

FUTURE TOPPER

**Biology / Biological Science / Biotechnology /
Biochemistry**
Subject Code: 304

*Based on the Latest Official CUET (UG) 2026 Syllabus released by NTA For
CUET (UG) 2027 Aspirants*

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Important Notes

Syllabus Source	This syllabus is reproduced from the official CUET (UG) 2026 syllabus published by the National Testing Agency (NTA). All topics are preserved verbatim.
CUET 2027 Status	As of preparation date, NTA has not released the official CUET 2027 syllabus. This document serves as the best available reference for CUET 2027 preparation.
Verify Updates	Always check cuet.nta.nic.in or nta.ac.in for the latest official notifications before your examination.
Exam Pattern	The Biology / Biological Science / Biotechnology / Biochemistry paper typically comprises 50 questions (40 to be attempted) in MCQ format. Confirm the exact pattern from the official NTA information bulletin.
Marking Scheme	Generally: +5 for correct answer, -1 for incorrect answer, 0 for unattempted. Verify with the official NTA bulletin.
Preparation Tip	Focus on NCERT textbooks as the primary source. Supplement with previous years' CUET papers and Future Topper practice material.

Biology / Biological Science / Biotechnology / Biochemistry — Complete Syllabus

Unit VI: Reproduction

1. Sexual Reproduction in Flowering Plants

- Pre-fertilisation: structure and events – stamen, microsporangium and pollen grain, pistil, megasporangium and embryo sac.
- Development of male (microsporogenesis) and female gametophyte (megasporesis).
- Pollination – types, agents and examples; out-breeding devices; pollen-pistil interaction.
- Double fertilisation.
- Post-fertilisation: structure and events – development of endosperm and embryo; formation of seed and fruit; parthenocarpy.
- Significance of seed in angiosperms; apomixis and polyembryony.

2. Human Reproduction

- Male and female reproductive systems; microscopic anatomy of testis and ovary.
- Gametogenesis – spermatogenesis and oogenesis; menstrual cycle.
- Fertilisation; embryo development up to blastocyst formation; implantation.
- Pregnancy, embryonic development and placenta; parturition and lactation.

3. Reproductive Health

- Problems and strategies – amniocentesis.
- Population stabilisation and birth control – various methods of contraception.
- Medical termination of pregnancy (MTP); sexually transmitted infections (STIs).
- Infertility – assisted reproductive technologies: IVF, ZIFT, GIFT, ICSI and IUI.

Unit VII: Genetics and Evolution

1. Principles of Inheritance and Variation

- Mendel's laws of inheritance: inheritance of one gene – law of dominance, law of segregation (test and back cross).
- Deviations from Mendelism – incomplete dominance and co-dominance; multiple alleles and inheritance of blood groups.
- Inheritance of two genes – law of independent assortment; dihybrid cross; chromosomal theory of inheritance; linkage and recombination.
- Polygenic inheritance; pleiotropy.
- Sex determination in humans, birds and honey bee; mutation.
- Genetic disorders – pedigree analysis; Mendelian disorders: colour blindness, haemophilia, sickle-cell anaemia, phenylketonuria and thalassemia.
- Chromosomal disorders in humans: aneuploidy, polyploidy, Down's syndrome, Turner's syndrome and Klinefelter's syndrome.

2. Molecular Basis of Inheritance

- Structure and packaging of DNA helix; search for genetic material (transforming principle and Hershey-Chase experiment).
- Properties of genetic material; replication (Meselson and Stahl's experiment).
- Transcription – transcription unit and gene; RNA world – types of RNA and process of transcription.

- Genetic code and mutations; tRNA; translation.
- Regulation of gene expression – Lac operon.
- Human Genome Project (goals, salient features and applications); DNA fingerprinting (polymorphism and VNTR).

3. Evolution

- Origin of life – Miller's experiment; concepts of evolution (Darwin's contribution).
- Evidences for evolution: embryology, palaeontology, comparative anatomy, divergent and convergent evolution, industrial evolution.
- Adaptive radiation; biological evolution; natural selection; mechanism of evolution.
- Hardy-Weinberg principle and affecting factors: gene migration, genetic drift, mutation, recombination and natural selection.
- Evolution of plants and vertebrates through geological periods; origin and evolution of man.

Unit VIII: Biology and Human Welfare

1. Human Health and Disease

- Introduction about health; common diseases: typhoid, pneumonia, common cold, malaria, amoebiasis, ascariasis, filariasis and ringworms.
- Immunity – innate and acquired, active and passive, vaccination and immunisation, allergies, auto-immunity and immune system in humans.
- AIDS; cancer; drugs and alcohol abuse – adolescence, addiction, effects of drug abuse, prevention and control.

2. Microbes in Human Welfare

- Microbes in household products; microbes in industrial products – beverages, antibiotics, enzymes and bioactive molecules.
- Microbes in sewage treatment and production of biogas.
- Microbes as biocontrol agents and biofertilisers.

Unit IX: Biotechnology and Its Applications

1. Biotechnology: Principles and Processes

- Principles of biotechnology; tools of recombinant DNA technology – restriction enzymes, cloning vectors, competent host.
- Processes of rDNA technology – isolation, amplification of gene (PCR), insertion of rDNA in host and bioreactors; downstream processing.

2. Biotechnology and Its Applications

- Application in agriculture – tissue culture, genetically modified organisms, Bt cotton, RNA interference.
- Biotechnology in medicine – insulin, gene therapy and molecular diagnosis.
- Transgenic animals; ethical issues – biopiracy and patents.

Unit X: Ecology and Environment

1. Organisms and Populations

- Population attributes – birth and death rate, age pyramids.
- Population growth – exponential and logistic growth; life history variation.
- Population interactions – predation, competition, parasitism, commensalism, mutualism and amensalism.

2. Ecosystem

- Structure and function; productivity; decomposition.
- Energy flow – different trophic levels, food chain and food web.
- Ecological pyramids – pyramid of energy, biomass and number.

3. Biodiversity and Conservation

- Biodiversity – concept, patterns and importance; causes of biodiversity loss.
- Biodiversity conservation – approaches: narrowly utilitarian, broadly utilitarian and ethical.
- Methods of conservation – in situ (endemism, hotspots and sacred groves, etc.), ex situ (wildlife safaris, zoological parks and cryopreservation, etc.).

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