JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-I Semester (CSE/IT/ECE/CE/BT/BI)

COURSE CODE (CREDITS): 15P1WPH215 (3) MAX. MARKS: 15

COURSE NAME: MICROSTRIP ANTENNA DESIGN

COURSE INSTRUCTORS: MAX. TIME: 1 Hour

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	Marks
Q1	The radial component of the radiated power density of an antenna is given by $W_{rad} = \widehat{a_r} A_0 \frac{sin\theta}{r^2}$ where A_0 is the peak value of the power density, θ is the spherical coordinate and $\widehat{a_r}$ is the radial unit vector, Determine the total radiated power.	2
Q2	The normalized radiation intensity of an antenna is given as $U(\theta) = cos^2(\theta)cos^2(3\theta)$. $(0 \leq \theta \leq 90^o, \quad 0 \leq \emptyset \leq 360^o)$ Find 1. Half power beam width HPBW (in radiations and degrees) 2. First null beam width FNBW (in radiations and degrees)	4
Q3	What is the difference between Gain and Directivity of an antenna	3
Q4	Keeping in mind the operating environment of radiators, classify the antennas as per the working environment	3
Q5	The maximum radiation intensity of a 90% efficiency antenna is 200 mW/unit solid angle. Find the directivity and gain (dimensionless and in dB) when the (a) input power is 125.66 mW (b) radiated power is 125.66 mW	3