

 <b>Universiti Malaysia PAHANG</b> <small>Engineering • Technology • Creativity</small>	Name	:	_____
	ID No.	:	_____
	Group	:	_____
	Section	:	_____
	Submission date	:	_____
Assignment No.	:	3	
Duration	:	1 day	
Total Marks	:	100	

### Answer the following questions

- Jominy test is a standard procedure that widely utilized to determine hardenability of steels. Draw the thypical hardenability curve of medium carbon steel and justify your answer. **(15 Marks)**
- Explain the following terms in ferrous and non-ferrous alloy: **(15 Marks)**
  - AISI 1040
  - Refractory metals
  - Austenitic stainless steel
- Large glass doors and eyeglass lenses require high strength glass for their application. Proposed **one (1)** mechanism to improve the strength of glass and explain its process. **(15 Marks)**
- A continuous and aligned fiber-reinforced composite is to be produced consisting of 40 vol% silicon carbide fibers and 60 vol% of a polycarbonate matrix. The mechanical characteristic of these two materials are shown in **Table Q4**.
  - (i) Calculate the modulus of elasticity of the composite, **(15 Marks)**
  - (ii) If the cross sectional area is 500 mm<sup>2</sup> and a stress of 50,000 MPa is applied in this longitudinal direction, calculate the actual load carried by both fiber and matrix phase. **(40 Marks)**

	Modulus of Elasticity [GPa]	Tensile Strength [MPa]
Silicon carbide	600	5000
Epoxy Resin	3	70