JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

B.Tech-I Semester (All Branches)

COURSE CODE(CREDITS): 18B1WPH732 (3)　　　　　MAX. MARKS: 15

COURSE NAME: OPTICAL FIBER NETWORK DESIGN

COURSE INSTRUCTORS:　SKK　　　　　　　　　　MAX. TIME: 1 Hour

Note: (a)All questions are compulsory.

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for

solving problems

1. Explain the concept of Numeric Aperture (NA) in step index fiber. How is it related to launch angle of fiber　　　　　　　　　　　　　　　　　　　　　　[3]

2. Explain the difference between Raman and Brillouin scattering in fibers. Calculate their ratio also.　　　　　　　　　　　　　　　　　　　　　　　　　　[4]

3. What is V parameter and how is it used to calculate the number of modes in step index and graded index fiber.　　　　　　　　　　　　　　　　　　　　　[3]

4. Consider a 100/140 step index fiber with core refractive index of 1.48 and cladding refractive index is 95% of core refractive index. Calculate

   (a) Numeric Aperture

   (b) Launch Angle

   (c) Critical Angle

   (d) Cut-off wavelength for being a single mode fiber.

   (e) Number of modes supported by fiber at 600 nm wave.

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