JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-V Semester (ECE)

COURSE CODE (CREDITS):18B1WEC534 MAX. MARKS: 15

COURSE NAME: NETWORK ANALYSIS AND SYNTHESIS

COURSE INSTRUCTORS: Dr Rajiv Kumar 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	a) Define z-parameters of a two-port network. You are given following an open-circuit impedance (Z) matrix. Check whether the given network is: i) Symmetrical. ii) Reciprocal $Z = \begin{bmatrix} \frac{2}{s+1} & \frac{1}{s+1} \\ \frac{1}{s+1} & \frac{6}{s+1} \end{bmatrix}$ b) Explain the difference between a two-port network and a single-port network with suitable examples.	CO-2	3+2=5
Q2	a) What is a linear system? Discuss the significance of the superposition principle and proportionality property in the context of linear systems. b) Establish a mathematical relation between the unit impulse signal and the unit step signal in a linear system.	CO-1	2.5+2.5 = 5
Q3.	a) Discuss the effect of pole movement in the s-plane for the following cases: i) Both poles lie in the negative half of the real axis. ii) Both poles lie in the positive half of the real axis. iii) Poles are mirror images on the imaginary axis. iv) Both poles lie on the imaginary axis. b) Explain the concept of complex frequency. Discuss its importance in analyzing the attenuation of a signal.	CO-1	2.5+2.5 = 5