

## Grade 12 Life Science Quiz & Questions

**Topics: Meiosis, Reproduction in Vertebrates, DNA - The Code of Life**

**Term 1 Practice paper**

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Choose the correct answer for each question.

Multiple Choice Questions

1. **During which phase of meiosis does crossing over occur?**
  - a) Prophase I
  - b) Metaphase I
  - c) Anaphase II
  - d) Telophase I
2. **Which reproductive strategy is most common in mammals?**
  - a) External fertilization
  - b) Asexual reproduction
  - c) Internal fertilization
  - d) Budding
3. **What is the main function of DNA?**
  - a) Producing energy
  - b) Storing genetic information
  - c) Transporting oxygen
  - d) Breaking down nutrients
4. **Which of the following is a difference between mitosis and meiosis?**
  - a) Mitosis produces four daughter cells, meiosis produces two
  - b) Meiosis involves two divisions, mitosis involves one
  - c) Mitosis creates gametes, meiosis creates somatic cells
  - d) Crossing over occurs in mitosis but not in meiosis
5. **In vertebrates, which organ produces gametes?**
  - a) Liver
  - b) Kidneys
  - c) Gonads
  - d) Lungs

True or False Questions

6. **DNA is made up of amino acids.** (True / False)
7. **The purpose of meiosis is to produce genetically identical cells.** (True / False)
8. **Fertilization occurs when a sperm cell fuses with an egg cell.** (True / False)
9. **All vertebrates reproduce sexually.** (True / False)
10. **A mutation in DNA can lead to genetic disorders.** (True / False)
  
11. **What is the complementary DNA strand for the sequence ATCGGATC?**
  - a) TAGCCTAG
  - b) CGATTAGC
  - c) ATCGGATC
  - d) GCTAACT

Section B: Multiple Choice Questions

1. **During which phase of meiosis does crossing over occur?**
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5. **In vertebrates, which organ produces gametes?**
  - a) Liver
  - b) Kidneys
  - c) Gonads
  - d) Lungs
6. **Which base is NOT found in RNA?**
  - a) Adenine

- b) Uracil
  - c) Thymine
  - d) Cytosine
7. **What is the name of the process in which a sperm cell fertilizes an egg cell?**
- a) Mitosis
  - b) Meiosis
  - c) Fertilization
  - d) Transcription
8. **Which type of vertebrate has external fertilization?**
- a) Mammals
  - b) Birds
  - c) Reptiles
  - d) Amphibians
9. **How many chromosomes does a normal human gamete contain?**
- a) 23
  - b) 46
  - c) 22
  - d) 44
10. **What is the function of mRNA in protein synthesis?**
- a) Carries amino acids to the ribosome
  - b) Forms ribosomal subunits
  - c) Transports genetic code from DNA to ribosomes
  - d) Replicates DNA

### Section C: True or False Questions

- 11. **DNA is made up of amino acids.** (True / False)
- 12. **The purpose of meiosis is to produce genetically identical cells.** (True / False)
- 13. **Fertilization occurs when a sperm cell fuses with an egg cell.** (True / False)
- 14. **All vertebrates reproduce sexually.** (True / False)
- 15. **A mutation in DNA can lead to genetic disorders.** (True / False)
- 16. **A zygote is formed after fertilization.** (True / False)
- 17. **Meiosis occurs only in reproductive cells.** (True / False)
- 18. **Adenine always pairs with guanine in DNA.** (True / False)
- 19. **Oviparous animals give birth to live young.** (True / False)
- 20. **Sexual reproduction increases genetic variation.** (True / False)

### Section D: Short Answer Questions

- 21. **Define the term "crossing over" in meiosis.**
- 22. **Explain the difference between oviparous and viviparous reproduction.**
- 23. **Describe the role of tRNA in protein synthesis.**
- 24. **List two advantages of internal fertilization over external fertilization.**
- 25. **What is the difference between haploid and diploid cells?**

Section E: Bonus Questions

26. **What is the complementary DNA strand for the sequence ATCGGATC?**
- a) TAGCCTAG
  - b) CGATTAGC
  - c) ATCGGATC
  - d) GCTAACTG
27. **Which part of the sperm cell contains enzymes for penetrating the egg?**
- a) Nucleus
  - b) Acrosome
  - c) Mitochondria
  - d) Flagellum
28. **What is the role of RNA polymerase in transcription?**
- a) Synthesizing proteins
  - b) Unzipping DNA and forming mRNA
  - c) Transporting amino acids
  - d) Replicating DNA
29. **Which hormone plays a key role in regulating the menstrual cycle?**
- a) Insulin
  - b) Estrogen
  - c) Thyroxine
  - d) Adrenaline
30. **What is the term for an organism that has two different alleles for a particular gene?**
- a) Homozygous
  - b) Heterozygous
  - c) Diploid
  - d) Mutant
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