International Islamic University Chittagong (IIUC)

Department of Electronic and Telecommunications Engineering

Final Examination

Program: B.Sc. (Engg.)
Course Code: PHY -1201
Full Marks: 50

Semester: Spring-2018
Course Title: Physics – II
Time: 2 hours and 30 minutes

Group- A

[Answer *any two* sets of the following questions]

1. (a) What do you understand by current density? Explain. 02
   (b) Derive an expression for current density. 05
   (c) A 4 μF capacitor is first charged and then discharged through a 4 MΩ resistor. Calculate the time for voltage to drop by half of its initial value. 03

2. (a) Compose a short note on alternating current. 02
   (b) Derive an equation for r.m.s value of alternating current. 05
   (c) For ensuring a pure sinusoidal output of alternating current, we must ensure a form factor of value 1.11. Explain it with details. 03

3. (a) Define: Lattice, Crystal Structure. 02
   (b) Explain different types of defects in crystal. 05
   (c) Write down short notes on: Covalent bond and Ionic bond. 03

Group- B

[Answer *any three* sets of the following questions]

4. (a) Write the equations for relativistic time, mass and length. 03
   (b) Attain the equation for relativistic equation for mass. 05
   (c) A body of rest mass 1.9 Kg is moving with a momentum 18 Kg m/s. Calculate the total energy of the body. 02

5. (a) Define binding energy per nucleon. 01
   (b) Describe some general properties of stable atomic nuclei. 06
   (c) Calculate the binding energy for Helium nucleus. 03

6. (a) Propose your idea about the Compton effect. 02
   (b) Establish the equation for change in wavelength of scattered photon during Compton effect. 08

7. (a) Prepare a precise description of radioactivity with example. 03
   (b) What is nuclear fusion? Show a real calculation of radiated power during fusion. 04
   (c) Mention some distinctions between nuclear fission and fusion. 03