Daffodil International University
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Final Examination, Summer 2021 @ DIU Blended Learning Center
Course Code: Phy123 (Retake), Course Title: Physics-II
Level: 3   Term: 3   Section: All
Instructor: MMI   Modality: Open Book Exam
Date: Friday 3ʳᵈ September, 2021   Time: 07:00am-10:30am
Three and half hours (3:30), Marks: 40

Answer any(5) from the following questions: **2+2+4**

1**.**a) What is called that instrument which can convert A.C voltage of high value to the low value of low value to a high value?

  b) State one advantage of using an ac over the dc?

  c) Calculate the avg. mean value of an alternating current for the fifth negative half cycle.

2. a) Should an atomic bomb really be called nuclear bomb?

  b) What is the photoelectric effect and why is it important?

  c) Calculate the mass defect and binding energy of $_{11}Na^{23}$. Mass of each neutron =1.008665 a.m.u. , Mass of each proton= 1.007277 a.m.u., Mass of sodium nucleus=7.016005 a.m.u..

3. a)What is the key difference and the key similarity between beta ($\beta-$) decay and alpha decay?

  b) What is the function of a moderator in a nuclear reactor?

  c) A 530nm violet light is incident on a calcium photoelectrode with a work function of 2.81 eV. Find the energy of the incident photons and the maximum kinetic energy of ejected electrons.

4. a) Explain why the photoelectric effect cannot be explained by classical physics

  b) Define and make clear distinctions between the terms neutron, nucleon, nucleus, and nuclide.

  c) A piece of radium becomes one-seventh part on radiating radioactive radiation for 6500 years.Find the decay constant of radium.

5. a)Discuss the differences between average power and instantaneous power.

  b)Whice one is safe to use, AC or DC? Explain into your own language.

  c)An alternating current is expressed as i=15sin πt.Calculate frequency, peak value,and root mean square value of the current.

6. a) Discuss any similarities and differences between the photoelectric and the Compton effects.

  b)Distinguish between resistance, reactance and impedence?

  c)The work function of sodium is 4.3eV.Calculate the maximum kinetic energy when light wavelength of 2300 A is incident on it.