

**Manonmaniam Sundaranar University,
Directorate of Distance & Continuing Education,
Tirunelveli - 627 012 Tamil Nadu, India**

INTERNAL ASSIGNMENT FOR MAY 2026 EXAMINATION

Subject. **: Solid State Physics**

Assignment Question No:

1. (a) Obtain the Lorentz relation for local field at a point inside a dielectric. How is local field different from Maxwell field?

(or)

(b) Describe the method to determine Miller indices of a plane. Find the Miller indices for a plane having intercepts a , b , $-c$ on the crystallographic axes.

2. (a) Distinguish between diamagnetic, Paramagnetic and ferromagnetic substances on the basis of their behaviour in the presence of an external magnetic field.

(or)

(b) What is the origin of magnetic properties in a material? Obtain an expression for paramagnetic susceptibility on the basis of Langevin theory. Explain briefly an experimental method used to measure paramagnetic susceptibility.

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INTERNAL ASSIGNMENT

Name of the Programme : Nano Science and Nanotechnology / JEPH61

Assignment Question No:

1. (a) Explain Quantum confinement and Compare 0D, 1D and 2D nanostructures.

(or)

(b) Define Surface Plasmon Resonance (SPR) and its effect on optical properties.

Assignment Question No:

2. (a) Differentiate between top-down and bottom-up fabrication approaches, using CVD as an example.

(or)

(b) Discuss the applications of nanomaterials in targeted drug delivery and CNTFETs.

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INTERNAL ASSIGNMENT

Name of the Programme : Applied Physics / JNPH61

Assignment Question No:

1. (a) Distinguish between renewable and conventional energy systems, and briefly comment on the status of the world's conventional energy reserves.

(or)

(b) List out the primary types of fossil fuels and summarize their major merits and demerits regarding availability and environmental impact.

Assignment Question No:

2. (a) Describe the working principle of a biogas plant and outline the basic mechanism of the wood gasification process.

(or)

(b) Explain the structure and operating principle of either a solar pond or a solar cell used for energy conversion.

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INTERNAL ASSIGNMENT

Name of the Programme : Digital Electronics and Microprocessor 8085

Assignment Question No:

1. (a) Explain decimal, binary, octal, and hexadecimal number systems with examples.

(or)

(b) What is a half adder? Explain its logic diagram, Boolean expressions, and truth table.

Assignment Question No:

2.(a) Define ROM. Explain different types of ROM: PROM, EPROM, EEPROM, and EAROM.

(or)

(b) Write ALP for addition, subtraction, multiplication, and division of 8-bit numbers. Discuss the advantages and limitations of 8085 microprocessor.

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INTERNAL ASSIGNMENT

Name of the Programme : Relativity and Quantum Mechanics

Assignment Question No:

1. (a) Derive the Lorentz space-time transformation formulae. Discuss length-contraction and time-dilation

(or)

(b) Define black body radiation. Explain the distribution of energy in the spectrum of black body. Derive an expression for Planck's law of radiation.

Assignment Question No:

2.(a) Discuss briefly the wave nature of matter and obtain an expression of de Broglie wavelength for matter waves.

(or)

(b) What are the postulates of wave mechanics? Derive Schrodinger's equation. What is the significance of wave function?

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