JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

B.Tech-VII Semester (ECE/Minor ECE)

COURSE CODE (CREDITS):18B11EC611(3) MAX. MARKS: 15

COURSE NAME: Wireless and Data Communication

COURSE INSTRUCTOR: 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

(c) Use of calculators is allowed

Q.No	Question	CO	Marks
Q1	a) Identify and list well-known communication systems and state their typical operating frequency ranges. b) Differentiate and compare circuit switching and packet switching techniques. Examine their working principles and justify the suitability of each with appropriate wireless system examples. c) Define and describe the ISM and U-NII bands. Distinguish between them in terms of frequency range and applications. Evaluate and justify their advantages and drawbacks for wireless communication system.	1	[2] [1] [2]
Q2	Explain and interpret the frequency hopping technology used in Bluetooth systems. State its operating frequency range, data rate, and hopping rate. Also, analyze and assess how frequency hopping improves system performance.	1	[2]
Q3	a) Define and distinguish path loss, fading, and shadowing. Develop and construct the mathematical formulations for each phenomenon. Examine and interpret their impact on wireless system performance. b) Derive and formulate the mathematical expression for Doppler shift in a wireless system. Develop and solve a numerical problem demonstrating its significant impact on a cellular communication system. Further, assess and justify the implications of Doppler shift in high-mobility scenarios.	3	[2] [3]
Q4	Review and summarize the evolution of cellular systems from 1G to 5G. Compare and differentiate these generations in terms of system parameters (at least ten). Finally, evaluate and justify the technological advancements at each stage.	6	[3]

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