Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

VII SEMESTER B.TECH. (MECHANICAL ENGINEERING)

END SEMESTER MAKE UP EXAMINATIONS DEC 2016/JAN 2017

SUBJECT: COMPOSITE MATERIALS (MME 471)

REVISED CREDIT SYSTEM
(02/01/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** questions.
- Missing data may be suitably assumed.

1A. Explain with neat sketch Chemical vapour infiltration technique used in fabrication of CMCs. **(03)**

1B. List down any six advantages and disadvantages of adhesive joints in composite materials. **(03)**

1C. Classify and briefly explain the composite materials based on reinforcements. **(04)**

2A. Explain with neat sketch the manufacturing process of Thick moulding compound in PMC. **(03)**

2B. Explain the testing procedure and conditions followed in ASTM D7264 for PMC. **(03)**

2C. List down three advantages and disadvantages of Polyester, Vinyl ester and Epoxy resin in each case. **(04)**

3A. Briefly explain any four defects found in composite materials. Explain thermography technique used in detecting defects in composites. **(03)**

3B. Explain the Diffusion bonding process of MMC manufacturing. **(03)**

3C. With a neat sketch explain the working principle and steps involved in Vacuum Bagging process used in manufacture of PMC. **(04)**

4A. Explain the standard testing procedure and conditions followed for short beam testing of PMC. **(03)**

4B. Explain RTM used in fabrication of PMC. **(03)**

4C. State the rule of mixture. Write the assumptions made and hence derive an expression for modulus of elasticity for composites under Iso-stress condition. **(04)**

5A. What are the ten factors that influencing the tensile testing of PMCs specimen? **(03)**

5B. Differentiate between Alloys and Composite Materials with examples. **(03)**

5C. With the help of a neat sketch explain the manufacturing of PAN based carbon fibers? **(04)**

6A. Explain with a neat sketch, the manufacturing process of Aramid fibers. **(03)**

6B. Explain with sketch the fabrication of CMC by sol-gel process. Explain the steps involved in it. **(03)**

6C. Write a short note on the application of composites in aerospace, Marine and Electrical industry. **(04)**

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