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B TECH
(SEM VIII) THEORY EXAMINATION 2018-19
SATELLITE AND RADAR SYSTEM

Time -3.00 hr **MM-100**

Note :- Attempt all section. If require any missing data, then choose suitably

SECTION – A

1. Attempt all question in brief. **2 x 10 = 20**

a) What are the applications of radar.
b) What do you mean by antenna scan.
c) What do you mean by maximum unambiguous range.
d) What do you understand by "False Alarm".
e) What is Doppler effect.
f) Give advantages of Geostationary satellite.
g) What is meant by azimuth angle.
h) Define apogee and perigee.
i) Define ascending node and descending node.
j) What is mean by ODU and IDU.

SECTION – B

2. Attempt any Three of the following : **10 x 3 = 30**

a) Explain the basic principle of RADAR. Also derive the expression for radar range equation.
b) Define Pulse Width, Pulse Repetition Time, Average Power, Duty cycle and Missed Detection
c) What are the different types of system losses in a Radar System. Explain them briefly.
d) State Kepler's three laws of planetary motion. Illustrate in each case their relevance to artificial satellites orbiting the earth.
e) Describe orbital elements of a satellite system.

SECTION – C

3. Attempt any One part of the following : **10 x 1 = 10**

a) What is CW radar. Draw the block diagram of CW radar and explain about simple CW radar.
b) Describe the frequency response of single delay line canceler. Describe the need of double delay line canceler.

4. Attempt any One part of the following : **10 x 1 = 10**

a) Explain with a neat diagram about sequential lobing.

b) Consider a radar with a maximum range of 200 kms. Suppose due to some modifications made in the system components.
   (i) the wavelength of the transmitted energy doubles while the antenna gain become half.
   (ii) the antenna effective aperture becomes half while the antenna gain triples.
   (iii)the antenna effective aperture doubles while the wavelength of the transmitted energy remains constant.

   Find the new radar range in all the three cases.

5. Attempt any One part of the following : 10 x 1 = 10

a) Explain digital MTI Doppler signal processor.
b) Explain in detail the elements of a satellite communication.

6. Attempt any One part of the following : 10 x 1 = 10

a) Explain Telemetry,Tracking and command control system.
b) What is Look angle. How does it calculated with respect to shifting of satellite with respect to earth station.

7. Attempt any One part of the following : 10 x 1 = 10

a) State and explain the different segments of GPS. What is meant by satellite signal acquisition in GPS.
b) With the help of block diagram explain the working of DBS Television.