International Islamic University Chittagong (IIUC)
Department of Electronic and Telecommunication Engineering
Final Examination

Program: B.Sc. Engg. (ETE)
Course Code: ETE-4813/4825
Total Marks: 50

Semester: Autumn 2018
Course Title: Biomedical Engineering
Time: 2 Hours 30 Minutes

Part A

[Answer any two questions from followings]

Q1. (a) Define Ultrasound. Illustrate what happen following events. 3

(b) Define acoustic impedance. Why do jelly use in ultrasound. 3

(c) Describe Doppler Ultrasound and Dangers of Ultrasound. 4

Q2. (a) Write the basic principle of EMG. 3

(b) Given the energy level of 6.624×10^{-18} J imparted to an electron stream by an X-ray device, Calculate the frequency in MHz and wavelength in cm & Â of the X-ray beam. 4

(c) Comment on lithium ion cells. 3

Q3. (a) Why is the lung image not found by using ultrasound? 2

(b) Justify why do we use lower frequency for depth tissue scanning and higher frequency for shallow tissue? 4

(c) Summarize Area Contrast and Fluoroscopic Imaging System in X-ray. 4

Part B

[Answer any three questions from followings]

Q4. (a) Define MRI. Illustrate how does MRI Work. 4

(b) Summarize the working principle of Gamma Camera. 4

(c) Rewrite about the risk of MRI process. 2

Q5. (a) Describe the Design and Working Principle of Colorimeter. 5

(b) Construct the block diagram of Spectrophotometer and Explain the Working Principle it's. 5

Q6. (a) Point out the techniques Chromatography. 3

(b) Define Cardiac Pacemaker. Illustrate how does a pacemaker work? 5

(c) If a patient has a pacemaker, then is it possible to carry out MRI? Justify this statement. 2

Q7. (a) Propose a way out to connect a rural resident with highly qualified consultant in a remote urban hospital. 6

(b) What conclusions can you draw about the duties of a professional engineer and a registered equipment technician? 4