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Courses » Semiconductors Optoelectronics

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Unit 10 - Week 8

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Course outline

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Week 8

- Injection Electroluminescence
- Light Emitting Diode-I: Device Structure and Parameters
- Light Emitting Diode-II: Device Characteristics

Assessment 8

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-03-27, 23:59 IST.**

Instructions:

1. Answer **all** questions; all questions carry equal mark.
2. All symbols have their usual meanings.
3. Only one of the options is correct for the MCQs.
4. The 4th question is a "fill in the blank" type of question. You are supposed to enter a numerical answer to fill the blank as given in the question. Your answer must be correct upto two decimal places (unless it is an integer).
5. You can see the correct answers after the last date of submission.

Note:

Marks obtained in this quiz will be counted towards your final score. You can take the quiz and submit it any number of times, and the latest submitted answers will be taken as your final submission.

Physical Constants:

$$m_0 = 9.11 \times 10^{-31} \text{ kg}; h = 6.627 \times 10^{-34} \text{ J.s}; e = 1.602 \times 10^{-19} \text{ C}; k_B = 1.38 \times 10^{-23} \text{ J/K}$$

1) Which one of the following is not an advantage of using double-heterostructures for making **1 point** LEDs?

- Lower reabsorption loss
- Better optical confinement
- Higher operating current
- Stronger carrier confinement

No, the answer is incorrect.

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Light Emitting Diode-V: Materials and Applications

Quiz : Assessment 8

Solutions of Assessment 8

Week 9

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Exam Instructions

Lecture Transcripts

where $m \geq 0$. If A, B and C represent a point source, a He-Ne laser, and a surface-emitting LED, respectively, then which one of the following is correct?

- $m_A > m_B > m_C$
- $m_C > m_B > m_A$
- $m_B > m_C > m_A$
- $m_B > m_A > m_C$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$m_B > m_C > m_A$

3) In practical LEDs, increase in the temperature of the LED leads to (mark the correct answer)—

1 point

- Increase in the output power
- Decrease in the linewidth
- Increase in the peak emission wavelength
- Increase in the external quantum efficiency

No, the answer is incorrect.

Score: 0

Accepted Answers:

Increase in the peak emission wavelength

4) A particular LED emitting at 620 nm wavelength has radiative and non-radiative recombination lifetimes in the ratio of 3:2. If the output power of the LED is 10 mW when the applied bias current is 50 mA, the extraction efficiency of the LED is _____ %.

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 23,27

1 point

5) Which one of the following should be chosen for making a red-colour display?

1 point

- A surface-emitting LED using $\text{In}_x\text{Ga}_{1-x}\text{N}$
- An edge-emitting LED using $\text{Al}_x\text{Ga}_{1-x}\text{As}$
- A surface-emitting LED using $\text{GaAs}_{1-y}\text{P}_y$
- An edge-emitting LED using $\text{In}_{1-x}\text{Ga}_x\text{As}_y\text{P}_{1-y}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

A surface-emitting LED using $\text{GaAs}_{1-y}\text{P}_y$

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