

## Seventh Semester B.E. Degree Examination, Jan./Feb. 2021 Guidance , Navigation and Control

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. What are the basic principles of air navigation? Explain the different types of aircraft navigation. (10 Marks)  
b. Explain the relation between the guidance and control in navigation system. (10 Marks)

OR

- 2 a. Explain basic principle of working of RADAR with a neat block diagram. (10 Marks)  
b. What is Pulse Doppler radar? Explain the types of pulse Doppler radar with a neat sketch. (10 Marks)

### Module-2

- 3 a. Briefly explain type of tracking systems. (10 Marks)  
b. Discuss the concept of conical scan and sequential lobing with a neat diagram. (10 Marks)

OR

- 4 a. What are the components of an inertial navigation system? Explain with neat block diagram. (10 Marks)  
b. How the satellite navigation systems work? Explain and derive suitable notation. (10 Marks)

### Module-3

- 5 a. Explain the concept of the transfer functions of control system. (10 Marks)  
b. Explain the function of radar antenna and list various degree of target reorganization antenna. (10 Marks)

OR

- 6 a. Illustrate the working of roll stabilization with neat block diagram. (10 Marks)  
b. Explain the control of aerodynamic missile with neat sketch of axis system. (10 Marks)

### Module-4

- 7 Explain the concept of proportional navigational guidance with block diagram and root locus analysis. (20 Marks)

OR

- 8 a. Explain command guidance with block diagram. (10 Marks)  
b. Explain the concept of bank to turn missile guidance. (10 Marks)

### Module-5

- 9 a. What do you understand by lateral flight control system? Show that block diagram of RACS with commanded Yaw rate. (10 Marks)  
b. Write a short notes on :  
i) Auto pilot  
ii) Euler Angle (with respect to earth) (10 Marks)

OR

- 10 Explain the following :  
a) Director Fire Control System with block diagram (10 Marks)  
b) Longitudinal Flight Control System. (10 Marks)

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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.