

Microwave & Radar Engineering

Q. P. Code 26230

(3 Hours)

Max Marks: 80

1. Question No. 1 is compulsory.
2. Out of remaining questions, attempt any three questions.
3. Assume suitable additional data if required.
4. Figures in brackets on the right hand side indicate full marks.

1. (A) Explain the working of Directional Couplers. (05)
 (B) Explain travelling wave tube as an amplifier. (05)
 (C) What is meant by RADAR range? (05)
 (D) Explain working of BARITT. (05)
2. (A) With a neat functional diagram explain the working principle of Cylindrical Magnetron. (10)
 (B) Radar operating at 1.5 GHz uses a peak pulse power of 2.5 MW and has a range of 100 nmi for objects whose radar cross section is 1 m^2 . If the minimum receivable power of the receiver is 2×10^{-13} Watt, what is the smallest diameter of the antenna reflector could have assuming it to be a full paraboloid with $\eta=0.65$. (10)
3. (A) State various modes of Gunn diode and explain any one of them in detail. (10)
 (B) Explain Doppler Shift and its role in pulsed and CW RADAR. (10)
4. (A) Explain instrument landing system for aircraft navigation. (10)
 (B) Match a load impedance $Z_L=60-j80$ to a 50Ω line using a double stub tuner. The stubs are open circuited and are spaced $\lambda/8$ apart. The match frequency is 2 GHz. (10)
5. (A) Discuss the various frequency bands and characteristics of microwaves. (10)
 (B) Write a short note on rectangular waveguide. (10)
6. (A) Give the working of Two Cavity Klystron. (10)
 (B) With block diagram explain the MTI radar system. Give its limitations. (10)
