

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2017

RADAR AND MICROWAVE COMMUNICATION

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks

1. List any two factors that influence radar performance.
2. Write the use of delay line cancellers.
3. List the types of tracking radars.
4. Define TE mode.
5. Write the features of microwave relay system.

(5 × 2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Draw the block diagram of a pulse radar.
2. Explain about radar tracking.
3. Describe the principle of Doppler effect. Give its use in radar.
4. Explain about the working of Gunn diode.
5. Explain the working of Microwave FETs.
6. Give the basic principle of Microwave links.
7. Explain about fading.

(5 × 6 = 30)

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks)

UNIT — I

- III (a) Derive radar range equation. 12
 (b) Write about radar frequency ranges. 3

OR

- IV (a) A 10 Ghz radar has peak power 250kW, power gain of antenna 2500, minimum detectable signal of receiver is 10^{-14} watts, cross section area of radar antenna 10sq.m. If the radar is used to detect a target of 2sq.m cross section, find the max range possible. 8
 (b) List the applications of Radar. 7

UNIT — II

- V (a) Draw the diagram of MTI radar and explain its working. 10
 (b) Explain about rectangular wave guides. 5

OR

- VI (a) Explain the working of FM - CW radar with diagram. 8
 (b) Draw the block diagram of pulse Doppler radar and explain its working. 7

UNIT — III

- VII (a) Explain the working principle of magnetron with diagram. 10
 (b) Describe the working of tunnel diode. 5

OR

- VIII (a) Explain the working of two cavity Klystron with diagram. 10
 (b) Describe the working of isolators. 5

UNIT — IV

- IX (a) Draw the block diagram of terminal transmitters and explain its working. 8
 (b) Write short note on the protection switching techniques. 7

OR

- X (a) With diagram explain the working of microwave repeaters. 8
 (b) Write short notes on diversity receivers. 7