Roll No. | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (ANE) (Sem.–6)

AUTOMATIC FLIGHT CONTROL

Subject Code : ANE-321

M.Code : 60530

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly : **(10 × 2)**

a) Transfer function

b) Compensation

c) Open loop control system

d) Stability derivatives

e) Bode plot

f) Significance of signal flow graphs

g) Classical control theory

h) Steady state error

i) Gain margin

j) Multivariable system

SECTION-B

2. Write a note on 'Forward path Compensation'. 5

3. Sketch a root locus plot for a typical control system while explaining the rules for graphical construction of root locus plot. 5

4. Define and differentiate between 'Displacement Autopilot' and 'Pitch Displacement Autopilot. 5

5. Write a note on 'Instrument Landing System'. 5

6. Write a note on 'Routh-Huritz criterion'. 5

SECTION-C

7. Given the following transfer function, determine the steady-state error of the system to unit step, ramp and parabolic input : 10

$$G(s)H(s)=\frac{k(s+2)}{s(s+1)(s+4)(s+5)}$$

8. Determine whether the characteristic equations given below has stable or unstable roots. (2 × 5)

a) $2\lambda^3 + 4\lambda^2 + 4\lambda + 12 = 0$

b) $\lambda^3 + 6\lambda^2 + 12\lambda + 8 = 0$

9. Explain the following controllers with the help of examples : (2, 2, 3, 3,)

a) Proportional Controller

b) Integral Controller

c) PI Controller

d) PID Controller

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.