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Q6(b)

Critically examine Darwin's theory of evolution in understanding evolution

UPSC Civil Services Mains 2015 · Anthropology GS 1 · 15 marks · Theories of Organic Evolution (Pre-Darwinian, Darwinian and Post-Darwinian).

(b) Theories of Organic Evolution (Pre-Darwinian, Darwinian and Post-Darwinian).

Core demand of the question

- Critically examine Darwin's theory of evolution in understanding evolution
- Write about 200 words for 15 marks

Revision summary

Darwin proposed natural and sexual selection and common descent.

He lacked Mendelian heredity.

The modern synthesis joined selection to genes.

Drift, punctuation, and evo-devo extend the theory.

Social Darwinism is a misuse, not a test of the biology.

Introduction

Darwin's theory of evolution by natural selection still organises biology. It is necessary, and it is not the whole modern kit.

Body

What Darwin got right

- **Origin of Species (1859)** argued descent with modification. Variation is heritable; more are born than live; the fitter leave more offspring.
- Sexual selection, in **The Descent of Man**, explained ornaments that natural selection alone strains to justify.
- The human animal was placed in the same process, against special creation.

Limits in Darwin's own text

- He lacked a correct heredity. Blending inheritance would wash out variation. **Mendel**, recovered in 1900, saved the theory.
- He knew little of genes, drift, or development. **Wallace** shared selection but not always sexual selection.

Later critical development

- The **modern synthesis** of **Fisher**, **Haldane**, **Wright**, and **Dobzhansky** joined selection to population genetics.

- **Gould** and **Eldredge** added punctuated patterns in fossils. **Kimura** added neutral drift at the molecular level.
- **Epigenetics** and **evo-devo** refine, they do not scrap, selection.
- Social Darwinism was a political misuse, not Darwin's field method.

Flow diagram

Darwin selection -> Mendel genes
Mendel genes -> Modern synthesis
Modern synthesis -> Drift evo-devo

Conclusion

Darwin explained adaptation by selection and common descent. Understanding evolution today still starts there, then adds **Mendel**, drift, development, and a careful fossil clock.

Facts & figures

1859

On the Origin of Species by Means of Natural Selection.

Mendel

Particulate inheritance, unknown to Darwin, later rescued variation from blending.

Dobzhansky

Genetics and the Origin of Species made the synthesis teachable.

Kimura

Neutral theory: much molecular change is not adaptive selection.