TED (15) – 6045 Reg. No. .....

(REVISION — 2015) Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2018

RADAR AND NAVIGATION

[*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. Define the need for duplexer in RADAR.
2. State Doppler effect.
3. List any two types of hyperbolic navigation systems.
4. State the function of marker beacons.
5. List any two satellite navigation systems. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. List the applications of Radar.
2. Explain the operation of delay line cancellers.
3. List different types of tracking in radars.
4. Describe the concept of Distance measuring equipment.
5. Explain the working principle of ADF.
6. Explain the significance of glide slope.
7. Explain the basic working principle of GPS. (5×6 = 30)

Marks

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. 9

(b) State the Radar frequency ranges. 6

Or

IV (a) Draw and explain the basic block diagram of Radar. 7

(b) Write short note on :

(i) Minimum detectable signal (ii) Range ambiguities

(iii) Signal to Noise ratio (iv) Pulse repetition frequency 8

Unit — II

V (a) Explain Mono-pulse Tracking Radar with diagram. 9

(b) Explain any two types of Radar displays. 6

Or

VI (a) Explain the operation of MTI Radar. 6

(b) Draw and explain the block diagram of FM - CW super heterodyne receiver. 9

Unit — III

VII (a) Describe the four methods of navigation. 8

(b) Explain the working of loop antenna. 7

Or

VIII (a) Explain the working principle of LORAN navigation system. 10

(b) List the practical applications of the VOR System. 5

Unit — IV

IX (a) With the aid of a diagram explain the function of components in an Instrument Landing System. 10

(b) Explain the basic principle of GALILEO system. 5

Or

X (a) Explain Microwave Landing System with diagram. 9

(b) State the basic principle of INS. 6