

DR.B.R.Ambedkar Open University
M.Sc Second Year - PHYSICS (2025-2026)
Course V: Nuclear Physics & Analytical Techniques

ASSIGNMENT-I

Maximum Marks: 15
Minimum marks: 06

Instructions to the Candidates:

- I. Answer **all** the following questions.
- II. Each question carries 5 marks.
 - 1. Derive the Bloch equations and write their significance.
 - 2. Define and explain Q-value of a nuclear reaction.
 - 3. Describe working of NQR spectrometer.

ASSIGNMENT-II

Maximum Marks: 15
Minimum marks: 06

Instructions to the Candidates:

- I. Answer **all** the following questions.
- II. Each question carries 5 marks.
 - 1. Derive Bohr's ionization formula for charged particles in a medium
 - 2. Elaborate Gamow's theory of alpha decay..
 - 3. Explain different types of nuclear reactions with example.

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Course VI: Electromagnetic Theory and Spectroscopy

ASSIGNMENT-I

Maximum Marks: 15

Minimum marks: 06

Instructions to the Candidates:

- I. Answer **all** the following questions.
- II. Each question carries **5** marks.
 - 1. Explain hyperfine structure in atomic spectra.
 - 2. Discuss the classical theory of Raman Effect.
 - 3. State and explain Frank-Condon principle.

ASSIGNMENT-II

Maximum Marks: 15

Minimum marks: 06

Instructions to the Candidates:

- I. Answer **all** the following questions.
- II. Each question carries **5** marks.
 - 1. Explain Spin-Orbit coupling beyond the Bohr model.
 - 2. Explain about the magnetic dipole radiation. Derive the equation for ratio of
Magnetic to electric power.
 - 3. With the help of suitable expressions and diagrams explain Poynting theorem.

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Course VII: Memory Devices and Microprocessors

ASSIGNMENT-I

Maximum Marks: 15

Minimum marks: 06

Instructions to the Candidates:

- I. Answer **all** the following questions.
- II. Each question carries **5** marks.
 1. Discuss logic families and their performances.
 2. Explain about memory architectures
 3. Explain LDA adder instruction with examples.

ASSIGNMENT-II

Maximum Marks: 15

Minimum marks: 06

Instructions to the Candidates:

- I. Answer **all** the following questions.
- II. Each question carries **5** marks.
 1. Explain the following instructions with examples.
 - a) ANI data , b)DI , c)DRC B, D)POP D
 2. Explain memory organization of 8155 RAM with the help of a block diagram.
 3. Explain various instruction sets of Intel 8086 microprocessors.

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Course VIII: Microwave Devices and Communication Systems

ASSIGNMENT-I

Maximum Marks: 15

Minimum marks: 06

Instructions to the Candidates:

- I. Answer **all** the following questions.
- II. Each question carries **5** marks.
 1. Discuss group velocity and phase velocity in wave guides.
 2. Explain the working of a Gyrator.
 3. Derive an expression for RADAR Range equation.

ASSIGNMENT-II

Maximum Marks: 15

Minimum marks: 06

Instructions to the Candidates:

- I. Answer **all** the following questions.
- II. Each question carries **5** marks.
 1. What is demodulation? Explain the demodulation of FM signals.
 2. Explain the operation of slope detector with the help of suitable diagram.
 3. Explain the terms
 - i) Gain ii) Efficiency iii) Radiation resistance of an antenna.
