# Unit 14 - Week 12



## Week 12 Assignment 12

**The due date for submitting this assignment has passed.** **Due on 2018-10-24, 23:59 IST.**
**As per our records you have not submitted this assignment.**

1) *2 points*

If a Gaussian pulse is launched into a dispersive system the temporal distribution o pulse will

(a) Shrink (b) Broaden (c) remain intact

- (a)
- (b)
- (c)

No, the answer is incorrect.
Score: 0

Accepted Answers:
*(b)*

2) *2 points*

The spectral broadening phenomenon takes place in presence of

(a) Dispersion (b) Nonlinearity (c) none of these

- (a)
- (b)
- (c)

No, the answer is incorrect.
Score: 0

Accepted Answers:
*(b)*

3) *2 points*

For a Gaussian pulse of temporal distribution $U(0,T) = exp - \left(\frac{T^2}{2T_0^2}\right)$ in presenc only GVD , the temporal width modifies after a distance z as $(L_D = T_0^2/|\beta_2|)$,

(a) $T_0\left[1-\left(\frac{z}{L_D}\right)^2\right]^{\frac{1}{2}}$ (b) $T_0\left[1+\left(\frac{2z}{L_D}\right)^2\right]^{\frac{1}{2}}$ (c) $T_0\left[1+\left(\frac{z}{L_D}\right)^2\right]^{\frac{1}{2}}$

- (a)
- (b)

4) **2 points**

For an input Gaussian pulse of width 100 $ps$ what will be the width of output pulse propagating a distance $z = 3L_d$ in a dispersive optical medium

(a) 316.2 $ps$ (b) 100 $ps$ (c) 223.6 $ps$ (d) 50 $ps$

- (a)
- (b)
- (c)
- (d)

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*(a)*

5) **2 points**

The dispersive length of a pulse of width 50 fs in a dispersive medium with parameter ($\beta_2 = -0.2\ ps^2/m$) is

(a) 1.25 $m$ (b) 1.25 $cm$ (c) 12.5 $cm$ (d) 125 $cm$

- (a)
- (b)
- (c)
- (d)

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*(b)*

6) **2 points**

The nonlinear length of a 25$fs$ pulse of a pulse of power 50 $mW$ and wavele 1550 $nm$ in a nonlinear optical medium of effective area 0.51 $\mu m^2$ is, ($n_2$ = $10^{-18}\ m^2W^{-1}$)

(a) 83 $m$ (b)0.83 $cm$ (c) 83 $cm$ (d) 0.83 $mm$

- (a)
- (b)
- (c)
- (d)

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*(c)*

7) **2 points**

The ratio of the nonlinear length to the dispersion length for the pulse described in approximately ($\beta_2 = 0.075\ ps^2/m$ ;)

(a) 10 (b) 100 (c) 1 (d) 0.1

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
*(b)*

8) **2 points**

For a fundamental optical soliton the relation between nonlinear length ($L_{NL}$) dispersion length $L_D$ is

(a) $L_D > L_{NL}$ (b) $L_D < L_{NL}$ (c) $L_D = L_{NL}$ (d) $L_D \gg L_{NL}$

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
*(c)*

9) **2 points**

If $L_D = 4L_{NL}$ then the order (N) of the generated optical soliton is

(a) 1 (b) 4 (c) 0.5 (d) 2

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
*(d)*

10) **2 points**

The form ($u(\xi, \tau)$) for a dark soliton in a nonlinear medium is

(a) $Sech(\tau)e^{\frac{i\xi}{2}}$ (b) $tanh(\tau)e^{\frac{i\xi}{2}}$ (c) $Sin\, h(\tau)e^{\frac{i\xi}{2}}$ ( d) $Sech(\tau)\tanh(\tau)e^{\frac{i\xi}{2}}$

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
*(b)*

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