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Question Paper Code:U2207

M.E. DEGREE EXAMINATION, MAY / JUNE 2025

Second Semester

Communication Systems

21PCM207- ADVANCED RADIATING SYSTEMS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) Analyze the role of mesh generation in the accuracy and efficiency of Finite Difference Time Domain (FDTD) simulations for antenna array structures. CO4- Ana (20)

Or

- (b) For cellular (mobile) phone systems, the handset (phone) antennas are nearly omnidirectional, while contrast base-station antennas are fairly directional (at least in the vertical direction). Analyze how this difference in directionality might be desirable, and/or inevitable for mobile users. CO4- Ana (20)

2. (a) Explain the following in relation with a patch antenna (a) Patch parameters (b) Methods of bandwidth control (c) Shape of antennas (d) Characteristic impedance. CO1-U (20)

Or

- (b) Illustrate the principle and working of patch antenna in terms of its shape and thickness of substrate material. CO1-U (20)

3. (a) Analyze the various material loading techniques in terms of efficiency in miniaturization concept of patch antenna with an example. CO2- App (20)

Or

- (b) Apply the concept of bending and folding techniques to reduce the height of the inverted L antenna for S band applications. CO2- App (20)

4. (a) Design a printed UWB antenna with a rectangular notch on the radiator such that the antenna is etched onto a piece of PCB - RO4003, $\epsilon_r=3.38$, $\tan \delta=0.002$ and 1.52 mm in thickness. CO3- App (20)

Or

- (b) Apply the concept of Diversity techniques in printed antenna for UWB applications. CO3- App (20)

5. (a) Explain how base station antennas contribute to cellular coverage for 5G networks. CO1-U (20)

Or

- (b) Illustrate the concept of antenna beam forming in Radio telescope system. CO1-U (20)