**Government Engineering College, Bhuj**

**Assignment-2 (Engineering Physics)**

**Ch-3, 4, 5, 6, 7, 9, 10**

**Ch-3 Crystal Physics**

1. Explain- Unit Cell
2. Write short note on Crystal Systems.
3. State three laws of crystallography.
4. What is Hauy’s law? Explain shortly.
5. Explain Miller Indices with proper example.
6. Define: Co ordination Number.
7. Derive Atomic Radius for simple Cubic, FCC & BCC cells.
8. Explain Packing & Atomic Fraction Number (AFP).
9. How can we derive Miller Indices? Explain.
10. Find Weiss Indices and Draw these Planes in Cubic System.

110, 101, 201, 200.5,212,111,101

1. Explain Bragg’s law.

**Ch-4 Band Theory of Solids**

1. Explain different bands in solid and & Explain its formation.
2. What is Hall Effect? Explain it and obtain expressions for Hall Voltage and Mobility of Charge Carrier.
3. Derive an equation for Hall Angle.
4. Derive an expression for conductivity of Intrinsic and Extrinsic Semiconductors.
5. Write short notes: LED, Varactor Diode, Solar Cell, Transition Capacitor, LDR,

**Ch-5 LASER**

1. What is LASER?
2. Define: Spontaneous Emission, Stimulated Emission.
3. Derive relation between Einstien’s Coefficients.
4. Define: Metastable state, Population Inversion, Explain Lasing action in Crystal.
5. Explain: a. RUBY laser b. Nd:YAG laser c. CO2 laser
6. Explain applications of LASER.
7. Explain HOLOGRAPHY

**Ch-6 Optical Fibre Communication**

1. What is Total Internal Reflection?
2. Explain basic structure of Fibre Cable.
3. Write Snell’s Law for Refraction.
4. Give detailed classifications of Fibre Optic Cables.
5. Derive Expression for Acceptance Angle and Numerical aperture.

**Ch-7 Conducting Materials**

1. Derive formula for electrical Conductivity in Metal and prove **б α 1/√T**
2. Derive Weidmann- Franz Law for thermal Conductivity.

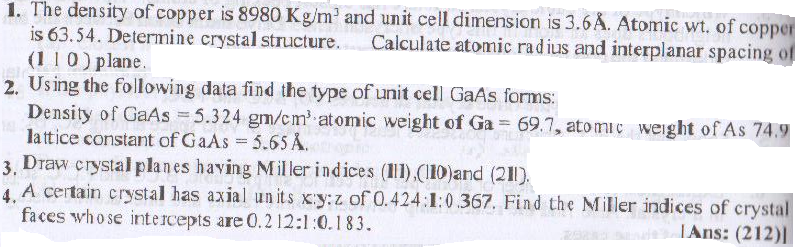
**Ch-9 New Engineering Materials**

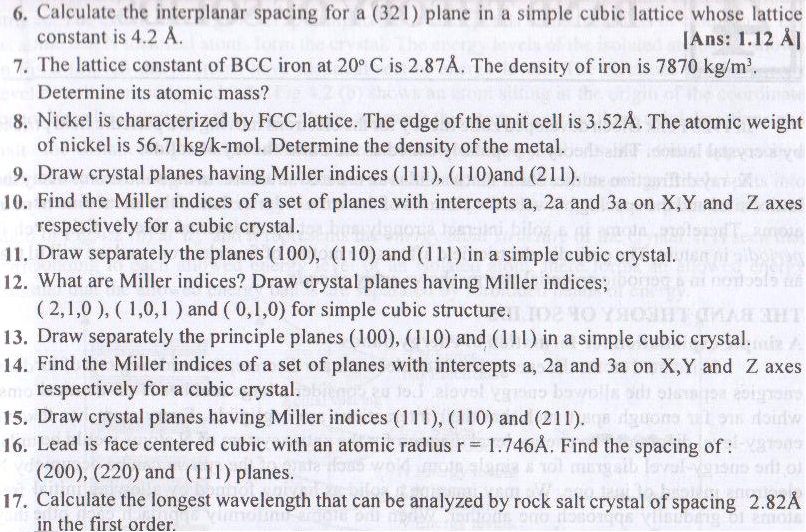
1. Define: Metallic Glasses.
2. Write applications of Metallic glasses.
3. What is Nano Technology? Explain FULLERENE and Carbon Nanotubes.
4. Short note: Shape Memory Alloys

**Ch-10 Non Destructive Testings**

1. List the methods of NDT.
2. List the types of defects in solids.
3. Explain any one method from above list.

**Ch-3 CRYSTAL PHYSICS**

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**Ch-4 BAND THEORY OF SOLIDS**

