CBCS SCHEME

USN

15AE81

Eighth Semester B.E. Degree Examination, Aug./Sept.2020
Avionics

Time: 3 hrs. Max. Marks: 80

Note: i) For Regular Students: Answer any FIVE full questions irrespective of modules.
ii) For Arrear Students : Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain vital services with examples. **(06 Marks)**

b. Illustrate the significance of each position of the code used in aircraft cable, 2 D 3 B 2 3 P. **(10 Marks)**

2 a. Draw and explain the routing chart of temperature sensing switch and warning system. **(10 Marks)**

b. What is the significance of the line drawn over a letter or signal function when related to the input or output of logic gate? **(06 Marks)**

Module-2

3 a. Define pitch gimbal servo error and inner roll gimbal servo error. **(06 Marks)**

b. Explain with neat diagram the concept of stable platform. **(10 Marks)**

4 Aircraft data: m = 16000 kg, overall length = 14.5 m, wing span = 11 m, S = 50 m^2, $I_y = 2.5 \times 10^5$ kgm^2, V_T = 300 m/s (600 knots approximately), wing incidence/g at 600 knots = 2/3 degree/g, static margin = 12% negative, $M_h = 5 \times 10^6$ Nm/radian, $M_q = 5 \times 10^5$ Nm/radian per s. From the above derive a suitable pitch control law. Neglecting lags in the actuator response, non linear effects, structural resonance. Notch fitters etc. [$\omega_0 = 6.3, \xi = 0.6$] **(16 Marks)**

Module-3

5 a. Explain the important functions of the following symbols in PFD:
(i) PTH (ii) HDGSEL (iii) FD (iv) DH
(v) THRHLD (vi) R (vii) ALT (viii) G/S **(10 Marks)**

b. Describe the quantities that are derived from Pitot tube. **(06 Marks)**

6 a. Describe modulators and demodulators. **(06 Marks)**

b. Explain the functions of the following:
(i) DME (ii) CWLU (iii) ELT (iv) TCS (v) TCAS **(10 Marks)**

Module-4

7 a. Describe the following: ALU, ACC, PSW, PC, SP, BUS **(06 Marks)**

b. With neat diagram, explain the architecture of Intel 8086. **(10 Marks)**

8 a. What is the importance of collimating lenses? **(06 Marks)**
b. Write the truth table to display: AVIONICS – 15AE81 ON LED DISPLAY **(10 Marks)**

Module-5

9 a. Describe the principle of RADAR. **(05 Marks)**
b. Explain SIGINT and ECM. **(06 Marks)**
c. Describe ARINC 429. **(05 Marks)**

10 a. Explain NRZ and Manchester bi-phase with neat diagram. **(06 Marks)**
b. With neat diagram, explain any 3 transfer formats used in MIL-STD-1553B. **(10 Marks)**

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