JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION- 2024
B.Tech-VIII Semester (CSE/IT/ECE/CE)

COURSE CODE(CREDITS): 18B1WPH831(3)
COURSE NAME: OPTOELECTRONIC DEVICES
COURSE INSTRUCTORS: SKK

MAX. MARKS: 35
MAX. TIME: 2 Hours

Note: (a)All questions are compulsory.
(b) All Questions carry equal Marks.
(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

1. (a) Consider a fiber with a 100μm core diameter and a 140μm cladding diameter. If n_1 = 1.48 and Δ = 1%, calculate the V- parameter if the operating wavelength is 850 nm?
   (b) Find the value of V at a wavelength of 850nm if the diameter of the core is 50μm?
   (c) Calculate the number of modes for each case.

2. What is Brillouin & Raman scattering in the fiber. Explain in detail

3. What is Dispersion of an fiber? Calculate material dispersion in fibers?

4. Explain the working of FET as an optoelectronic device

5. How does solar cell convert light into current? Explain with the help of equivalent circuit of an ideal solar cell

6. Explain working of thermo photovoltaic generator with detail diagrams

7. Write short note on

   (i) Photocurrent and quantum efficiency
   (ii) Seebeck effect