Enrol. No.													

KADI SARVA VISHWAVIDYALAYA
LDRP INSTITUTE OF TECHNOLOGY & RESEARCH, GANDHINAGAR

B.E. Semester-I

MID-SEM EXAMINATION(March-2014)

Date : 03/03/2014 **Branch** : CE/EC/CIV
Subject Name: ENGG. PHYSICS
Time : 12.00pm to 1.30pm **Max. Marks** : 30

Instructions: 1) Attempt any three from five questions.
2) Figures to the **right** indicate full marks.
3) Use of scientific calculator is permitted.

Q.1 **(a)** **[10]**

(i) Expand LASER and state its properties.
(ii) Define atomic packing factor. Calculate the packing factor for SC in unit cell.
(iii) Why must the refrective index of cladding material always be lower than that of the core.
(iv) What is threshold of hearing? Give its value.
(v) Define numerical aperture of an optical fibre.What is its physical significance.

Q. 2 **(a)** Find the numerical aperture, acceptance angle and fractional index difference of optical fiber of refractive indices for core and cladding as 1.65 and 1.63 respectively. **[5]**

(b) Explain the construction & working of Nd-YAG LASER with energy level diagram. **[5]**

Q.3 **(a)** Explain types of musical sound. **[5]**

(b) The ratio of population of two energy levels out of which upper one corresponds to a metastable state is 1.059×10^{-30} .Find the wavelength of light emitted at 330 K. **[5]**

Q.4 **(a)** Compare optical fibres and coaxial wire. **[5]**

(b) What is Holography? Explain the method of construction and reconstruction of a hologram. **[5]**

Q.5 **(a)** What is Miller Indices? Sketch the planes in simple cubic. (2 0 2), ($\bar{1}$ 0 0), (1 1 0), (2 2 2). **[5]**

(b) Derive the relation between Einstein's A and B coefficients with due discussion on the results. **[5]**

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B.E. Semester-I(Reg./ATKT)
MID-SEM EXAMINATION(September-2014)

Date : 08/10/2014 **Branch** : All Engg. Branch
Subject Name: ENGG. PHYSICS
Time : 10.30am to 12.00am **Max. Marks** : 30

Instructions:
1) All questions are **compulsory**.
2) Figures to the **right** indicate full marks.
3) Use of scientific calculator is permitted.
4) Indicate **clearly**, the options you attempt along with its respective question number.
5) Use the last page of main supplementary for **rough work**.

Q.1 (a) [5]

(i) Classify types of optical fiber.
(ii) Write functional properties of nanomaterials.
(iii) How LASER differs from ordinary light beam?
(iv) What are lattice parameters?
(v) What is meaning of Monochromaticity?

(b)

(i) Sketch the planes in simple cubic. (2 2 2), (1 0 0) , (0 1 1) [3]
(ii) Find numerical aperture of an optical fibre having a core refrective index of 1.6 and a cladding refrective index of 1.55. [2]

Q. 2 (a) Discuss optical fiber on the basis of mode of propagation. [5]
(b) Explain the construction & working of Nd-YAG LASER with energy level diagram. [5]

OR

Q.2 (a) Describe Eddy current method of NDT with suitable diagrams. [5]
(b) Calculate the interplanar distance and atomic radius for (3 2 1) plane in FCC lattice with lattice constant equal to 4.12 A° . [5]

Q.3 **Attempt any two.**

(a) What is LASER? Explain Holography in detail. [5]
(b) Define APF. Calculate APF and void space for SC,BCC and FCC unit cells. [5]
(c) Explain how fiber optics are more advantageous than metallic cable in case of communication. [5]
(d) What are SMAs? Give some brief explaination of types, properties and applications of SMAs. [5]