

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Physics-II

Subject Code: 4SC02PHC1

Branch: B.Sc. (All)

Semester: 2

Date: 06/05/2017

Time: 02:00 To 05:00

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.

Q-1 Attempt the following questions: (14)

- a) Define Doppler effect
- b) Give an expression connecting Half Life Time ' ' and Decay Constant ' λ ' for a radioactive element.
- c) What is the difference between Isotopes and Isotones?
- d) Draw and define: Unit cell.
- e) Define Musical sound
- f) Write Bragg's formula for X-ray diffraction.
- g) What is threshold intensity of sound? Give its value with unit.
- h) Give examples for crystalline and non-crystalline solids.
- i) Abbreviate LED and draw its symbol
- j) Define: Ripple Factor - γ .
- k) Draw symbolically P-N-P and N-P-N transistors
- l) Define Bravais lattice.
- m) Define Anisotropy.
- n) State the working principle of a photodiode

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

Q-2 Attempt all questions (14)

- a. How Longitudinal waves are different from Transversal waves? Give examples. **06**
- b. List the properties of X-rays. **08**

Q-3 Attempt all questions (14)

- a. Compare the properties of α , β and γ radiations. **07**
- b. Describe production of X-rays using a Coolidge Tube with necessary diagrams. **07**

Q-4 Attempt all questions (14)

- a. State and explain the Laws of Radioactivity **05**
- b. Calculate sound velocity in water if its bulk modulus is 2.23×10^9 Pa. **04**
- c. Derive Newton's formula for velocity of sound in air applying Laplace's Correction to it. **05**



- Q-5 Attempt all questions (14)**
a. Discuss Full wave Center Tap rectifier in detail. **07**
b. Write a short note on Zener Diode. **07**
- Q-6 Attempt all questions (14)**
a. Explain how do multi-colour LEDs work? **06**
b. What is Bravais Lattice? Describe 14 Bravais lattices of 7 crystal systems with lattice parameters and diagrams. **08**
- Q-7 Attempt all questions (14)**
a. Explain the working of a P-N-P transistor. **07**
b. Describe Common Base Transistor configuration with circuit diagram. Explain its I/P & O/P characteristic curves. **07**
- Q-8 Attempt all questions (14)**
a. What are Miller Indices? Illustrate the steps to find out Miller indices of a Crystal plane with necessary diagram. **07**
b. Give mathematical analysis of a Full Wave Rectifier. **07**

