# PRABHAT KUMAR COLLEGE, CONTAI

M. Sc. 1st Semester Examination-2021

Subject: Physics      Paper: **PHS 195**    Full Marks: 50   Time: 2 hr

### Electronics Practical-I

Answer any TWO question                                    2×25=50

1. Design a resonant filter circuit with different value of L-C .Describe the process of obtaining the resonant frequency and show theoretically the variation of $A$ $(dB)$ and $\Phi$ as a function of $\frac{\omega}{\omega_0}$

2. Define transformer? How the eddy current loss can be minimized? Design and explain how to study the performances of a Voltage Transformer and to find out the primary inductance, secondary inductance and mutual inductance of the given transformer.

3. Design a full wave regulated power supply using 2N 3055 as pass transistor and 741C OPAMP as comparator. Explain the process of determining the regulation characteristics and to find out the ripple factor after the regulation. What are UPS and SMPS?

4. Design a circuit using FET/MOSFET to (i) Draw Drain Characteristics between ID & VDS for different values of VGS, (ii) Draw (Transconductance Characteristics) ID with VGS & find gm. Explain the procedure. How the Pinch-off region is formed in JFET? Explain.

5. Realize and implement JK Master Slave & D Flip-Flops using IC's / basic logic gates and breadboard. Explain the operation.

6. Design a NON-INVERTING amplifier circuits using OPAMP. Explain how to draw frequency response characteristics and to find out the bandwidth. Why the practical op-amp does depend on input frequency whereas ideal one doesn't? What is slew rate?

7. Design an INVERTING amplifier circuits using OPAMP. Explain how to draw frequency response characteristics and find out the bandwidth. Why the practical op-amp does depend on input frequency whereas ideal one doesn't? What is slew rate?