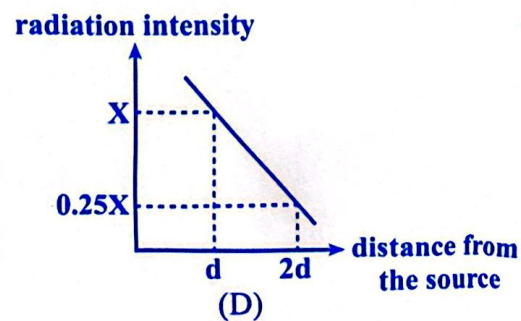
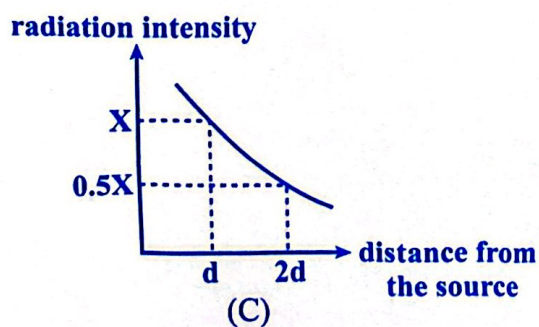
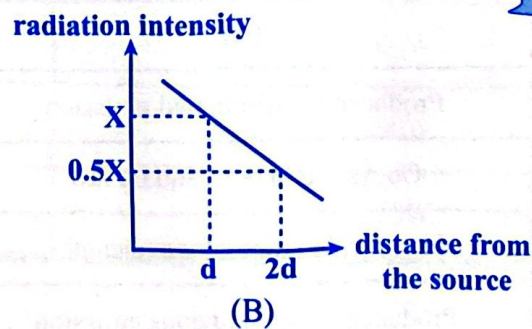
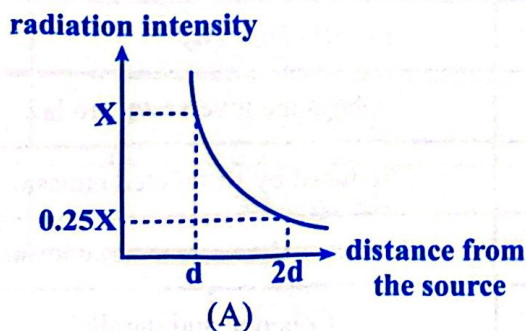
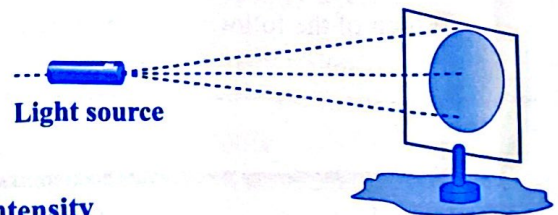


- 3) The two optical sources with the same frequency and intensity, one of them is a laser and the other is ordinary light source, are incident on the surface of a metal at a distance ( $2d$ ). if their frequency is higher than the critical frequency of the metal surface, so the photoelectrons emitted, when both sources are brought to a distance of ( $d$ ) from the metal surface:

	Number of electrons emitted by the laser	Number of electrons emitted by the ordinary light
(A)	Constant	Constant
(B)	Increase	Constant
(C)	Constant	Increase
(D)	Increase	Increase

- 4) The opposite figure represents a light source with a barrier obstructing the emitted light. Which of the following graphs represents the relation between the intensity of the radiation and the distance between the light source and the barrier?





## 17- Chapters (Seven and Eight)

### (Hard Exam)

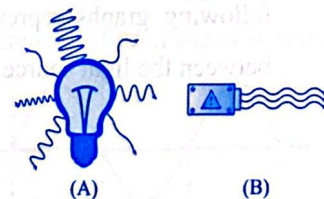
**Choose the correct answer:**

- 1) The ratio between the wavelength of the photon produced by spontaneous emission to the wavelength of the photon produced by stimulated emission when the atom transferred between the two levels ( $E_1$ ) and ( $E_2$ ) is .....

- (A) 2/1  
(B) 3/1  
(C) 1/1  
(D) 4/1

- 2) The figures (A) and (B) represent two optical sources, and the following table shows some properties of the rays emitted from each source.

Which of the following properties are correct?



	(A)	(B)
(1)	Produced by stimulated emission	Obeys the inverse square law
(2)	Obeys the inverse square law	Produced by stimulated emission
(3)	Has a wide range of wavelengths	The beam diameter is not constant
(4)	Produced by spontaneous emission	Coherent and parallel

- (A) 1, 2  
(B) 2, 4  
(C) 2, 3  
(D) 1, 4