

# 5 Armature Reaction Nptel

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## 5 Armature Reaction Nptel

### L-37 TB ET EE NPTEL

375 Armature reaction In a unloaded dc machine armature current is vanishingly small and the flux per pole is decided by the field current alone The uniform distribution of the lines of force get upset when armature too carries current due to loading In one half of the pole, flux lines are concentrated and in the other half they are rarefied

### DC machines - Montefiore Institute

5 Armature reaction  $Y(I_a) = y(I_a) + R_a I_a$  Total armature reaction Compensating winding disadvantages: •for a single value of  $I_a$  •shift direction dependson rotation direction •shift direction dependson functioningmode (generator or motor) Shift of the brushes wrt pole axis Reductionof the armature reaction DC machines

### Armature Reaction: The effect of magnetic field set up by ...

Armature Reaction: The effect of magnetic field set up by armature current on the distribution of flux under main poles of a generator The armature magnetic field has two effects: (i) It demagnetises or weakens the main flux and (ii) It cross-magnetises or distorts it Fig 1 ...

### DC MACHINES (17CA02301)

The phenomena of armature reaction and commutation III Characteristics of generators and parallel operation of generators IV Methods for speed control of DC motors and applications of DC motors V Various types of losses that occur in DC machines and how to calculate efficiency

### DC MACHINES LABORATORY

2 Find out the voltage drop due to full load armature reaction? 3 State the conditions required to put the DC shunt generator on load 4 How do you compensate for the armature reaction? 5 What happens if shunt field connections is reversed in the generator?

## Institute Technology DC" - MIT OpenCourseWare

carry the armature current, this may be a practical limit for air-gap flux density anyway To get started, consider the equivalent circuit shown in Figure 5 This is actually the equivalent 32 A Little Two-Reaction Theory The material in this subsection is framed in terms of three-phase ( $q = 3$ ) machine theory, but it is actually

### NPTEL

NPTEL Syllabus Electrical Machines -I - Video course COURSE OUTLINE Synchronous machines: types, windings, emf equation, generator and motor operations, phasor diagrams; testing, power angle characteristic, v-curves,

### ELECTRICAL MACHINE-II

factors, armature reaction, the rotating field leakage reactance Concept of time phasor & space phasor Synchronous Generator: Various types & construction, cylindrical rotor theory, phasor diagram, open circuit & short circuit characteristics, armature reaction reactance, synchronous reactance, SCR, load characteristics, potier reactance,

### II. Synchronous Generators

Figure 4: The phasor diagram showing the effect of armature reaction when the power factor is lagging Synchronous Generators Dr Suad Ibrahim Shahl 14 By following the above sequence of events, we can obtain the phasor diagrams for the lagging (Figure 4) and the leading (Figure 5) power factors

### CHAPTER 31 SYNCHRONOUS GENERATORS

SYNCHRONOUS GENERATORS 315 FIGURE 316A cutaway diagram of a large synchronous machine Notice the salient-pole construction and the on-shaft exciter This effect is known as the armature reaction because the current in the armature (stator) affects the magnetic field that produced it in the first place

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### Name of the Department- Electrical Engineering

Name of the Department- Electrical Engineering SUBJECT CODE-1302 NAME OF THE SUBJECT- ELECTRICAL MACHINE1 (PART 2) SEMESTER- 3RD BRANCH- EE&EEE shunt, series and compound motors, Armature reaction and commutation, Starting of DC motor, Principle of operation of 3 point and 4 point starters, drum controller, Constant & Variable losses,

### Index Terms INTRODUCTION IJSER

means that the rotor flux can be chosen higher if the armature reaction is smaller implying higher alignment torque To achieve a great reluctance torque contribution however, the stator reaction must be large The machine parameters give that a large  $m$  and small inductances, are required to obtain mainly alignment torque

### B.Tech in ELECTRICAL ENGINEERING

BTech in ELECTRICAL ENGINEERING Paper-1 SNo Unit/Topic NPTEL Link 1 SIGNALS & NETWORKS Mathematical Description of Signals: Continuous-Time ...

**Appendix A Practice Problems Chemistry Answers**

enthalpy change of a reaction by Law of Multiple Proportions Practice Problems, Chemistry Examples, Fundamental Chemical Laws This chemistry video tutorial explains the concept of the law of multiple proportions It's another fundamental chemical law Molarity Practice Problems Confused about molarity? Don't be!

**Lecture Notes ELE-A6**

The armature has 536 conductors connected as a lap winding The DC machine runs at 1050 rpm and it delivers a rated armature current of 225 A to a load connected to its terminals, calculate: A) Machine constant,  $K_m$  B) Generated voltage,  $E_g$  C) Conductor current D) Electromagnetic torque E) Power delivered by the machine

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Since the armature reaction voltage lags the current by 90 degrees, it can be modeled by  $E_{jX}$  stat A The phase voltage is then  $I I_{AA}$  However, in addition to armature reactance effect, the stator coil has a self-inductance  $L_A$  ( $X_A$  is the corresponding reactance) and the stator has resistance  $R_A$  The phase voltage is thus  $V_E = jX I + R I + A$