Dr.B.R.AMBEDKAR OPEN UNIVERSITY

DEPARTMENT OF PHYSICS

M.Sc-2nd year (2013-2014)

Course –v; NUCLEAR PHYSICS AND ANALYTICAL TECHNIQUES

FIRST ASSIGNMENT

Max marks – 15

Min Marks - 06

SECTION-A

(MARKS-10)

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

1. Explain various types of nuclear reactions .What are different conservation laws of nuclear reactions. Using Q value discuss kinematics of nuclear reactions

2. Explain beta decay using neutrino hypothesis. Give Fermi's theory of beta decay. What are selection rules for beta decay?

SECTION-B

(MARKS-5)

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

1. Explain the concept of Bremsstrahlung.
2. Describe the working of scintillation detector.

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M.Sc- 2nd year (2013-2014)

Course –V **:NUCLEAR PHYSICS AND ANALYTICAL TECHNIQUES**

SECOND ASSIGNMENT

Max marks – 15

Min Marks - 06

SECTION-A

(Marks- 10)

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

1. Discuss in detail about neutron leakage rate and thermal diffusion length. Obtain Fermi age equation.

2. Obtain Bloch equation in NMR. Explain Bloc" complex susceptabilities.

SECTION-B

(Marks- 5)

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

1. Distinguish between the following techniques

a) Thermo Gravimetric Aanalysis.

b) Differential scanning calorimetric

2. What is Mossbauer effect. Explain its magnetic hyper fine splitting and applications

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M.Sc- 2ND year (2013-2014)

Course –VI :ELECTRO MAGNETIC THEORY AND SPECTROSCOPY

FIRST ASSIGNMENT

Max marks – 15

Min Marks - 06

SECTION-A

(Marks- 10)

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

1 Using LienardWiechert potential obtain expression for fields of an accelerated charge.

2. W hat is vector atom model Explain LS and JJ coupling of two electron state.

SECTION-B

(Marks- 5)

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

1. Explain electro static and magneto static fields in matter.Describe their boundary conditions .

2.Explain how spin orbit energy for Hydrogen is evaluated.

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Course –VI: ELECTROMAGNETIC THEORY AND SPECTROSCOPY

SECOND ASSIGNMENT

Max marks – 15

Min Marks - 06

SECTION-A

(Marks- 10)

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

1.Give the theory of vibration –rotation spectra of diatomic molecule .

Explain the effect of anharmonicity on the vibrational spectra of diatomic molecule.

2. What is Born oppenhemier approximation. With example explain Frank Condon

Principle. Give details of dissociation energies of a diatomic molecule

SECTION-B

(Marks- 5)

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

1. Explain Zeeman Effect for two electron system.

2. What is Raman Effect. Discuss quantum theory.

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DEPARTMENT OF PHYSICS

M.Sc-II year (2013-2014)

Course –VII: Memory Devices and Microprocessors

FIRST ASSIGNMENT

Max marks – 15

Min Marks - 06

SECTION-A (Essay Type) ---------- 1x10

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

1. Discuss in detail the function and working of Transistor-Transistor Logic(TTL)circuit and its applications
2. Draw and explain the timing diagram for Fetch operation

SECTION-B (Short answer type) -------- 1x5

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

1. What is Tri-State logic? Explain
2. Write an assembly language programme to find the sum of two 8 bit numbers

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DEPARTMENT OF PHYSICS

M.Sc-II year (2013-2014)

Course –VII: Memory Devices and Microprocessors

SECOND ASSIGNMENT

Max marks – 15

Min Marks - 06

SECTION-A (Essay Type) ---------- 1x10

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

1. Explain the Architecture of 80286 with a block diagram
2. Draw the pin diagram of PPI8255 and explain the function of signals on each pin.

SECTION-B (Short answer type) -------- 1x5

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

1. What are the advantages of isolated I/O?
2. Explain Pipeline concept.

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DEPARTMENT OF PHYSICS

M.Sc-II year (2013-2014)

Course –VIII: Microwave Devices and Communication Systems

FIRST ASSIGNMENT

Max marks – 15

Min Marks - 06

SECTION-A (Essay Type) ---------- 1x10

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

1. Discuss the propagation of TM waves in a rectangular waveguide.
2. Explain the operating principle and construction of IMPATT diode and its major disadvantages.

SECTION-B (Short answer type) -------- 1x5

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

1. Describe the construction and working of a Gyrator.
2. Discuss the characteristics of E-plane tee.

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DEPARTMENT OF PHYSICS

M.Sc-II year (2013-2014)

Course –VIII: Microwave Devices and Communication Systems

SECOND ASSIGNMENT

Max marks – 15

Min Marks - 06

SECTION-A (Essay Type) ---------- 1x10

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

1. Explain the principle of Square law detector
2. Derive the Radar range equation

SECTION-B (Short answer type) -------- 1x5

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

1. What is Directivity? Derive the expression for the directivity.
2. Compare Amplitude modulation and Frequency modulation