For More Questions ***Click Here***

1. Which of the following is a unique property of laser?
a) Directional
b) Speed
c) Coherence
d) Wavelength
View Answer

Answer: c
Explanation: Coherence is an important characteristic of laser beam because in laser beams, the wave trains of the same frequency are in phase/ Due to high coherence it results in an extremely high power.

2. Which of the following is an example of optical pumping?
a) Ruby laser
b) Helium-Neon laser
c) Semiconductor laser
d) Dye laser
View Answer

Answer: a
Explanation: The atoms of Ruby are excited with the help of photons emitted with the help of photons emitted by an external optical source. The atoms absorb energy from photos and raises to excited state. Therefore Ruby laser is an example of optical pumping.

4. Calculate the wavelength of radiation emitted by an LED made up of a semiconducting material with band gap energy 2.8eV.
a) 2.8 Å
b) 4.3308 Å
c) 5548.4 Å
d) 4430.8 Å
View Answer

Answer: d
Explanation: E = hc/ʎ
Therefore, ʎ = hc/E
ʎ = 4430.8 Å.

5. Calculate the number of photons, from green light of mercury (ʎ = 4961 Å), required to do one joule of work.
a) $4524.2\times10^{18}/m^3$
b) $2.4961\times10^{18}/m^3$
c) $2.4961/m^3$

d) 2.4961/m
View Answer

Answer: b
Explanation: E = hc/ʎ
E = 4.006×10^{-19} Joules
Number of photons required = (1 Joule)/(4.006×10^{-19})
N = $2.4961\times10^{18}/m^3$.

6. Which of the following can be used for generation of laser pulse?
a) Ruby laser
b) Carbon dioxide laser
c) Helium neon laser
d) Nd- YAG laser
View Answer

Answer: d
Explanation: Since Nd YAG laser has a higher thermal conductivity than other solid state lasers, it lends itself for generation of laser pulses at a higher pulse repetition rate or a quasi continuous wave operation.

7. What is the need to achieve population inversion?
a) To excite most of the atoms
b) To bring most of the atoms to ground state
c) To achieve stable condition
d) To reduce the time of production of laser
View Answer

Answer: a
Explanation: When population inversion is achieved, the majority of atoms are in the excited state. This causes amplification of the incident beam by stimulated emission. Thus the laser beam is produced.

10. Which of the following is used in atomic clocks?
a) Laser
b) Quartz
c) Maser
d) Helium
View Answer

Answer: c
Explanation: Before laser maser was used. It stood for microwave amplification by stimulated emission of radiation. This was based on Albert Einstein's principle of stimulated emission. It was used in the atomic clock.