



Assiut University
Faculty of Science
Department of Physics
First Semester (2023-2024)
Final Exam (50%)

Physics Program
Level: (4)
Date: January 23rd, 2024
Time: 3 hours



Course Title: Selected Topics in Physics (1)
Teaching Staff: Prof. Dr. Salah A. Makhoulouf

Code: P 491

Constants & Conversion of Units:

Electron mass: $m = 9.11 \times 10^{-31} \text{ kg}$	
Electron charge: $e = 1.602 \times 10^{-19} \text{ C}$	$1 \text{ eV} = 1.6 \times 10^{-19} \text{ J}$
Planck's constant: $h = 6.626 \times 10^{-34} \text{ J}\cdot\text{s}$ or $h = 4.14 \times 10^{-15} \text{ eV}\cdot\text{s}$	$1 \text{ \AA} = 10^{-10} \text{ m}$
Avogadro's number: $N_A = 6.02 \times 10^{23} \text{ atom/mole}$	$\hbar = 1.054 \times 10^{-34} \text{ J}\cdot\text{s}$
Speed of light: $c = 3 \times 10^8 \text{ m/s}$	$\mu_0 = 4\pi \times 10^{-7} \text{ H/m}$
Boltzmann's constant: $k_B = 1.38 \times 10^{-23} \text{ J/K}$	$1 \text{ \mu B} = 9.27 \times 10^{-24} \text{ J/T}$
$\epsilon_0 = 8.854 \times 10^{-12} \text{ Fm}^{-1}$	Electric Field Units: $\text{V/m} = \text{N/C}$
Units of electric dipole moment is called Debye (D) $1 \text{ D} = 10^{-18} \text{ statC} \cdot \text{cm} (\text{cgs units})$ $1 \text{ D} \approx 3.33564 \times 10^{-30} \text{ C} \cdot \text{m} (\text{SI units})$	Units of Capacitance: $F = \text{C/V}$