

## DC motor drives

1. A 220 V, 800 rpm, 80 A separately excited motor has an armature resistance of 0.12  $\Omega$ . Motor is driving under rated conditions, a load whose torque is same at all speeds. Calculate motor speed if the source voltage drops to 200 V. [723.95 rpm]
  
2. A separately excited dc motor is used as an adjustable speed drive over the , speed range 0 to  $2N$  rpm. Speed is varied from 0 to  $N$  by varying armature voltage from 0 to  $V$  at a constant flux. Speed is changed from  $N$  to  $2N$  by varying flux with armature voltage maintained constant at  $V$ .
  - (i) Draw armature current vs speed curve for the entire speed range for a constant load torque.
  - (ii) Draw torque vs speed curve for the entire speed range when armature current is maintained constant.
  
3. A 230 V, 1000 rpm, 105A separately excited dc motor has an armature resistance of 0.06 $\Omega$ . Calculate the value of flux as a percent of rated flux for motor speed of 1500 rpm when load is such that the developed motor power is maintained constant at rated value for all speeds above rated speed. [Flux should be reduced to 66.7% of the rated value]