Experiment

ISPhO

A1-1

English (Official)

Fiber Bragg grating

Part A. FBG fabrication technology (5.0 points)

A.1 (0.2pt)

$\Lambda =$

A.2 (0.4pt)

$v_0 =$

A.3 (0.2pt)

$\lambda_B =$

A.4 (0.2pt)

$n_c =$

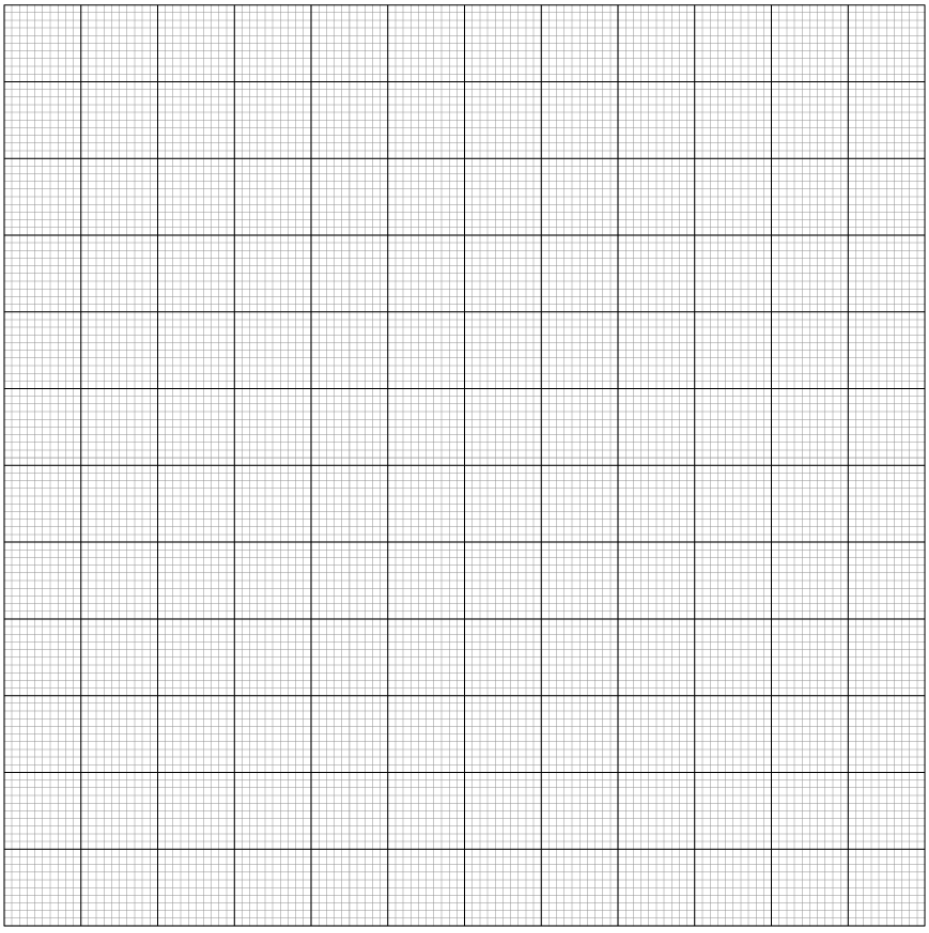
A.5 (0.2pt)

$v_{1550} =$

A.6 (1.8pt)

ΔY (μm)							
T_{min} (dB)							

ΔY (μm)							
T_{min} (dB)							



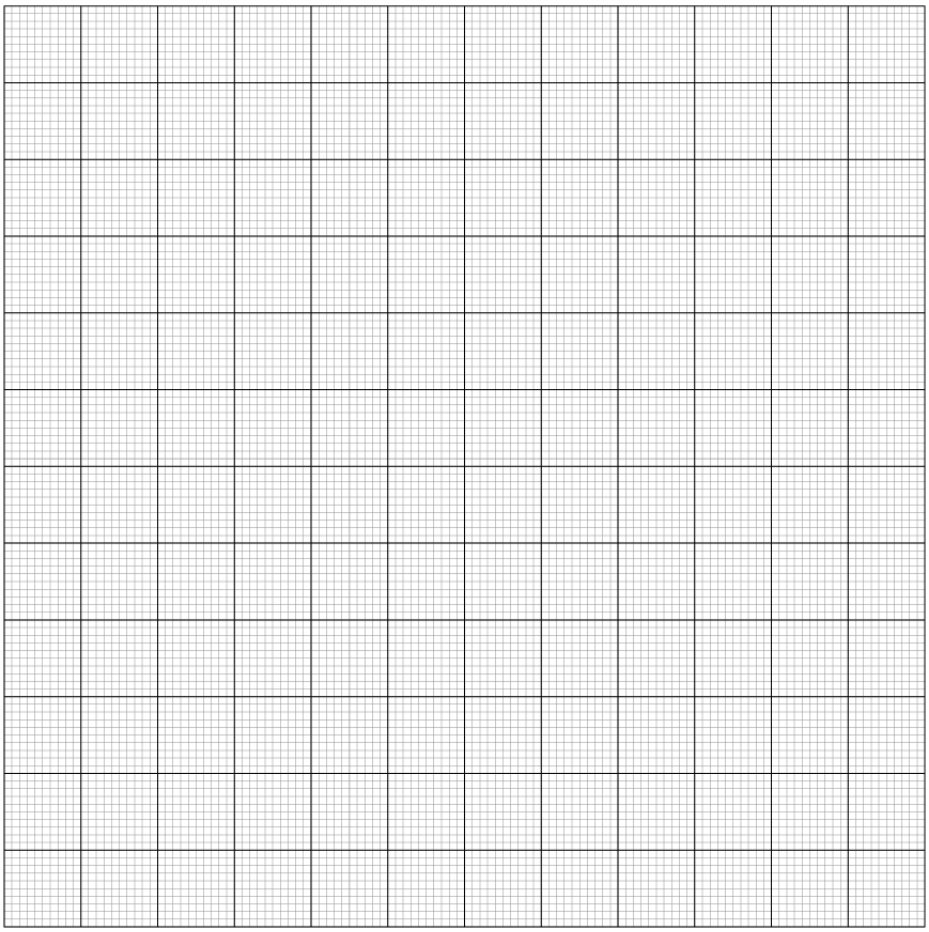
A.7 (0.3pt)

$\Delta Y_0 =$

A.8 (1.7pt)

L (mm)						
T_{min} (dB)						

L (mm)						
T_{min} (dB)						



$k =$

Part B. Coupled mode theory (2.9 points)

B.1 (0.5pt)

B.2 (1.4pt)

$T =$

B.3 (1.0pt)

$\varkappa_0 =$

Part C. Calibration of an FBG temperature sensor (2.9 points)

C.1 (0.4pt)

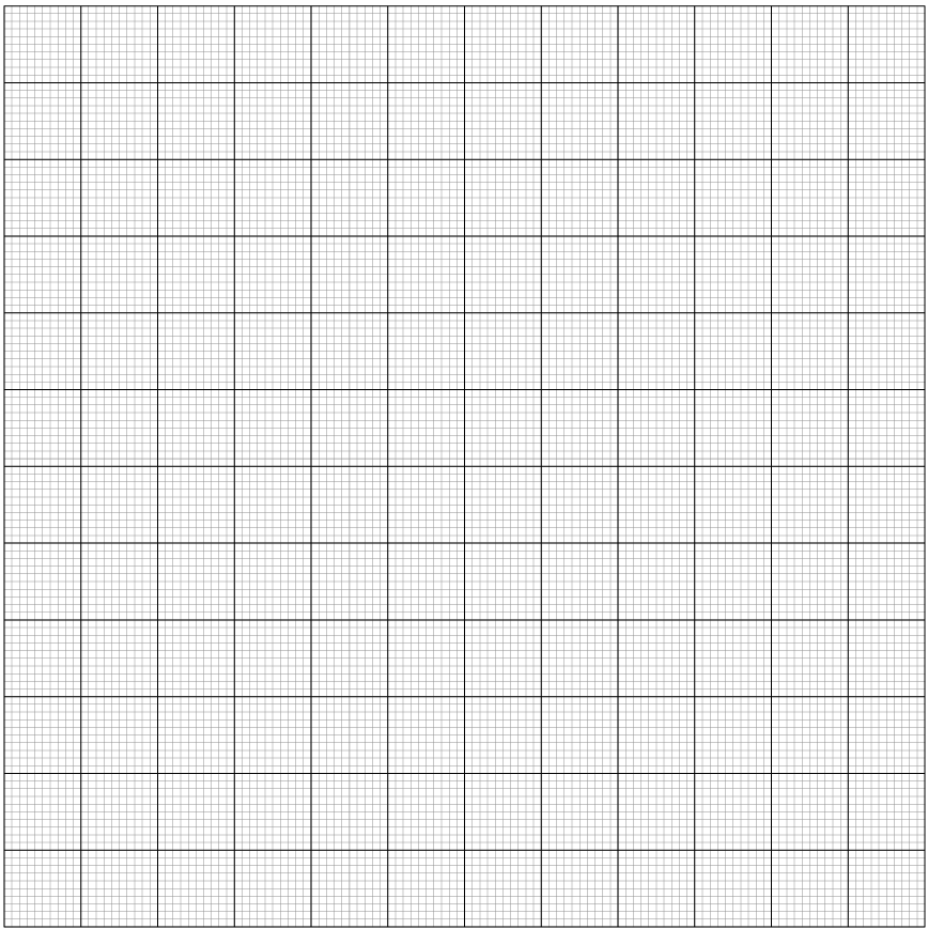
$A =$

C.2 (1.2pt)

t (°C)						
λ_B (nm)						

t (°C)						
λ_B (nm)						

C.3 (0.8pt)



$A =$

C.4 (0.5pt)

Part D. Using the FBG temperature sensor (2.4 points)

D.1 (1.6pt)

τ (min)								
λ_B (nm)								
t (°C)								

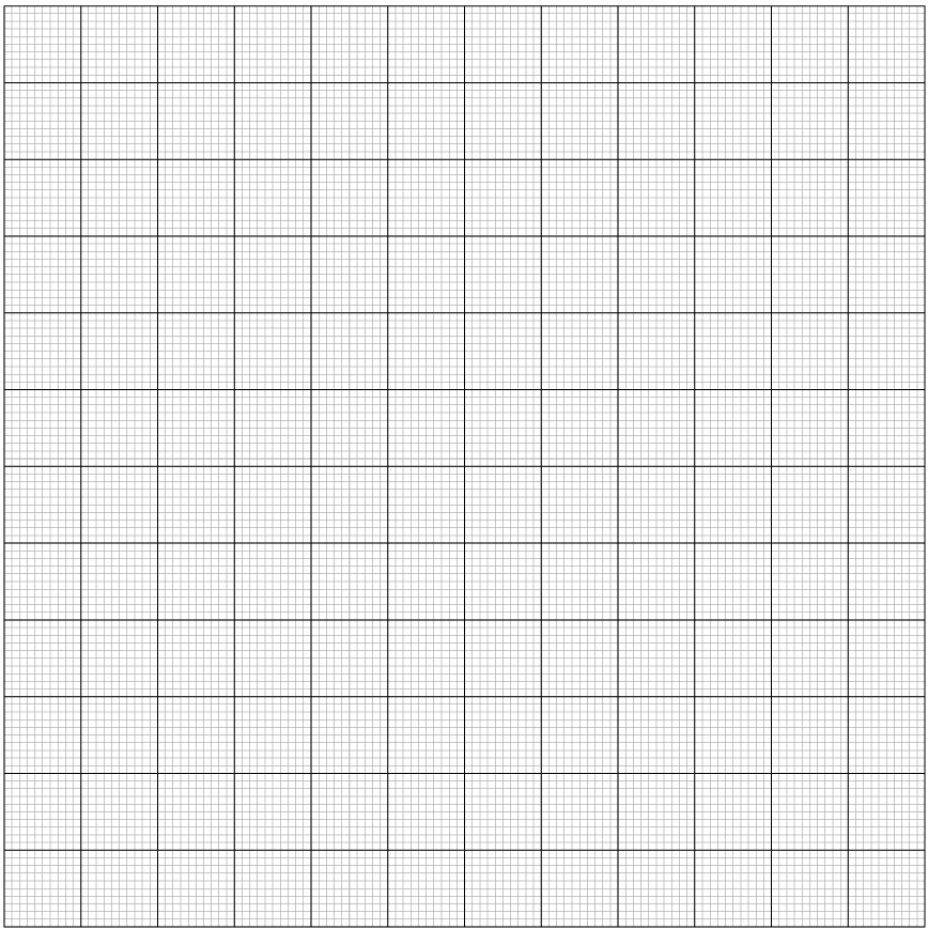
τ (min)								
λ_B (nm)								
t (°C)								

τ (min)								
λ_B (nm)								
t (°C)								

τ (min)								
λ_B (nm)								
t (°C)								

τ (min)								
λ_B (nm)								
t (°C)								

D.2 (0.8pt)



$t_0 =$

Part E. FBG dynamometer (3.9 points)

E.1 (0.5pt)

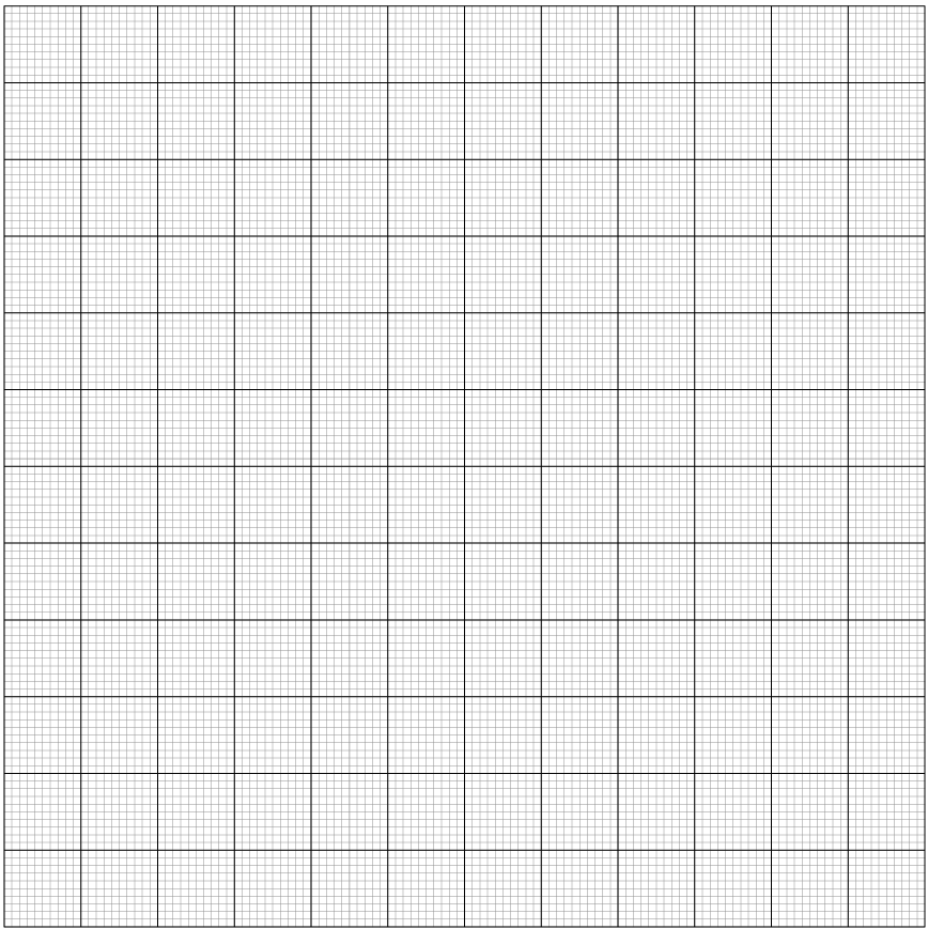
$B =$

E.2 (1.0pt)

F (mN)						
λ_B (nm)						

F (mN)						
λ_B (nm)						

E.3 (0.7pt)

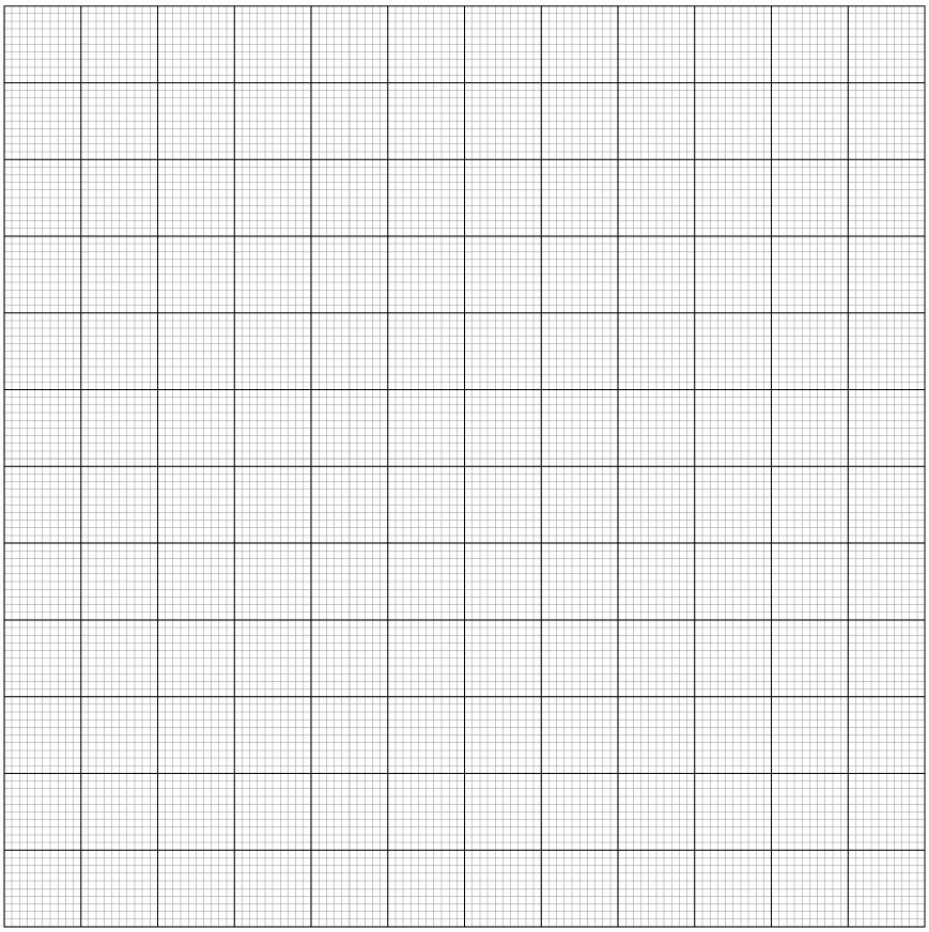


$B =$

E.4 (1.7pt)

Δx (mm)						
λ_B (nm)						

Δx (mm)						
λ_B (nm)						



$k =$

Part F. Birefringence in FBG (2.9 points)

F.1 (2.0pt)

$\theta_0 =$

F.2 (0.9pt)

$\varkappa_{\parallel} =$ $\varkappa_{\perp} =$

$\lambda_{B,\parallel} =$ $\lambda_{B,\perp} =$