Rules for evaluation of the exam in TMA4295 Statistical inference August 2026

This document specifies how the solutions to the exam are evaluated. This document should be read together with the problem text and the solution sketch. The solutions are evaluated by assigning points for the answer in each item of the solution. The points for each item are added together and thereafter scaled so that the maximum possible score becomes 100 points. The number of points is thereafter converted to a letter grade according to the conversion rule specified at the end of this document.

One should note that in the front page of the exam problem set it is said that "All answers should be justified. In the evaluation it will be emphasised that it from the solution is easy to understand the reasoning leading to the results. In particular, it will be emphasised that the solution includes all natural intermediate calculations". In the evaluation of the solutions no credit is therefore given to answers without any form of justification, and the score is strongly reduced whenever a solution does not contain natural intermediate calculations.

In the following we specify rules used to assign points to each of the items in the problem text. For each item the maximum number of points possible is ten.

1) Four points are given for setting up the two equations defining the moment estimators in the given situation. Note that this includes finding $E[X^2]$. No points are given for setting up just one equation. Two more points are given for solving the two equations with respect to the two estimators. Finally, four points are given for rewriting the estimators as functions of $\overline{X}$ and S^2.

2) Five points for finding the correct expression for $\text{MSE}[\widehat{\theta}]$ and expressing that this should be minimmised with respect to k_n. Five points for doing the minimisation and writing up the conclusion.

3a) Five points for starting correctly by multiplying together prior and likelihood. Five more points for correctly deriving the correct solution.

3b) Five points for finding the Bayes estimator for the first loss function. For the second loss function, two points for setting up the integral for the expected loss and clearly expressing that the Bayes estimator is found by minimising this expression. Additional three point for also deriving the Bayes estimator for the second loss function. No points for just explaining the procedure for finding the Bayes estimator in general terms.

4a) Five points for showing that the probability mass function of $\mathbf{X}$ can be expressed as an exponential family with the specified values/functions. Three more points for identifying also the function $h(\mathbf{x})$. Two points for identifying a sufficient statistic for $\mathbf{X}$.

4b) Three points for putting up the correct likelihood function. Three points for finding also the three partial derivaties. Four points for solving correctly and finding the maximum likelihood estimators.

4c) Two points for defining the correct fraction for the correct test statistic, two points for finding an expression for the numerator and two points for finding an expression for the denominator. Two points for simplifying the fraction, and two points for specifying the rejection criterion.

4d) To get points one both needs to specify or derive an estimator and argue why it is UMVUE.

The aggregated and scaled number of points is converted to a letter grade according to the following table.

Points	Letter grade
$(88, 100]$	A
$(76, 88]$	B
$(64, 76]$	C
$(52, 64]$	D
$(40, 52]$	E
$[0, 40]$	F