

Printed Pages : 2



EOE-033

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 199310

Roll No.

--	--	--	--	--	--	--	--	--	--

B. Tech.(SEM. III) (ODD SEM.) THEORY
EXAMINATION, 2014-15**LASER SYSTEM AND APPLICATIONS**

Time : 3 Hours]

[Total Marks : 100

- Note:** (1) Attempt all questions.
(2) All questions carry equal marks.

1. Answer any two parts of the following : $10 \times 2 = 20$
 - (a) Describe the DeBroglie theory of matter waves. How it is experimentally verified?
 - (b) Establish time dependent Schrodinger wave equation. What do you mean by eigen value and eigen function?
 - (c) Find the intensity of a laser beam of 20 mW power and having a diameter of 1.3 mm. Assume uniform intensity across the beam.
2. Answer any two parts of the following: $10 \times 2 = 20$
 - (a) What do you mean by coherence time and coherence length? Laser beam has a band width of 2500Hz. What are the values of coherence time and coherence length?
 - (b) What do you understand by pumping? Discuss different type of pumping scheme. How can it help in obtaining population inversion?

- (c) What are resonators? Describe working of different types of resonators.

3. Answer any two parts of the following: $10 \times 2 = 20$
 - (a) What do you understand by laser gain? Derive an expression for the loop gain.
 - (b) What are main components of laser? Discuss their necessity in laser action.
 - (c) What are continuous pulse lasers? Discuss the construction and working of He-Ne laser.
4. Answer any two parts of the following: $10 \times 2 = 20$
 - (a) Describe the working of semiconductor laser. Discuss recombination radiation in order to explain the principle of operation of LEDs.
 - (b) What are excimer laser. Discuss its properties and applications.
 - (c) What are Q- switched laser. Discuss different methods by which Q-switch can be incorporated.
5. Answer any two parts of the following: $10 \times 2 = 20$
 - (a) Explain the application of laser in medical science.
 - (b) How laser is important for material processing? Discuss in detail.
 - (c) Explain the importance of laser in holography technique. How the construction and reconstruction of image takes place in holography.

199310]

1

[Contd...

199310]

2

[2750]