

DR.B.R.Ambedkar Open University

M.Sc IIyear – PHYSICS (2022-23)

Course V: Nuclear Physics & Analytical Techniques

ASSIGNMENT-I

Maximum Marks: 15

Minimum marks: 06

Section-A

(Marks:10)

Answer any **one** of the following questions in about 30 lines

1. Explain the Gammas's theory of α -decay.
2. Derive Bohr's formula for ionization due to passage of heavy charged particles in the medium.

Section-B

(Marks :05)

Answer any **one** of the following questions in about 10 lines

1. Discuss the theory of photo electric effect.
2. Explain the magnetic dipole moment exhibited by the nucleus.

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Course V: Nuclear Physics & Analytical Techniques

ASSIGNMENT-II

Maximum Marks: 15

Minimum marks: 06

Section-A

(Marks :10)

Answer any **one** of the following questions in about 30 lines

1. Derive an expression for Weizacker's semi-empirical formula.
2. Explain the working of SEM and what are advantages of SEM over TEM.

Section-B

(Marks :05)

Answer any **one** of the following questions in about 10 lines

1. Discuss the principle of electron microscopy and give their applications.
2. Explain the meson theory of nuclear forces.

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Course VI: Electromagnetic Theory and Spectroscopy

ASSIGNMENT-I

Maximum Marks: 15

Minimum marks: 06

Section-A

(Marks:10)

Answer any **one** of the following questions in about 30 lines.

1. State and explain Faraday's and Lenz's laws. Obtain expressions for self and mutual inductance.
2. State and explains Franck-Condon principle with suitable example.

Section-B

(Marks :05)

Answer any **one** of the following questions in about 10 lines

1. How is Raman scattered light polarised?
2. Explain the nuclear effect in atomic spectra.

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Course VI: Electromagnetic Theory and Spectroscopy

ASSIGNMENT-II

Maximum Marks: 15

Minimum marks: 06

Section-A

(Marks:10)

Answer any **one** of the following questions in about 30 lines.

1. Discuss the Rotational fine structure of electronic spectra and explain Fortrat parabola.
2. Distinguish between L-S and j-j coupling schemes for two value electron system with vector diagrams.

Section-B

(Marks:05)

Answer any **one** of the following questions in about 10 lines

1. Outline the effect of isotopic substance on the rotational spectra of molecules
2. Explain progressions and sequences in molecular spectra.

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Course VII: Memory Devices and Microprocessors

ASSIGNMENT-I

Maximum Marks: 15

Minimum marks: 06

Section-A

(Marks:10)

Answer any **one** of the following questions in about 30 lines.

1. What is the importance of Flag registers in Intel 8085.Explain its working with examples.
2. Write an Assembly language programme to find the sum of two decimal numbers

Section-B

(Marks:05)

Answer any **one** of the following questions in about 10 lines.

1. Discuss and compare RTL, DTL and TTL logic gates.
2. Explain control instructions of 8085.

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Course VII: Memory Devices and Microprocessors

ASSIGNMENT-II

Maximum Marks: 15

Minimum marks: 06

Section-A

(Marks:10)

Answer any **one** of the following questions in about 30 lines

1. Give the salient features of PIC 8259 and explain the function of all the signals using the pin diagram.
2. Explain the following instructions with examples.

a) STA addr

b)INX rp

c)LHLD addr

d)SIM

e)RRC

Section-B

(Marks :05)

Answer any **one** of the following questions in about 10 lines

1. Explain flag register of 80286 processor.
2. Write an ALP to move a block of data.

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Course VIII: Microwave Devices and Communication Systems

ASSIGNMENT-I

Maximum Marks: 15

Minimum marks: 06

Section-A

(Marks:10)

Answer any **one** of the following questions in about 30 lines

1. What is Amplitude modulation? Discuss the generation of Amplitude modulation.
2. What is the principle of operation of travelling wave tube.

Section-B

(Marks:05)

Answer any **one** of the following questions in about 10 lines

1. Describe the construction and working of a Gyrator.
2. Explain the principle of square law detector.

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Course VIII: Microwave Devices and Communication Systems

ASSIGNMENT-II

Maximum Marks: 15

Minimum marks: 06

Section-A

(Marks:10)

Answer any **one** of the following questions in about 30 lines

1. Explain the working of a basic Radar Equation
2. State and prove Antenna theorem.

Section-B

(Marks:05)

Answer any **one** of the following questions in about 10 lines

1. Discuss the generation of Frequency Modulation
2. Explain the terms (i) Gain, 2) Efficiency,3)Radiation resistance of an antenna.