HRS** **TOTAL MARKS: 60**

**Instructions:** (1) This Question paper has two sections. Attempt each section in separate answer book.
(2) Figures on right indicate marks.
(3) Be precise and to the point in answering the descriptive questions.
(4) Assume data wherever necessary.

### SECTION: I

**Q.1** **(10)**

a) Draw neat diagram of open loop & close loop control system and explain it giving one example. 5

b) Derive the transfer function for the system given in fig. 1.1 using block reduction technique. 5

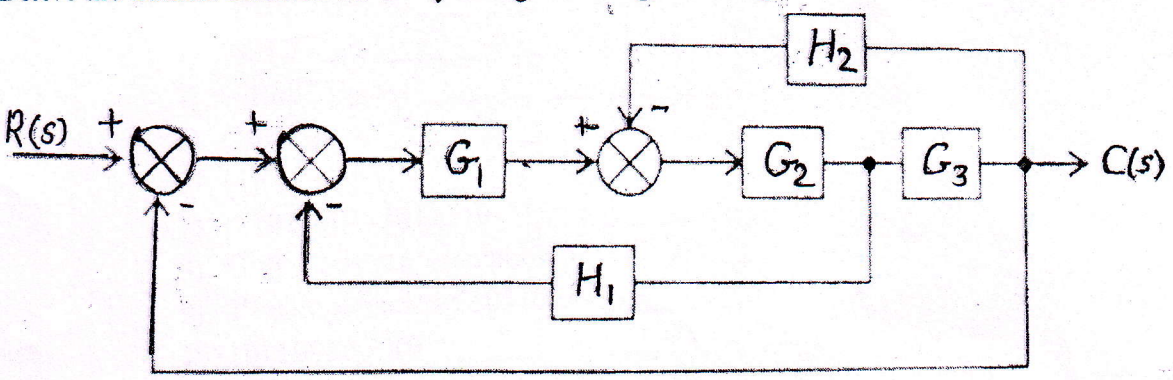


**Figure 1.1**

**OR**

**Q.1** **(10)**

a) Apply Routh Hurwitz criterion to check the stability of the system, having following characteristic equation. 5

$$S^5+6S^4+3S^3+2S^2+S+1=0$$

b) Give definitions of: 5

(1) Manipulated variable.
(2) Process.
(3) Feedback control
(4) Reference input.
(5) Input node.

**Q.2** **(10)**

a) Consider the Unit-step response of, a unity-feedback control system whose open loop transfer functions 5

$$G(s) = \frac{1}{s\,(s+1)}$$

Obtain Rise time, Peak time, Max. peak overshoot and settling time.