Assignment 3

Due on 2018-08-01, 22:00 BST.

The time limit for submitting the assignment has passed.
Are our records correct you have not submitted this assignment.

1. Given non-symmetrical fiber parameters $a = 1.54, a_0 = 1.44, c = 4.44$, core radius = 4.53 μm, and operating wavelength of 1550 nm. Verify whether the fiber's response is linear.
   - $a = 1.54$
   - $a_0 = 1.44$
   - $c = 4.44$
   - $r = 4.53$ μm
   $\lambda = 1550$ nm
   $\lambda_0 = 1550$ nm
   $\lambda_0 = 1550$ nm
   - Yes, the fiber is linear.
   Accepted Answers:
   [True]

2. For the fiber parameters given in Question 1, calculate wavelength of the fiber.
   - $\lambda = 1550$ nm
   - $\lambda_0 = 1550$ nm
   $\lambda_0 = 1550$ nm
   - Yes, the answer is incorrect.
   Accepted Answers:
   [2 μm]

3. For the fiber parameters given in Question 1, coherence angle of the filter is (in degrees).
   - 12°
   - 16°
   - 18°
   - 21°
   - Yes, the answer is incorrect.
   Accepted Answers:
   [18°]

4. For the fiber parameters given in Question 1, coherence angle of the filter is (in degrees).
   - 12°
   - 16°
   - 18°
   - 21°
   - Yes, the answer is incorrect.
   Accepted Answers:
   [18°]

5. Pulse broadening due to intermodal dispersion in the fiber gives rise to an operating wavelength of 1480 nm over the distance of 5 km to be.
   - 1.5 μm
   - 0.9 μm
   - 0.625 μm
   - 2 μm
   - Yes, the answer is incorrect.
   Accepted Answers:
   [0.625 μm]

6. Extra 10 meter long fiber having $a = 1.5312, a_0 = 1.53, c = 1.5 μm$, and operating wavelength of 1.8 μm, the maximum achievable bit rate without violating the specified condition is.
   - 44.7 Mbps
   - 48.7 Mbps
   - 50 Mbps
   - 52 Mbps
   - No, the answer is incorrect.
   Accepted Answers:
   [48.7 Mbps]

7. The bandwidth of the spectrally white wavelength is to be specified, and operating wavelength is fixed, the bandwidth required can be estimated as an arbitrary value of the bit rate.
   - $\lambda = 1.75$ μm
   - $\lambda = 1.5$ μm
   - $\lambda = 1.25$ μm
   - $\lambda = 1.0$ μm
   - No, the answer is incorrect.
   Accepted Answers:
   [49.9 MHz]

8. Which of the following expressions is incorrect.
   - $E = \frac{c}{2\pi} \left( \frac{2\pi f_{\text{c}}}{c} + \frac{\lambda^2}{2} \right)$
   - $E = \frac{c}{2\pi} \left( \frac{2\pi f_{\text{c}}}{c} - \frac{\lambda^2}{2} \right)$
   - $E = \frac{c}{2\pi} \left( \frac{2\pi f_{\text{c}}}{c} + \frac{\lambda^2}{2} \right)$
   - $E = \frac{c}{2\pi} \left( \frac{2\pi f_{\text{c}}}{c} - \frac{\lambda^2}{2} \right)$
   - No, the answer is incorrect.
   Accepted Answers:
   [False]

9. The tangential electric field $E$ at a conductor-conductor interface is.
   - $E = \frac{c}{2\pi} \left( \frac{2\pi f_{\text{c}}}{c} + \frac{\lambda^2}{2} \right)$
   - $E = \frac{c}{2\pi} \left( \frac{2\pi f_{\text{c}}}{c} - \frac{\lambda^2}{2} \right)$
   - $E = \frac{c}{2\pi} \left( \frac{2\pi f_{\text{c}}}{c} + \frac{\lambda^2}{2} \right)$
   - $E = \frac{c}{2\pi} \left( \frac{2\pi f_{\text{c}}}{c} - \frac{\lambda^2}{2} \right)$
   - No, the answer is incorrect.
   Accepted Answers:
   [False]

10. Ray theory can be used to explain wave nature of light.
    - Yes
    - No
    No, the answer is incorrect.
    Accepted Answers:
    [False]