No. of Printed Pages : 3

BIEE-035

00402

DIPLOMA-VIEP-ELECTRICAL ENGG-V SEM

Term-End Examination

December, 2011

BIEE-035 : CONTROL SYSTEMS

Time : 2 hours *Maximum Marks : 70*

Note : *There are total **eight** questions. All questions carry **equal** marks. Question No. **1** is **compulsory**. **Four** questions are to be attempted out of question No **02** to **08**.*

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1. Write *'TRUE'/'FALSE'* and justify. **14**

(a) With a proportional - only controller if measurement equals set - point, the output will be 100%.

(b) The lowest power of 's' in the characteristic equation is called the order of the system.

(c) A Transfer Function relates behaviour of the input to the behaviour of the output.

(d) Throttling controller cannot be used as a 2 - position controller.

(e) The gain divided by proportional Band equals one.

(f) Anticipatory Control Mode can be used alone.

(g) Laplace Transform of $\frac{df}{dt}$ is sF(s).

2. Comment on the following :

(a) The existence of Neutral Zone is an example of desirable hysteresis in a system. 7

(b) The Integral Mode is Phase - Lagging. 7

3. (a) Define an 'Electronic Controller'. Explain working of Direct-Acting and Reverse-Acting controller with one - one example. 1+3+3

(b) Write the principle and construction of an elementary stepping motor. 3+4

4. (a) Write two examples of Open - Loop control system and identify (by writing) the controller, the output actuator and the process for each. 3½+3½

(b) Write the steps for drawing the Bode - Plots. 7

5. (a) Define 'stability' - what are the effects of adding pole and zero's in the root-locus. 1+6

(b) Check the stability of the system whose characteristic equation is given by 7

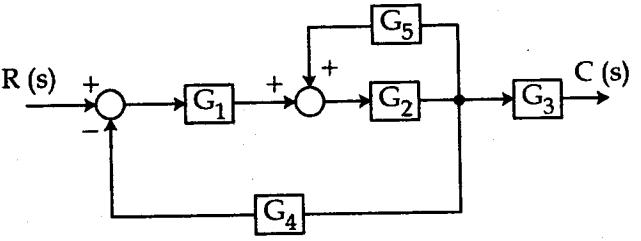
$$S^4+2\,S^2+6\,S^2+4\,S+1=0$$

6. (a) Write the principle of operation of a position control servosystem with the help of block diagram. 7

(b) Define Robotics and write five applications of Robotics. 2+5

7. (a) What are static error coefficients ? 7

(b) Find the transfer function for the given block diagram shown in Fig. 1. 7



(Fig. 1)

8. Write short notes on (*any four*) : 14

(a) Gain Margin

(b) Offset

(c) Circuit diagram of ON - OFF controller using op-amp.

(d) Standard Test Inputs

(e) Mason's Gain Formula

(f) Potentiometer as Error Detector.