TRUE/FALSE

1. The brush polarity in a separately excited generator cannot be changed by reversing the rotation of the armature or the direction of the field current.

   ANS: F PTS: 1 REF: Brush Polarity

2. If both the armature direction and the direction of the field current change, the brush polarity remains the same.

   ANS: T PTS: 1 REF: Brush Polarity

3. The magnitude of the voltage depends on the rate at which the flux is cut.

   ANS: T PTS: 1 REF: Output Voltage

4. Field control of the output voltage is accomplished by varying the total resistance of the field circuit with a field rheostat.

   ANS: T PTS: 1 REF: Output Voltage

5. Brush polarity changes when the field current is zero.

   ANS: F PTS: 1 REF: Residual Voltage

COMPLETION

1. If the machine is stopped and then driven in the opposite direction, the _____ is cut in the opposite direction and the brush polarity changes.

   ANS: field flux

   PTS: 1 REF: Brush Polarity

2. In a separately excited generator, an output voltage increase is _____ to an increase in the armature speed.

   ANS: proportional

   PTS: 1 REF: Output Voltage

3. The output voltage of a separately excited generator can be varied by adjusting the speed of the _____ or the field current.

   ANS: armature rotation

   PTS: 1 REF: Output Voltage

4. _____ the resistance increases the output voltage.

ANS: Decreasing

PTS: 1 REF: Output Voltage

5. Residual flux is caused by the residual magnetism left in the _____.

ANS: field poles

PTS: 1 REF: Residual Voltage

SHORT ANSWER

1. How is magnetic saturation achieved in a separately excited DC generator and what is the impact?

ANS:
The field flux, or magnetic strength of the magnetic poles, is increased as the field current is increased until magnetic saturation occurs. Saturation of the magnetic field means that no more magnetic flux can be produced even with an increase in field current.

PTS: 1 REF: Introduction

2. How is the upper limit of the voltage determined?

ANS:
The upper limit of the voltage is determined by the permissible mechanical speed and the insulation qualities of the armature and commutator.

PTS: 1 REF: Output Voltage

3. How can a field rheostat be used to vary the output voltage?

ANS:
Field control of the output voltage is accomplished by varying the total resistance of the field circuit with a field rheostat. Increasing the resistance reduces the field current and reduces output voltage. Decreasing the resistance increases the output voltage.

PTS: 1 REF: Output Voltage

4. What causes residual flux?

ANS:
If the field circuit is opened at S_1 the field current becomes zero. A small amount of magnetic flux called residual flux remains, which is caused by residual magnetism left in the field poles.

PTS: 1 REF: Residual Voltage

5. What happens if the field circuit is closed momentarily with the battery connections reversed?

ANS:
If the field circuit is closed momentarily with the battery connections reversed, the residual flux reverses and the brush polarity reverses.

PTS: 1 REF: Residual Voltage