



Branch: Materials Science
Subject: Composite Materials
Examiner: Dr. Awham M. H.

Final Exam
2015 -2016

Class : 4th class
Time : 3 hour
Date : 4/9/2016

Note: answer four questions only. (25 marks for each question)

Q₁: (a) Define the following:

- 1- Particulate Composites,
- 2- Diffusion bonding method,
- 3- R-glass fibers,
- 4- Type A of hybrids,
- 5- lamination process

(b) What are the drawbacks of polyester as matrix material?

Q₂: Give the reasons of the following:

- 1- MMCs have several advantages over PMCs.
- 2- Thermoset polymers are insoluble and infusible after curing.
- 3- Using of fiber reinforcement with thin diameter.
- 4- Reinforcing the ceramics with fibers such as carbon increases their fracture toughness.
- 5- PMCs are the most common composites.

Q₃: (a) What are the applications of carbon-carbon matrix composites?

(b) Calculate the tensile modulus of a composite consisting of 30% of volume of glass fibers having tensile modulus of (85kN/mm²) in a polyester matrix of tensile modulus (5kN/mm²)?

Q₄: (a) Sketch the classification of fibers reinforced composites?

(b) Describe the sandwich laminate. What are the failure modes of sandwich laminate?

Q₅: (a) Complete the following:

- 1-The advantages of aramid fibers are
- 2-The hot pressing method is defined a.....
- 3- The advantages of Phenolics are
- 4- Prepregs are
- 5- The single -fiber pull-out test is defined

(b) Distinguish between the homogenous and isotropic materials?