School of Engineering and Applied Science (SEAS), Ahmedabad University

Name: _____ Roll no.: _____

M. Tech. (Composites): Term II
Subject Name: FEA of Composite Structures (CMP621).
End Term Exam (Winter Sem.:2026); Marks: 50, Wt.:25 %
March 5, 2026, Thursday, 11.00 AM – 1.00 PM

Instructions:

1 All questions are compulsory.
2 All acronyms and symbols carry their usual meaning.
3 Assume suitable data wherever necessary and specify it clearly in your answers.
4 Use of scientific / programmable calculators allowed
5 Use of laptop and study material is permitted except use of internet related services

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Q-1. Create a laminate of dimensions 250 mm x 250 mm x 1 mm using ply combinations [0/90/45/90/0] fiber orientations with each ply thickness 0.1 mm made of graphite-epoxy material with properties given below. Create simply supported boundary conditions for all edges. Analyse this model with uniformly distributed force o 1 N/m2 acting downwards on the top surface. Plot together with the model boundary conditions, deformation of the panel and various stresses in the panel. (25)

$E_1 = 155$ GPa
$E_2 = 12.10$ GPa
$\nu_{12} = 0.248$
$G_{12} = 4.4$ GPa

Q-2. Explain various FE model checks used to verify FE model before carrying out actual stress analysis. (15)

Q-3. Explain FE Analysis steps carried out in any stress analysis using FEA software. (10)