International Islamic University Chittagong
Department of Electrical and Electronic Engineering

Assignment Autumn-2020
Course Code: **EEE-4807**

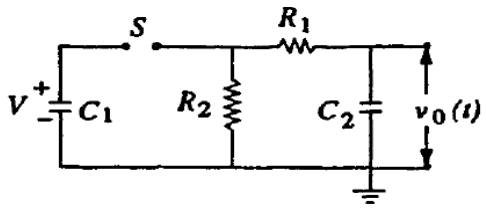
Program: B.Sc. Engg. (EEE)
Course Title: **High Voltage Engineering**
Full Marks: 30

[Answer **each of the** questions from the followings; Figures in the right margin indicate full marks. **write down the Q. Set on the front page of your answer script.]**

Q. Set-A

1(a).	Explain the operation of a simple voltage doubler circuit used for generation of high DC voltages.	**CO1**	**U**	**02**
1(b).	Derive the expression for ripple and regulation in a voltage multiplier circuits. How are the ripple and regulation minimized?	**CO1**	**An**	**03**
1(c).	A ten-stage Cockraft-Walton circuit has all capacitors of 0.06 µF. The secondary voltage of the supply transformer is 100 kV at a frequency of 150Hz. If the load current is 1 mA, Determine, i. Voltage regulation ii. The optimum number of stages for maximum output voltage	**CO2**	**Ev**	**02**
2(a).	How are damped high-frequency oscillations obtained from a Tesla coil?	**CO1**	**An**	**02**
2(b).	Draw the equivalent circuit of a three-stage Cascaded transformer and determine the expression for short circuit impedance of the transformer.	**CO1**	**R, Ev**	**03**
2(c).	A 100KVA, 250V/200kV testing transformer has resistance and reactance of 1% and 10% respectively. It is used to test a capacitive sample at 600KV, and at 0.3Amp. Determine the series Inductance required. Frequency = 55Hz. Assume a suitable value for resistance of the inductor coil.	**CO2**	**Ev**	**02**
3(a).	Draw the voltage wave shape of lightning impulse and explain it in detail. Also, define the different standard of impulse voltage.	**CO1**	**R**	**02**
3(b).	An impulse generator has eight stages with each condenser rated for 0.16 µF and 125 kV. The load capacitor available is 1000 pF. Calculate, the series resistance, and the dampingresistance needed to produce 1.2/50µs is an impulse wave.	**CO2**	**Ev**	**02**

3(c). Give a complete analysis of the impulse circuit shown in **"Fig: 01"** and derive the condition for physical Realization of wave front and wave tail resistances. **CO1 An 03**



"Fig: 01" Impulse Generator Circuit.

Assignment: 21 Marks

Viva/Quiz based on Assignment: 9 Marks (Quiz)

Total: 30 Marks