

C.U.SHAH UNIVERSITY
Winter Examination-2018

Subject Name: Applied optics

Subject Code : 4SC04APO1

Branch: B.Sc. (Chemistry,Physics)

Semester : 4 Date : 02/11/2018

Time : 10:30 To 01:30

Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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Q-1 Attempt the following questions: (14)

- a) What is numerical aperture?
- b) Is there any unit for numerical aperture?
- c) Write full name of UV and IF.
- d) Full name of LASER.
- e) Full name of LED.
- f) What is pumping?
- g) What is population inversion?
- h) What is intrinsic semiconductor?
- i) Explain what Diode is.
- j) What is p type semiconductor?
- k) What is refractive index?
- l) What is core?
- m) What is receiver?
- n) What is transmitter?

Attempt any four questions from Q-2 to Q-8

Q-2 Attempt all questions (14)

- (a) What is semiconductor laser diode? Explain the working principle of laser diode. 7
- (b) Describe the different types of optical sources, what are the major applications of laser source? 7

Q-3 Attempt all questions (14)

- (a) Explain the Einstein relation, how spontaneous emission dominated to stimulated emission. 7
- (b) Explain the concept of spatial frequency filtering. 7

Q-4 Attempt all questions (14)

- (a) What is the FBG? Explain its working principle with suitable applications 7
- (b) What is holography? Explain the working principle of holography. 7



