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Rajshahi University of Engineering & Technology

Department of Electrical & Computer Engineering

Lab report-04

Course Code : **ECE 1202**

Course Title : **Circuits and Systems-II Sessional**

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Submitted To:	Submitted By:
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Experiment no: 04

1. **Experiment name:** Three phase sequence test using six phase motor.

2. **Objective:** The main objective of this experiment is to understand the concept of phase sequence in three phase system and study the effect of phase sequence on the direction of rotation in six phase motor.

3. **Theory:** In a three-phase electrical system, the phase sequence refers to the order in which the voltages of the three phases (a, b, C) reach their peak values. The sequence can be either forward (abc) or reverse (cba). This sequence directly impacts the direction of rotation in AC motors. In a six-phase motor, which consists of two sets of three-phase windings, the direction of rotation depends on the phase sequence of the input supply. A forward sequence results in clockwise rotation, while reversing the sequence causes counterclockwise rotation.

4. **Required apparatus:**
   i. Source
   ii. VARIAC
   iii. Three phase motor
   iv. Connecting wires

5. **Circuit diagram:**

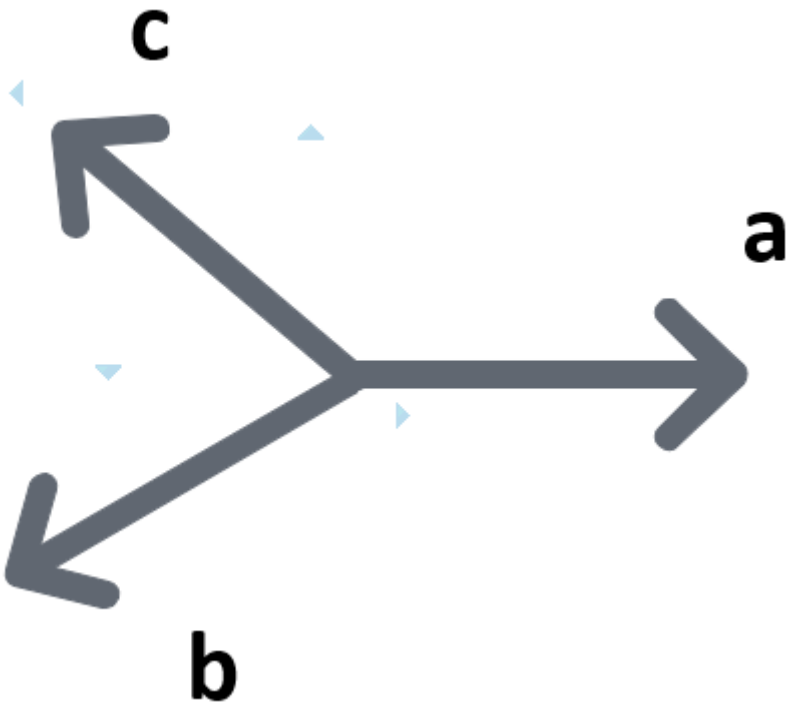

Figure: Phase sequence

6. **Discussion:** The experiment shows that altering the phase sequence changes the motor's direction of rotation. A forward sequence (abc) causes clockwise rotation, while a reverse sequence (cba) results in counterclockwise rotation. This confirms the critical role of phase sequence in motor control, as incorrect sequencing can lead to undesired motor behavior or even damage. The six-phase motor's response demonstrates the importance of verifying the correct phase sequence in three-phase systems to ensure proper operation in industrial applications.

7. **Precautions:**
    i. Ensured all connections were secured and double checked before powering the circuit to avoid short circuit or any other safety hazard.
    ii. Handled measuring equipment carefully to get accurate reading.
    iii. Been cautious of the power rating of the instruments to avoid overheating.

8. **References:**

    i. Fundamentals of Electric Circuits; Charles K. Alexander and Mathew N. O. Sadiku
    ii. Wikipedia (delta connected three phase balanced system)
    iii. Google