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NPTEL

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Courses » Laser Fundamentals and Applications

Announcements

Course

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Unit 2 - Week 1 - Introduction to LASERS

Register for
Certification exam

Course outline

How to access
the portal

Week 1 -
Introduction to
LASERS

- Lecture 01 -
Unique
properties of
LASERS and
their
applications
- Lecture 02 -
LASER and its
history
- Lecture 03 -
Interaction of
Light with
matter
- Lecture 04 -
Einstein's
Concept of
stimulated
emission
- Lecture 05 -
Calculation of
Einstein's
coefficient
- Quiz :
Assignment 1
- Feedback For

Assignment 1

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-02-13, 23:59 IST.**

1) Concept of quantization of energy was given by? 1 point

- Albert Einstein
- Theodore Maiman
- Max Planck
- Gordon Gould

No, the answer is incorrect.

Score: 0

Accepted Answers:

Max Planck

2) Which of the following is NOT true about the properties of LASER light? 1 point

- Directional
- High Power
- Monochromatic
- Incoherent

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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 and
Non Linear
Optics

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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Which of the following techniques can be performed without exclusive use of LASERS?

- Nonlinear Optics
- LIDAR
- LASIK
- Absorption Spectroscopy

No, the answer is incorrect.

Score: 0

Accepted Answers:

Absorption Spectroscopy

4) Who developed the microwave solid state MASER?

1 point

- Max Planck
- Gordon Gould
- Charles H Townes
- Nicolaas Bloembergen

No, the answer is incorrect.

Score: 0

Accepted Answers:

Nicolaas Bloembergen

5) Ratio of Einstein's coefficients for absorption and stimulated emission, B_{12} and B_{21} is

1 point

- 2
- 1
- 0.5
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

1

6) Which one of the following rate(s)

1 point



does not depend upon incident photon density?

- Rate of Absorption
- Rate of Stimulated Emission
- Rate of Spontaneous Emission
- Both (a) and (b)

No, the answer is incorrect.

Score: 0

Accepted Answers:

Rate of Spontaneous Emission

7) Ratio of the rate of spontaneous emission to the rate of stimulated emission is directly proportional to

- ν
- ν^2
- ν^3
- ν^5

No, the answer is incorrect.

Score: 0

Accepted Answers:

ν^3

8) Which of the following was used as an active medium to construct first LASER

1 point

- Dye
- CO_2
- He-Ne
- Ruby Crystal

No, the answer is incorrect.

Score: 0

Accepted Answers:

Ruby Crystal

9) Which one of the following is

1 point



easiest frequency to construct a LASER

- Infra-Red
- Ultraviolet
- X Ray
- Microwave

No, the answer is incorrect.

Score: 0

Accepted Answers:

Microwave

¹⁰ For LASER action one needs the ratio of rate of stimulated emission to rate of absorption to be

- = 1
- > 1
- < 1
- = 0.5

No, the answer is incorrect.

Score: 0

Accepted Answers:

> 1



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