

CBCS SCHEME

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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, $S = 50$ m², $I_y = 2.5 \times 10^5$ kgm², $V_T = 300$ 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) THRHL D (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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

15AE81

- 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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