Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech. (Computer Science & Engg./ Electronics & Communication Engg.) (Sem.–7,8)**

# ANTENNA RADIATING SYSTEMS

**Subject Code : BTEC-907B-18**

**M.Code : 90674**

**Date of Examination : 19-01-2023**

**Time : 3 Hrs.** **Max. Marks : 60**

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

## SECTION-A

**1. Write briefly :**

a) What is radiation resistance?

b) What is meant by antenna beam width?

c) What is Broad side array?

d) What is the need for the Binomial array?

e) List out the uses of loop antenna.

f) Discuss between power gain and directive gain.

g) Define Radiation Field.

h) Define Pattern Multiplication.

i) What is the directivity of isotropic radiator?

j) Define quarter wave transformer.

## SECTION-B

2. With a suitable diagram, discuss the construction and operation of a Yagi antenna.

3. Give the expressions for impedance, bandwidth and directivity of rectangular patch antenna.

4. With a neat block diagram, explain the method of measurement of radiation pattern of an antenna.

5. Find the array factor and sketch the pattern of a 2-element array having equal amplitudes and opposite phases, and having a spacing of $d=\lambda$.

6. Design a rectangular microstrip antenna using a substrate with a dielectric constant of 2.2, height h = 0.1588cm so as to resonate at 10GHz.

## SECTION-C

7. Derive an expression for the power radiated by the current element and calculate of radiation resistance.

8. Compute the gain, principle beam width and HPBW of a 10m diameter parabolic Dish with a half wave length dipole feed in focus at 10GHz.

9. Explain the various techniques to suppress EMI.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student**.