MONAD UNIVERSITY HAPUR (UP)

Programme: M.Sc.
Semester: II
Course: ATOMIC AND MOLECULAR PHYSICS
Assignment No: 1
Due date of submission: 12 Mar 2018
Instructions:
1. Write the responses to the assignment in your own handwriting.
2. Submit the responses to your HOD within the due date.
3. Write your Name, Programme and Enrolment No. clearly at the top of the page.

Q1.

a) Discuss the vibrational –rotational spectra of diatomic molecules.
b) Discuss the salient feature of spectrum of He atom. How the spectrum is explained quantum mechanically?

Q 2

a) As you are aware of Pauli Exclusion Principle is very important for electronic configuration. Discuss its applications.
b) Write short note on :
(i)   L-S coupling.
(ii)   J-J coupling.

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Programme: M.Sc.
Semester: II
Course: CONDENSE MATTER PHYSICS
Assignment No: 1
Due date of submission: 12 Mar 2018
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Q1.

    a) As you are aware of crystal structure .Discuss diamond structure in brief.
    b) Discuss the Kronig-Penny model and obtain its solution.

Q 2

    a) Explain the reason of X-rays diffraction by a crystal.
    b) Write short note on :
    (i)   Isotope effect.
    (ii)   The Meissner effect.
    (iii)   BCS theory.

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Programme: M.Sc.
Semester: II
Course: DIGITAL ELECTRONICS AND MICRO PROCESSOR
Assignment No: 1
Due date of submission: 12 Mar 2018
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Q1.

a) Discuss the half wave adder and full wave adders with block diagram.
b) Explain difference between digital and analog signal and convert decimal number $(2519)_{10}$ in to hexadecimal.

Q 2

a) Discuss the J-K flip-flop and JK master slave in details.
b) Write short note on :
(i)   Op-amp.
(ii)   TTL.

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Programme: M.Sc.
Semester: II
Course: ELECTRODYNAMICS AND PLASMA PHYSICS
Assignment No: 1
Due date of submission: 12 Mar 2018
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Q1.

a) Express the Maxwell's equation in terms of scalar and vector potentials.
b) Explain displacement current and give its importance.

Q 2

(a) Explain Lorentz gauge and transverse gauge in reference of electromagnetic field.
(b) Write short note on :
(i)   Poynting vector.
(ii)   Poynting theorem.

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Programme: M.Sc.
Semester: II
Course: STATISTICAL PHYSICS
Assignment No: 1
Due date of submission: 12 Mar 2018
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Q1.

   a) Discuss phenomenon of Bose-Einstein condensation show to what extend does it explain the properties of liquid helium-II.
   b) State and explain the statistical equilibrium.

Q 2

   a) Establish the Ehrenfest equation for second order phase transitions.
   b) Write the short note on :-
   (i)   Planck's radiation formula.
   (ii)   Nyquist theorem.
   (iii)   Fokker-Plank equation.