TED (15) – 6045

(REVISION — 2015)

Reg. No.....

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

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. List the factors that affect the maximum range of a radar.
2. List the limitations of radars.
3. State the Doppler effect in radar system.
4. State the principle of hyperbolic navigation system.
5. State the use of marker beacons in instrument Landing System. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain any four applications of radar system.
2. Derive the radar range equation.
3. Explain the operation of a PPI display used in radar.
4. Describe the four methods of navigation.
5. With the help of diagrams explain the principle of operation of goniometer.
6. Explain the use of glide slope in Instrument Landing System.
7. Briefly explain the IRNSS navigation system. (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) With the help of a block diagram explain the operation of a basic radar. 9

(b) Describe the frequency ranges used in radar system. 6

Or

IV (a) Explain the significance of the following with reference to a radar system.

(i) Radar cross section of targets (ii) Minimum detectable signal 8

(b) Define the term 'Pulse Repetition Frequency'. Explain its significance in avoiding confusions in range calculation. 7

Unit — II

V (a) With a neat block diagram explain the working of MTI radar employing power amplifier transmitter. 9

(b) State the use of a tracking radar. Explain various types of tracking radars. 6

Or

VI (a) With the help of a block diagram explain the operation of FM CW radar. 10

(b) Describe the operation of Pulse Doppler Radar. 5

Unit — III

VII (a) With the help of a block diagram explain the operation of Radio Compass ADF. 9

(b) With the help of diagrams explain the principle of operation of loop antenna. 6

Or

VIII (a) With the help of diagrams explain DECCA navigation system. 9

(b) Draw the block diagram of Distance Measuring Equipment. Explain its operation. 6

Unit — IV

IX (a) Explain the operation of Microwave Landing System with the help of diagrams. 9

(b) Explain the Differential GPS system. 6

Or

X (a) Explain the principle of operation of GPS navigation system. 9

(b) Write short notes on the given Satellite Navigation systems.

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