

Easy

Assistant Engineer (Electrical), Class 2025

Building Department

How does induced emf in DC motor react to supply voltage?

A

It will aid the supply voltage

B

It will be double the supply voltage

C

It will oppose the supply voltage

Correct

D

It will be half of the supply voltage

Correct Answer: C

Full Detailed Explanation

Concept & Reasoning When the armature of a DC motor rotates in the magnetic field, an emf is induced in its conductors. The direction of that induced emf is governed by Lenz's law: it

opposes the cause producing it. Since the supply causes the armature to rotate, the induced emf acts opposite to the supply and is therefore called back emf. The armature circuit is commonly written $V = E_b + I_a R_a$ (neglecting brush drop). At starting $E_b = 0$, which explains the high starting current; as speed rises, E_b rises and current falls. **How to Solve It in the Exam** Motor induced emf = back emf = opposes supply. **Important Exam Point** Use the armature-voltage equation to connect back emf with starting-current behavior. **Related Revision Path** This question sits in the revision path Electrical Machines → DC Machines → Back EMF .

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