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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST - 3 EXAMINATION - 2026

B.Tech-VI Semester (ECE)

COURSE CODE(CREDITS): 18B1WEC742(3) MAX. MARKS: 35

COURSE NAME: Antenna and Wave Propagation

COURSE INSTRUCTOR: Salman Raju Talluri MAX. TIME: 2 Hours

Note: (a) All questions are compulsory. (b) The candidate is allowed to make suitable numeric assumptions wherever required for solving problems. (c) Use of calculator is allowed.

Q.No	Question	CO	Marks
Q.1	What are the five important electrical parameters of antenna? Give three different types of application and a selection of antenna with regards to these applications.	CO-2	5
Q.2	Derive the expression for radiation pattern of a linear antenna array of N elements positioned at a distance of d from each other. How do you modify this equation in order to extend it to 2-Dimensional and in general to 3-Dimensional arrays?	CO-2	5
Q.3	How does the Electron density profiles of ionosphere varies with respect to height? Using this graphs along with other properties of ionosphere, explain the concept of maximum usable frequency, virtual height and skip distance.	CO-3	5

Q.No	Question	CO	Marks
Q.4	What is the need for an anechoic chamber concerning antenna measurements? How do you measure the radiation pattern inside an anechoic chamber with two different types of antenna positioner? Explain with neat diagrams.	CO-3	5
Q.5	How do you measure the gain of a test antenna using Absolute Gain Measurement and Gain Transfer method? Draw the setup diagram for measurement along with necessary equations.	CO-4	6
Q.6	Two identical antennas operating at 2.4 GHz are used to measure their gains. With the transmit power set to 1 W, the power received by the receive antenna kept at a distance of 25 m is -8 dBm. Calculate the gain of the antennas.	CO-4	4
Q.7	Write very precisely about the following. a. Broadside array and End-Fire array b. dBm and dBW c. Electric vector potential and Magnetic vector potential d. Grating lobe and back-lobe e. Isotropic antenna and Omni-directional antenna	CO-1	5