

A-Level Biology

Name: _____ Score: _____

1. A single nucleotide is made of:
 - ☐ a phosphate, a 5-carbon sugar and a base
 - ☐ two sugars and a base
 - ☐ an amino acid and a phosphate
 - ☐ three bases
2. DNA replication is "semi-conservative" because each new molecule has:
 - ☐ one original (old) strand and one newly made strand
 - ☐ two brand-new strands
 - ☐ two original strands
 - ☐ no original strands
3. A gene is a sequence of DNA that codes for:
 - ☐ one polypeptide
 - ☐ one nucleotide
 - ☐ one sugar
 - ☐ the whole organism at once
4. A gene mutation is:
 - ☐ a change in the base sequence of DNA
 - ☐ a change in the number of cells
 - ☐ a change in the cell membrane
 - ☐ a loss of all the DNA
5. ATP releases energy for the cell when:
 - ☐ its last phosphate group is broken off
 - ☐ a base is added
 - ☐ it joins with DNA
 - ☐ its sugar changes to deoxyribose
6. In semi-conservative replication, each new DNA molecule keeps one of the original strands.
 - ☐ True ☐ False

7. Free nucleotides line up against the exposed template bases by _____ base pairing.

8. A group of three mRNA bases that codes for one amino acid is called a _____.

9. A substitution can sometimes leave the amino acid unchanged.

☐ True ☐ False

10. In DNA, A always pairs with T, and C always pairs with _____.

A-Level Biology

1. **a phosphate, a 5-carbon sugar and a base**

Every nucleotide has three parts: a phosphate group, a pentose sugar, and a nitrogen-containing base.

2. **one original (old) strand and one newly made strand**

Each daughter molecule conserves one parental strand and pairs it with one new strand.

3. **one polypeptide**

A gene is a length of DNA that codes for a single polypeptide.

4. **a change in the base sequence of DNA**

A gene mutation is a change to the sequence of bases in a DNA molecule.

5. **its last phosphate group is broken off**

ATP has three phosphates; breaking off the terminal phosphate releases energy.

6. **True**

That is exactly what "semi-conservative" means — one old strand is conserved in each copy.

7. **complementary**

Each template base attracts its complement (A–T, C–G), so the new strand is an exact partner.

8. **codon**

Three bases = one codon (triplet); the matching three bases on a tRNA are its anticodon.

9. **True**

Because the code is degenerate, the new triplet may still code for the same amino acid — no change.

10. **G**

Complementary base pairing: A–T (2 hydrogen bonds) and C–G (3 hydrogen bonds).