Exercise 01 (08 marks):

Fill in the blanks with words from list 1.

A genetic ................is compared with a gradient-based algorithm in the context of several ................ shape optimization problems. The ................ include single point and multipoint ................ problems, as well as the ................ of a Pareto front. The results demonstrate that both algorithms ............... reliably to the same optimum. ................ on the nature of the problem, the number of design variables, and the .............. of convergence, the genetic algorithm requires from 5 to 200 times as many function evaluations as the gradient based algorithm.

List 1:
degree - aerodynamic - converge - optimization - computation - Depending - examples - algorithm.

Exercise 02 (07 marks):

Give the equations of the following expressions.

i. \( a \) times \( b \) minus \( a \) times \( c \) is equivalent to \( a \) into \( b \) minus \( c \).

ii. Integral from \( x \) sub zero to \( x \) of \( f \) of \( x \) equals plus or minus three.

iii. \( a \) prime over \( b \) prime equals \( c \) cubed.

iv. Reciprocal of \( x \) is equal to \( ten \).

..........................
Write how you should read the following equations.

i. \( \sqrt{y} = 16 \)

ii. \( \sqrt[3]{x} = 12 \)

iii. \( \lim_{n \to \infty} x = a \)

Exercise 03 (05 marks):
Choose the right translation of the following technical expressions:

1. Allongement =
   A. Elangation
   B. Elongation

2. Appui simple =
   A. Simple support
   B. Neutral support

3. Dilatation thermique =
   A. Thermal dilatation
   B. Thermal expansion

4. Jauge de déformation =
   A. Stress gage
   B. Strain gage

5. Réseau électrique =
   A. Electronic network
   B. Electric network

6. Réactions chimiques =
   A. Chemic reactions
   B. Chemical reactions

7. Masse atomique =
   A. Atomic weight
   B. Atomic Mass

8. Redressement =
   A. Rectification
   B. Rectifier

9. Temperature ambiante =
   A. Ambiant temperature
   B. Room temperature

10. Alliages légers =
    A. Heavy alloys
    B. Light alloys

GOOD LUCK