

UNIVERSITY OF OSLO

Faculty of Mathematics and Natural Sciences

Exam in: **MBV2010 Molecular Biology**

Day of exam: **August 16, 2007**

Exam hours: **9:00-12:00 (3 hours)**

This examination paper consists of **1** page.

Appendices: **None**

Permitted materials: **None**

Make sure that your copy of this examination paper is complete before answering.

Numbers in brackets indicate the maximum number of points for each question. The maximum number of points for the entire exam is 80 (85 with extra points).

1. Which of the following statements are true?
 - a) Bacterial RNA polymerases consist of 3 subunits.
 - b) Small nuclear RNAs (snRNAs) are involved in translation.
 - c) SR proteins play a role in mRNA splicing.
 - d) RNA ligases are involved in splicing of tRNA introns.
 - e) Histones are modified in their N-terminal regions.
 - f) Photolyases repair DNA damaged by alkylation.
 - g) Bacterial 16S ribosomal RNA is associated with the large ribosomal subunit.
 - h) microRNAs play a role in degradation of mRNAs.
 - i) DNA gyrase is a topoisomerase.
 - j) Ribozymes are proteins. (10)

2.
 - a) List all proteins involved in replication of bacterial genomes. (10)
 - b) Describe how the ends of chromosomes are maintained in the nucleus. (15)

3.
 - a) Explain the differences between processing of GU-AG introns and Group I introns in eukaryotes. (15)
(For 5 extra points: How does splicing of Group II introns differ from splicing of the above introns?) (5)
 - b) What is a cryptic splice site? (5)
 - c) What is meant by “exon skipping”? (5)

4.
 - a) What is an inducer, a repressor, and a co-repressor? (10)
 - b) Give an example for each type of factor. (10)