

# Question 1

A Xenon lamp equipped with a filter that transmits light of wavelength 400 nm.

The power (total energy per second) emitted by the light is increased. Which of the following is true?

1. The energy of each photon is unchanged and the rate of photon emission is unchanged.
2. The energy of each photon is unchanged and the rate of photon emission increases.
3. The energy of each photon increases and the rate of photon emission is unchanged.
4. The energy of each photon increases and the rate of photon emission increases.

## Question 2

Two lasers each emit red light of wavelength 632 nm. The power of laser A is 1 mW and that of laser B is 5 mW.

Which of the following is/are true?

1. Each photon from laser A has the same energy as that of laser B.
2. Each photon from laser A has smaller energy than that of laser B.
3. Laser B emits more photons per second than laser A.
4. Laser B emits the same number of photons per second as laser A.
5. The frequency of light from laser B is larger than that of laser A.