



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JANUARY 2011 SESSION

SUBJECT CODE : FMB 20102
SUBJECT TITLE : STRENGTH OF MATERIALS
LEVEL : BACHELOR
TIME / DURATION : 12.30pm – 2.30pm
(2 HOURS)
DATE : 10 MAY 2011

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper **CAREFULLY**.
 2. This question paper is printed on both sides of the paper.
 3. Please write your answers on the answer booklet provided.
 4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
 5. This question paper consists of **TWO (2)** sections. Section A and B. Answer all questions in Section A. For Section B, Answer **THREE (3)** questions only.
 6. Answer all questions in English.
 7. *Formulae are appended.*
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• THERE ARE 3 PAGES OF QUESTIONS AND 1 PAGE OF APPENDIX, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

A 100-mm long rod has a diameter of 15 mm. If an axial tensile load of 100 kN is applied determine its change in length. Take $E = 200 \text{ GN/m}^2$.

(10 marks)

Question 2

A bar has a length of 200 mm and cross sectional area of 7000 mm^2 . Determine the modulus of elasticity of the material if it is subjected to an axial load of 50 kN and stretches 0.075 mm.

(10 marks)

Question 3

A 200-mm long rod has a diameter of 20 mm. If an axial load of 15 kN is applied to it, determine its change in diameter. Take Young's modulus, $E = 70 \text{ GPa}$ and Poisson's ratio, $\nu = 0.35$.

(10 marks)

Question 4

A solid cylinder bar is made up of two lengths. The first is 200 mm long with diameter of 40 mm; the second is 150 mm long with diameter of 30 mm. Calculate the total compression of this bar under a load of 100 kN. $E = 180 \text{ GN/m}^2$.

(10 marks)

