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reviewer1@nptel.iitm.ac.in ▼

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Unit 7 - OFC-Week 5 lectures

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ASSIGNMENT-5

The due date for submitting this assignment has passed.

Due on 2016-08-23, 23:59 IST.

Submitted assignment

1)

2 points

The core and cladding refractive indices of a multi-mode fiber are 1.46 and 1.45 respectively. The acceptance angle and the relative index difference Δ respectively are

- 1.2441 rad and 1.0136
- 0.441 rad and 0.36
- 0.2441 rad and 0.0136
- None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.2441 rad and 0.0136

2)

2 points

In a step-index multi-mode fiber, the critical angle for the core-cladding interface is 85° . The core refractive index is 1.46 and the core diameter is $100 \mu\text{m}$, then the V -number is

- 18.74
- 25.79
- 37.9
- None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

25.79

3)

In the above question, the approximate number of guided modes M at wavelength $1.3 \mu\text{m}$ is.....

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: String) 332

2 points

4) Consider the following parameters

V-number= 26.6

λ (Wavelength)= 1300 nm

a (Core radius)= 25 μm

Then the Numerical aperture (N.A) is.....

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: String) 0.22

2 points

5)

In the above question, Assume that $V=2.405$, $a=4.1 \mu\text{m}$, $\lambda = 1550 \text{ nm}$
Then Numerical aperture and n_2 (cladding refractive index) respectively (Assume $n_1=1.44$)

- 0.144 and 1.4326
- 0.44 and 1.326
- 0.24 and 1.26
- None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.144 and 1.4326

2 points

6)

The cutoff wavelength for a step index fiber to exhibit single-m operation when the core refractive index and radius are 1.46 and 4.5 respectively, with the relative index difference being 0.25% is (in nm and must be in integer form)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: String) 1214

2 points

7)

A 6 km optical link consists of multimode step index fiber with a core refractive index of 1.5 and a relative refractive index difference of 0.25%. Then the delay difference between the slowest and fastest modes at fiber output (in ns and must be in integer form)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: String) 300

4 points

8)

In the above question, the rms pulse broadening due to intermodal dispersion on the link is

- 58.87 ns
- 32.34 ns

4 points

- 49 ns
- 86.7 ns

No, the answer is incorrect.

Score: 0

Accepted Answers:

86.7 ns

9)

3 points

In the above question, the maximum bit rate that may be obtained without substantial errors on the link assuming only intermodal dispersion (assume Pulse overlapping is present)

- 2.3 Mb/s
- 4.7 Mb/s
- 1.8 Mb/s
- None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

2.3 Mb/s

10)

2 points

The bandwidth-length product corresponding to question 9 is

- 23.8 Mhz-km
- 13.8 Mhz-km
-
- None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

13.8 Mhz-km

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