JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-VI Semester (ECE)

COURSE CODE (CREDITS):18B11EC611(3)

MAX. MARKS: 15

COURSE NAME: Wireless and Data Communication

COURSE INSTRUCTORS: Dr. Shweta Pandit 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	CO	Marks
Q1	Differentiate between circuit switched and packet switched network. How does the shift from circuit-switched networks in 1G and 2G to packet-switched networks in higher generation technologies impact the overall performance and user experience?	2	2
Q2	a) Define the key difference between baseband and bandpass signal representation in wireless systems. b) How source coding and channel coding is helpful in improving wireless communication system? Provide the key techniques of source and channel coding each.	1	1 1.5
Q3	What is Doppler shift and how does it impact wireless communication? Consider a transmitter which radiates a sinusoidal carrier frequency of 1850 MHz. For a vehicle moving 60 mph, compute the received carrier frequency if the mobile is moving (a) directly towards the transmitter, (b) directly away from the transmitter, (c) in a direction which is perpendicular to the direction of arrival of the transmitted signal	1	4
Q4	Compare the impact of path loss, shadowing and multipath fading on received signal strength of the wireless signal. What are the factors which affect radio wave propagation and cause the fading of signal in wireless communication?	3	2.5
Q5	How do 1G to 5G differ in terms of carrier frequency, modulation techniques, multiple access methods, channel bandwidth, and achievable data rates?	1	2
Q6	Consider an indoor wireless LAN with carrier frequency of 900 MHz, cells of radius 100 m, and nondirectional antennas. Under the free-space path loss model, what transmit power is required at the access point such that all terminals within the cell receive a minimum power of 10μW. How does this change if the system frequency is 5 GHz?	3	2