

Molecular Microbial Genetics MMG
Bio-2406 February 2008

Examination for Molecular Microbial Genetics No. 2406 from Lecture 1-12.
Write your answers on a separate sheet of paper, labelled with your name and Std.Reg. No.
Date: 25.02. 2008,

Name:
StdReg. No.:

1. What is an "auxotrophic" and "prototrophic" prokaryotic cell and how do they differ (5p)
2. List the chemical foundation of nucleic acids and explain the rules how they are interacting. (5p).
3. What is meant with the "Chargaff-Rule"? (5p)
4. Give three model structures of the DNA "Double-Helix"(5p).
5. What is meant with "semi-conservative" replication and how was it finally confirmed, by which method? (5p)
6. What is a "Gene", make a scheme und list its three major constituents. (10p).
7. What is a "mono- and polycistronic" gene sequence ? (5p)
8. What is meant with the "oriC" and where does it occur? (10p)
9. List the major sub-units of the "DNA-dependent RNA-polymerase" and define their functions. (10p)
10. What is a "promoter" (give an example, scheme!)? (10p)
11. Explain the role of the "aminoacyl-tRNA-synthetase" in translation. (5p)
12. Explain the meaning of the "F-and Hrf-factor" in bacterial genetics and how can it be used in "interrupted mating"?. (10p)
13. Give three examples by which DNA can be transferred from a donor cell to a recipient cell. (10p)
14. What is a "Clone" and on which basis is it made? (5p).
15. Find for the following DNA-strand 5'-ATTGCACTTGT-3' the correct complementary DNA-strand(s) from the list below. (5p) 3'-TAACGTGAACA-5'
 - a.) 3'-TACGATCATAT-5'
 - b.) 5'-ATATGATCGTA-3'
 - c.) 5'-ATGCTAGTCTC-3'
 - d.) 3'-TAACGTGAACA-5'
 - e.) 5'-TACGATCATAT-3'
 - f.) 3'-ATGTGCTGACTA-5'
 - g.) 3'-ACGCGAGTATA-5'.
16. Write the correct m-RNA sequence for the DNA-double-strand below . (10p)

5'-TTGTAGCTCAGCATGAATAGCAAGT-3' (coding strand!!)
3'-AACATCGAGTCGTAATTATCGTTCA-5' (template strand!!)