



Illinois Society of Professional Engineers - University of Illinois
College of Engineering
Professional Engineer On-Line Seminar Series



INSTRUCTIONS:

1. View the on-line seminar.
2. Complete the quiz below.
3. Complete the "Engineer Information" section.
4. Make a copy for your records.
5. Mail the quiz along with your \$20 payment (credit card information or check payable ISPE) to:
ISPE, 100 East Washington Street, Springfield, IL 62701.

If you score an 80% or better on the quiz, you will receive your certificate within 4 weeks. If you fail to earn an 80% score, the quiz will be returned to you and you will have the opportunity to retake it.

Each seminar/quiz is worth 1 Professional Development Hour.

QUIZ: 04-14
TOPIC: Computational Modeling of Fiber-Reinforced and Particulate Composite Materials
PRESENTER: Sonia Mogilevskaya

1. The structure of the fiber-reinforced composites consists of fibers and matrix but no interphases.
(circle) TRUE FALSE
2. The fibers in the fiber-reinforced composites are unidirectional in the shape of cylinders.
(circle) TRUE FALSE
3. In the presented Direct Boundary Integral Equation method if the desired estimated error is not met then the number of terms in the Fourier series is decreased.
(circle) TRUE FALSE
4. If the circular inclusion is close to the boundary, Melan's fundamental solution can be used.
(circle) TRUE FALSE
5. For finite domain with convex boundaries a fictitious elliptical domain is embedded.
(circle) TRUE FALSE
6. The transient heat conduction problem can be solved using analytical Laplace transform in time.
(circle) TRUE FALSE
7. The interphases are present because
 - a) Coating of the fibers
 - b) Damage zone around fibers
 - c) Chemical reaction or diffusion that arises during manufacturing processes.
 - d) All of the above.
8. The method used in this approach is
 - a) Boundary element method
 - b) Finite element method
 - c) Direct boundary integral equation
 - d) Singular integral method

QUIZ 04-14 CONTINUED

- 9. In the Direct BIE approach,
 - a) Fourier series approximation is used for 2D planar problems and Spherical harmonics is used for 3D problems
 - b) Fourier series approximation is used for 3D problems and Spherical harmonics is used for 2D problems
 - c) Standard polynomial approximation is used for 3D problems and Fourier series approximation is used for 2D problems
 - d) Standard polynomial approximation is used for 2D problems and Fourier series approximation is used for 3D problems

- 10. The presented approach can handle
 - a) both circular and square inclusions
 - b) circular, elliptical and square inclusions
 - c) only circular inclusions
 - d) any shape of inclusion.

ENGINEER INFORMATION

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