

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-V Semester (ECE/ECM)

COURSE CODE (CREDITS): 18B1WPH531(3)

MAX. MARKS: 25

COURSE NAME: Science and Technology of Materials

COURSE INSTRUCTORS: Dr. Santu Baidya

MAX. TIME: 1 Hour 30 Minutes

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	What is direct and indirect band gap semiconductor? Tabulate the difference between them. Which type of semiconductors are best for optoelectronic applications and why?	CO-1	1+2+2
Q2	What is working principle of light emitting diode? Draw I-V characteristic of LED? Tabulate the difference between LASER and LED.	CO-3	2+1+2
Q3	Define Luminescence. How many types of luminescence are there and explain each type. Why are so many animals in the ocean bioluminescent?	CO-4	1+3+1
Q4	Explain two types of thermoelectric effects with diagram of working principle. What is thermal efficiency and power factor.	CO-2	3+2
Q5	Define Dielectric polarization. Derive expression for electronic and thermal conductivity using Drude model.	CO-5	1+4