$Directorate\ of\ Distance\ Education\ (DDE)$ 

KUPPAM – 517 426:: A.P.

COURSE: II YEAR MSC PHYSICS

PAPER-I: QUANTUM MECHANICS

Answer any <u>THREE</u> of the following <u>FIVE</u> Questions.

- 1. Explain Dirac's Bra and ket renotation and mention its properties.
- 2. Describe the method of partial waves for scattering.
- 3. What is second quantization? Discuss the quantization of Schrodinger wave equation.
- 4. Discuss the significance method of partial waves for scattering.
- 5. Describe the construction of systematic and antisymmetric wave funtions.

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# PAPER-II: NUCLEAR PHYSICS AND ANALYTICL TECHNIQUES

Answer any <u>THREE</u> of the following <u>FIVE</u> Questions.

- 1. Discuss the principle and working of Mossbauer Spectrometer, outline the Application of Mossbauer Spectroscopy.
- 2. Discuss the Fermi's Theory of B-decay.
- 3. Discuss the construction, working and applications of photo Acoustic Spectroscopy.
- 4. Explain the properties of leptons and mesons.
- 5. What are the magic numbers? How do you establish their existance?

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### PAPER-III: CONDENCED MATTER PHYSICS

Answer any <u>THREE</u> of the following <u>FIVE</u> Questions.

- What is Type-I and Type-II Super-Conductory? Discuss the Application of Superconductor with examples.
- 2. What is stress and strain tensor?
- 3. Explain Atomic Force Microscope (AFM) for the estimation of particlesize.
- 4. Discuss Brideman. Technique for the preparation of single crystals.
- 5. Describe the pulse-echo technique for the determination of elastic constants.



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PAPER-IV: ELETRONICS

Answer any <u>THREE</u> of the following <u>FIVE</u> Questions.

- 1. Explain in Delta Modulation
- 2. Discuss the following digital modulation techniques.
  - a) BPSK
  - b) 8279 keyboard display interface
- 3. What are the various modulation formats in co-herent Optical Fibre Systems?
- 4. Explain the I/O port address decoding
- 5. With a neat diagram, discuss the internal architecture of a microprocessor.