

Physics

Max. Marks

Paper-I Condensed Matter physics.

Max. Marks: 85
Min. " " " 31

Note: Attempt all questions. All questions carry equal marks.

- Q.1. Describe bravais lattice in two and three dimensions.
- Q.2. Explain Reciprocal lattice of bcc and fcc lattice.
- Q.3. Describe stress and strain components with examples.
- Q.4. Give lattice dynamic of a diatomic linear lattice. explain.
- Q.5. Describe anharmonicity and thermal expansion?

Paper-II Nuclear and Particle physics.

Max. Marks = 85

- Q.1 Describe nuclear forces, exchange and tensor forces.
- Q.2 Give study of cyclotron in detail.
- Q.3 Explain liquid drop model with examples.
- Q.4 Explain β -decay and β -ray spectrum.
- Q.5 Give classification of elementary particles with examples.

Paper - III

Digital electronics

Max. Marks = 85

Min. .. = 21

- Q.1. Explain Number system (Binary, Octal, Decimal).
- Q.2. Explain codes: BCD, Gray, Asc II.
- Q.3. Give concept of multiplexer and demultiplexer?
- Q.4. Explain Counters - asynchronous (ripple) counter, synchronous (parallel) counter.
- Q.5. Give digital to analog conversion (Binary weighted register-method).

Paper - IV

Atomic and Molecular physics.

- Q.1. Explain NMR spectroscopy? Max. Marks = 85
Min. Mar = 31
- Q.2. Describe electronic spectra of diatomic molecules.
- Q.3. Explain Raman effect and give its quantum theory also?
- Q.4. Explain Mossbauer spectroscopy and its effect?
- Q.5. Give elementary idea about ESR, also explain ESR spectrometer?