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- g. The blind speed in radar are eliminated by using:
- (A) Delay line cancellers
  - (B) Staggered PRF
  - (C) Doppler shift
  - (D) Single PRF
- h. Tracking in range is achieved by:
- (A) Range gate stealer
  - (B) Split gates
  - (C) Automatic tracking
  - (D) Beam switching
- i. AFC system is employed to keep:
- (A) Receiver in tune with transmitter
  - (B) Frequency agility
  - (C) Constant gain
  - (D) Volume control
- j. The device used to protect receiver when the radar transmitter is transmitting:
- (A) Modulator
  - (B) Mixer
  - (C) Duplexer
  - (D) Magnetron
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**Answer any FIVE Questions out of EIGHT Questions.  
Each question carries 16 marks.**

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- Q.2** a. Describe the operation of Pulse Radar with help of block diagram. (8)
- b. Derive the simple form of the radar range equation. (8)
- Q.3** a. Briefly describe the behaviour of the radar cross section (4)
- b. Derive an expression for echo power in consecant-squared antenna for an air-surveillance radar. (4)
- c. Briefly explain various Radar System Losses (8)
- Q.4** a. Describe Doppler Frequency shift (4)
- b. A C W radar transmits frequency of 10 GHz and Doppler is 1000 Hz. Calculate the radial velocity of the target. (4)
- c. Explain with the help of block diagram, the principal of operation of MTI radar. (8)

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- Q.5** a. Describe Matched Filter Receiver. List its important characteristics. (8)  
b. Enumerate the important parameters for the automatic detection of radar signal. (8)
- Q.6** a. Briefly explain radar clutter, surface clutter, volume clutter. (8)  
b. Explain variation of surface clutter with grazing angle with the help of suitable diagram. (8)
- Q.7** a. Explain Directive gain and Power gain in radar antenna. (8)  
b. Enumerate the advantages of electronically steered phased array antenna. (8)
- Q.8** a. Explain the role and design features of RF low noise amplifier. (6)  
b. Define Noise Figure and express it mathematically? (6)  
c. Briefly explain Circulator as Duplexer. (4)
- Q.9** a. Briefly explain different types of tracking radars? (8)  
b. Briefly explain the principal of operation of three types of Radar/Radio Beacons. (8)