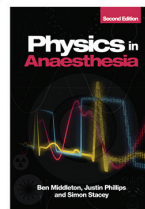


Chapter 24

Lasers



Self-assessment questions

These questions and answers, in both MTF and SBA formats, accompany *Physics in Anaesthesia 2e* and link back to the book for guidance.

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Multiple true / false questions

For each of the following questions, mark all answers as either true or false

1. Processes involved in the production of a laser beam include:

- a. Light amplification
- b. Stimulated emission
- c. Spontaneous emission
- d. Reflection of photons using mirrors
- e. Electrical energy to excite neutrons

Pointer

- Energy is required to excite the electrons in the laser medium.

Reminder

- In gas laser mediums, for example, argon ion or carbon dioxide lasers, the source of this energy is via an electrical current.
- In solid and liquid mediums, for example Ho:YAG and dye lasers, the source of this energy is via high intensity light (electromagnetic radiation).

2. Laser beams are:

- a. Monochromatic
- b. Coherent
- c. Directional
- d. Collimated
- e. Multi-chromatic

Reminder

- Monochromatic beams contain photons of only one wavelength.

Single best answer questions

For each of the following questions, select the single best answer – note that more than one answer may be true but only one option represents the best answer

1. Which of these is not a risk associated with the medical use of lasers?

- a. Corneal injury
- b. Thermal injury
- c. Electrical shock
- d. Fires
- e. Retinal injury

Reminder

- See *Table 24.2* for the risk classification for laser beam exposure.

Pointer

- Argon ion lasers and dye lasers have visible wavelengths.
- Carbon dioxide lasers, Nd:YAG lasers and Ho:YAG lasers are all in the non-visible infrared spectrum, compounding the risk of eye injury.

2. On receiving laser therapy, thermal injury to surrounding tissues is:

- a. Only caused by continuous wave lasers
- b. Less likely for a carbon dioxide laser than an Nd:YAG laser
- c. Less likely for a continuous laser than a pulsed laser as it allows for faster treatment
- d. Not possible with visible light lasers
- e. Less likely for a pulsed laser than a continuous wave laser because tissue is able to cool between pulses

Did you know?

- Acoustic shock waves are generated following ablation of tissue in pulsed laser beam surgery.
- See *Chapter 23* for more on ultrasound waves.

Answers to questions for Chapter 24 – Lasers

Multiple true / false questions

The following answers are true:

1. a, b and d
2. a, b, c and d

Single best answer questions

The options below represent the single best answer, although other options may also be true:

1. c
2. e