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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- Feb 2020

B.Tech 8<sup>th</sup> Semester

COURSE CODE: 13B1WEC832

MAX. MARKS: 15

COURSE NAME: Modern Antennas

COURSE CREDITS: 3

MAX. TIME: 1 Hr.

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

1. A  $1.2 \lambda$  long dipole has 1 amp peak input current. Find the maximum peak current seen on the dipole if the dipole is oriented along z-axis. Find the radiation electric & magnetic field at a distance of 100 meter along  $\theta = 60$  degree. [CO-1,2; 3 Marks]
2. What is the effect of tapering of the current distribution on the radiation pattern? [CO-1; 2 Marks]
3. What happens to the radiation pattern if a phase gradient is introduced in the current distribution? [CO-2; 2 Marks]
4. Derive the relationship between antenna directivity & effective aperture of the antenna. [CO-1,2; 2 Marks]
5. Explain in detail folded dipole antenna. Calculate the input impedance of n-element folded dipole antenna. [CO-1; 4 Marks]
6. Prove that Fourier transform relationship exists between antenna current and radiation pattern. [CO-1,2; 2 Marks]