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(Revision – 2015)

A22 – 03612

Reg. No……
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2022

RADAR AND NAVIGATION

[Maximum Marks: **100**] [Time: **3** Hours]

PART-A

(Maximum Marks: **10**)

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

1. What is Radar?
2. Mention the advantage of FM-CW super heterodyne receiver.
3. What is the operating frequency of Loran-A?
4. Mention about GNSS.
5. Mention the advantages of DGPS. (5 x 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 Radar cross section of targets.
3. Explain Doppler effect with equation.
4. Distinguish between MTI and Pulse Doppler Radar.
5. Explain loop antenna.
6. Explain the working principle of Omega navigation system.
7. Explain Microwave Landing System (MLS). (5 x 6 = 30)

PART-C

(Maximum Marks: **60**)

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

UNIT – I

III. (a) Draw and explain the block diagram of Radar. (10)

(b) Explain the significance of Minimum detectable Signal with reference to a radar system. (5)

OR

IV. (a) Derive Radar range equation. (8)

(b) State Radar frequency ranges. (7)

UNIT – II

V. (a) Explain with block diagram FM-CW Radar. (8)

(b) Explain the types of Radar displays. (7)

OR

VI. (a) Explain with block diagram MTI Radar with power amplifier transmitter. (8)

(b) Mention tracking with Radar, and list out its types. (7)

UNIT- III

VII. (a) Explain Radio Compass ADF. (10)

(b) Describe four methods of navigation. (5)

OR

VIII. (a) Explain VHF omni-directional range (VOR) (8)

(b) Explain Distance Measuring Equipment (DME) (7)

UNIT - IV

IX. Explain with diagram instrument landing system. (15)

OR

X. (a) Explain inertial navigation system. (8)

(b) Explain the basic idea of GPS. (7)

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