

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]

Dec.-22-0268

EC-602 (Antenna & Wave Propagation)

B.Tech. 6th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting one question from each section A, B, C and D. Question no. 9 is compulsory.

SECTION - A

1. Derive the expression for Radiation Resistance of Hertzian Dipole. (10)
2. What are the properties of Antenna? Explain the radiation mechanism of Antenna. (10)

SECTION - B

3. Explain Yagi-Uda Antenna with its salient features and radiation pattern. (10)
4. Prove that the radiation resistance of a folded dipole with 3 arms is given by $R_r = 657\Omega$. (10)

SECTION - C

5. Discuss about the feed system for parabolic reflector antennas in detail. (10)
6. What are Smart Antennas? Explain antenna beam forming in detail. (10)

SECTION - D

7. When the maximum electron density of the ionospheric layer corresponds to refractive index of 0.92 at the frequency of

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10MHz, find the range if the frequency is MUF itself. The height of the ray reflection point on the ionospheric layer is 400 km. Assume flat earth and negligible effect of earth's magnetic field. (10)

8. Derive the relation between MUF and the skip distance. (10)

SECTION - E (Compulsory Question)

9. Answer the following:
 - (a) Define Antenna Temperature.
 - (b) Write the application of Marconi Antenna.
 - (c) What should be the excitation phase of broadside array?
 - (d) What is Stub?
 - (e) Give the classification of parabolic reflector antennas.
 - (f) What are the benefits of smart antennas?
 - (g) Write down the babinet's principle.
 - (h) Write the effect of earth's magnetic field.
 - (i) What are the different modes of propagation?
 - (j) If the critical frequency of an ionized layer 1.5MHz, find the electron density of the layer. (10×2=20)