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Courses » Laser Fundamentals and Applications

Announcements **Course** Ask a Question Progress FAQ



# Unit 7 - Week 6 - Types of LASERs and Non Linear Optics

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## Course outline

How to access the portal

Week 1 - Introduction to LASERs

Week 2 - Concept of population inversion, 2-level, 3-level, and 4-level systems, Components of LASERs

Week 3 - Threshold condition, Unique Properties of LASER, various parameters of a LASER

Week 4 - Pulsing techniques

Week 5 - Mode-Locking technique and types of LASER

Week 6 - Types of LASERs

## Assignment 6

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-03-13, 23:59 IST.**

1) Which of the following is correct for a He-Ne laser? 1 point

- Excited He atoms collide with Ne atoms to transfer the energy
- Excited Ne atoms collide with He atoms to transfer the energy
- No energy transfer takes place
- They form an excimer which emits light while coming down to lower energy state

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Excited He atoms collide with Ne atoms to transfer the energy*

2) Which of the following wavelength is not an output of a He-Ne laser? 1 point

- 632.8 nm
- 840 nm
- 1152 nm
- 3391 nm

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*840 nm*

3) What are the electronic states involved in laser emission in case of a Nitrogen laser? 1 point

- $C^3\pi_g$  and  $B^3\pi_g$
- $C^3\pi_u$  and  $B^3\pi_u$
- $C^3\pi_g$  and  $B^3\pi_g$

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Lecture 28 - Introduction to Non Linear Optics

Lecture 29 - Non Linear Optics

Lecture 30 - 2nd order Nonlinear optics

Quiz : Assignment 6

Feedback For Week 6

Solution for Assignment - 6

**Week 7 – Applications of Lasers: Non-linear optics, LIDAR, Laser spectroscopy, Isotope enrichment and separation.**

**Week 8 - Various Applications of Lasers, Laser safety and Summary**

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4) What is the laser output wavelength for an iodine laser?

1 point

- 840 nm
- 880 nm
- 600 nm
- 1315 nm

No, the answer is incorrect.

Score: 0

Accepted Answers:

1315 nm

5) How does the refractive index of a medium (n) depend on electric field?

1 point

- $n \propto E$
- $n \propto E^2$
- $n \propto E^3$
- $n \propto E^4$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$n \propto E^2$

6) A light source of 840 nm will give SHG signal at \_\_\_\_\_

1 point

- 420 nm
- 840 nm
- 1120 nm
- 240 nm

No, the answer is incorrect.

Score: 0

Accepted Answers:

420 nm

7) Sum frequency generation (SFG) of two waves having wavelength of 600 nm and 400 nm will occur at \_\_\_\_\_

1 point

- 1000 nm
- 240 nm
- 200 nm
- 500 nm

No, the answer is incorrect.

Score: 0

Accepted Answers:

240 nm

8) Copper vapor laser is a \_\_\_\_\_

1 point

- Four level laser system
- Two level laser system
- Three level laser system
- None of the above

No, the answer is incorrect.



Score: 0

Accepted Answers:

Three level laser system

9) General equation of polarization (P) is given by...

1 point

- $P = c^{(1)}E + c^{(2)}E + c^{(3)}E + \dots$
- $P = c^{(1)}E - c^{(2)}E^2 + c^{(3)}E^3 + \dots$
- $P = c^{(1)}E + c^{(2)}E^2 + c^{(3)}E^3 + \dots$
- $P = c^{(1)} + c^{(2)}E^1 + c^{(3)}E^2 + \dots$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$P = c^{(1)}E + c^{(2)}E^2 + c^{(3)}E^3 + \dots$

10) Sum frequency generation (SFG) of two laser beams occurs at 247.5 nm. What is the wavelength of the other laser beam if one of them has a wavelength of 550.0 nm?

1 point

- 797.5 nm
- 302.5 nm
- 650.0 nm
- 450.0 nm

No, the answer is incorrect.

Score: 0

Accepted Answers:

450.0 nm



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