

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VIII (OLD) EXAMINATION – SUMMER 2021**

**Subject Code:181103**

**Date:05/08/2021**

**Subject Name:Radar & Navigational Aids**

**Time:02:30 PM TO 05:00 PM**

**Total Marks: 70**

**Instructions:**

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

**Q.1 (a)** What is Doppler effect? Draw and explain block diagram of FMCW radar . **07**

**(b)** What do you understand by navigation? List different methods of navigation and explain any one in detail.. **07**

**Q.2 (a)** Derive the radar range equations and discuss the factors affecting the radar range. **07**

**(b)** What is the working principle of radar? Draw and explain block diagram of pulse radar **07**

**OR**

**Q2. (b)** What is the principle of TACAN? Explain working of TACAN with the help of simple block diagram **07**

**Q.3 (a)** What do you mean by term tracking radar? Explain the working of mono pulse radar with the help of block diagram. **07**

**(b)** (i) Explain briefly : Multiple around echoes. (03) **07**  
(ii) Write short note on : Delay line cancellers (04)

**OR**

**Q.3 (a)** What is the working principle of LORAN-C navigation system? Explain briefly the components of the LORAN system. **07**

**(b)** Explain operation of VHF Omni directional radio range (VOR ) receiver. Discuss advantages and limitations of VOR **07**

- Q.4 (a)** Explain the working of microwave landing system. Write advantages and disadvantage of it. **07**
- (b)** (i) Explain Multiple around echoes. (03) **07**  
(ii) Explain Delay line cancellers (04)

**OR**

- Q.4 (a)** Draw and explain block diagram of DECCA receiver. **07**
- (b)** Explain different types of Adock direction finders and compare it with loop direction finder. **07**

- Q.5 (a)** Explain briefly: **07**
- (i) Blind speed  
(ii) Pulse Repetition Frequency  
(iii) Minimum detectable signal
- (b)** Draw and explain block diagram of MTI radar **07**

**OR**

- Q.5 (a)** Write short note on : **07**
- (i) Goniometer (03)  
(ii) Aural null Direction Finder (04)
- (b)** Explain briefly modern navigation systems **07**

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