

Books, watches, notes or cell phones are **not** allowed. The **only** calculators allowed are the Sharp EL-531\*\*\*. You **must** show all your work, the correct answer is worth 1 mark the remaining marks are given for the work.

**Question 1.** (1 mark each) Differentiate the following functions:

a.

$$f(x) = \frac{1}{x^{3/7}}$$

b.

$$f(x) = \operatorname{arccsc} x$$

c.

$$f(x) = \cot x$$

d.

$$f(x) = \ln x$$

e.

$$f(x) = \sec x$$

f.

$$f(x) = \operatorname{arcsec} x$$

**Question 2.** (2 marks) Differentiate the following functions (*do not simplify*):

$$f(x) = (x) \csc (\arctan 3x)$$

**Question 3.** (2 marks) Differentiate the following functions (*do not simplify*):

$$f(x) = \frac{e^{2x}}{\cos 3x}$$