JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -I EXAMINATION- 2026

B.Tech-6th Semester (ECE)

COURSE CODE (CREDITS): 18B1WEC632 MAX. MARKS: 15

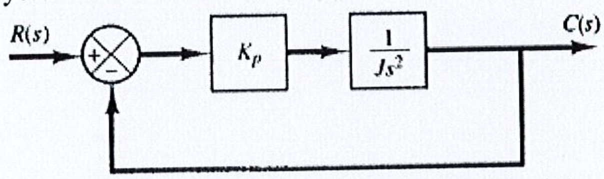
COURSE NAME: INTELLIGENT CONTROL SYSTEMS

COURSE INSTRUCTOR: 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

(c) Use of non-programmable calculators is allowed

Q.No	Question	CO	Marks
Q1	a) Compare conventional control systems with AI-based and intelligent control systems. Highlight differences with reference to application domains. b) Describe the types of intelligent control systems. Explain any one type in detail, including its basic working principle and typical applications. a) Describe how an ON/OFF controller can be for liquid level control, highlighting its advantages and limitations.	CO-2	2+2+2=6
Q2	a) Find out the output corresponding to unit step input of the system shown below:  b) Explain the advantages and disadvantages of the following types of controllers: (a) Proportional (P) controller (b) Proportional–Integral (PI) controller (c) Proportional–Integral–Derivative (PID) controller. c) Why are integral control and derivative control generally not used alone in practical control systems? Support your answer with suitable reasoning.	CO-1	2+2+2=6
Q3	For the following transfer function $G(s) = \frac{(s+2)(s+3)}{s(s+1)(s+5)}$ apply the Ziegler–Nichols second method of tuning PID controller	CO-1	3

66