

1. (a) State two (2) advantages of a Thermocouple thermometer

(2 Marks)

(b) The e.m.f. of a thermoelectric is given by  $E = \alpha(\Delta t) + \beta(\Delta t)^2$ , where

$\Delta t = t - 273.2$ ,  $t$  is being the thermodynamic temperature of the hot junction. The constant  $\alpha$  and  $\beta$  are related by the equation  $\beta = -2.5 \times 10^{-4}\alpha$ . If the temperature of a body determined with the thermoelectric is 523.2 K, calculate the equivalent temperature on the Celsius scale. (3 Marks)

2. (a) Define *Capillarity*

(1 Mark)

(b) Show, for fluid rising up in capillary pipe, that its height,  $h$  of the fluid column inside the pipe is given by

$$h = \frac{2\gamma \cos\theta}{r\rho g}$$

where all the symbols have their usual meaning.

(4 Marks)