

Code No: R05322105

R05**Set No. 2**

III B.Tech II Semester Examinations, December 2010
FINITE ELEMENT AND MODELLING METHODS
Aeronautical Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Illustrate the concept by Hyperoscillatory interpolation function with a suitable example.
 (b) What is meant by Higher order elements? [12+4]
2. (a) Explain which type of mass matrix gives more accurate natural frequencies.
 (b) How is consistent mass matrix derived? A plate element has nodes at 1(0,0) 2(5,0) and 3(3,4) is of material with mass density 8 gms/cm³ and thickness 1 cm. Derive its lumped mass matrix. [4+12]
3. (a) Illustrate in detail about the generalized Co-ordinate approach.
 (b) Using generalized co-ordinate approach, find the shape functions for a 2 noded bar element. [8+8]
4. (a) Explain the symmetric boundary condition and derive the strain displacement relations for symmetric problems.
 (b) Discuss the applications of axi-symmetric problems. [8+8]
5. How to do the Finite Element modeling for structural elements. [16]
6. (a) Explain the two-point Gaussian quadrature method for the numerical integration with suitable example.
 (b) What are the approximations and errors associated in two point Gaussian quadrature formula? Explain. [8+8]
7. (a) What are different uses and applications ANSYS package? Explain with the simple examples.
 (b) What is the better package to be used for solving nonlinear static analysis? Explain. [8+8]
8. Describe the co-ordinate transformations for the sub parametric element with simple example. [16]

Code No: R05322105

R05**Set No. 4**

III B.Tech II Semester Examinations, December 2010
FINITE ELEMENT AND MODELLING METHODS
Aeronautical Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. How to do the Finite Element modeling for structural elements. [16]
2. (a) Illustrate in detail about the generalized Co-ordinate approach.
 (b) Using generalized co-ordinate approach, find the shape functions for a 2 noded bar element. [8+8]
3. (a) What are different uses and applications ANSYS package? Explain with the simple examples.
 (b) What is the better package to be used for solving nonlinear static analysis? Explain. [8+8]
4. (a) Explain the two-point Gaussian quadrature method for the numerical integration with suitable example.
 (b) What are the approximations and errors associated in two point Gaussian quadrature formula? Explain. [8+8]
5. (a) Explain the symmetric boundary condition and derive the strain displacement relations for symmetric problems.
 (b) Discuss the applications of axi-symmetric problems. [8+8]
6. (a) Explain which type of mass matrix gives more accurate natural frequencies.
 (b) How is consistent mass matrix derived? A plate element has nodes at 1(0,0) 2(5,0) and 3(3,4) is of material with mass density 8 gms/cm³ and thickness 1 cm. Derive its lumped mass matrix. [4+12]
7. Describe the co-ordinate transformations for the sub parametric element with simple example. [16]
8. (a) Illustrate the concept by Hyperoscillatory interpolation function with a suitable example.
 (b) What is meant by Higher order elements? [12+4]

Code No: R05322105

R05**Set No. 1**

III B.Tech II Semester Examinations, December 2010
FINITE ELEMENT AND MODELLING METHODS
Aeronautical Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. Describe the co-ordinate transformations for the sub parametric element with simple example. [16]
2. (a) Illustrate in detail about the generalized Co-ordinate approach.
 (b) Using generalized co-ordinate approach, find the shape functions for a 2 noded bar element. [8+8]
3. (a) Explain the two-point Gaussian quadrature method for the numerical integration with suitable example.
 (b) What are the approximations and errors associated in two point Gaussian quadrature formula? Explain. [8+8]
4. (a) What are different uses and applications ANSYS package? Explain with the simple examples.
 (b) What is the better package to be used for solving nonlinear static analysis? Explain. [8+8]
5. (a) Illustrate the concept by Hyperoscillatory interpolation function with a suitable example.
 (b) What is meant by Higher order elements? [12+4]
6. (a) Explain which type of mass matrix gives more accurate natural frequencies.
 (b) How is consistent mass matrix derived? A plate element has nodes at 1(0,0) 2(5,0) and 3(3,4) is of material with mass density 8 gms/cm³ and thickness 1 cm. Derive its lumped mass matrix. [4+12]
7. (a) Explain the symmetric boundary condition and derive the strain displacement relations for symmetric problems.
 (b) Discuss the applications of axi-symmetric problems. [8+8]
8. How to do the Finite Element modeling for structural elements. [16]

Code No: R05322105

R05**Set No. 3**

III B.Tech II Semester Examinations, December 2010
FINITE ELEMENT AND MODELLING METHODS
Aeronautical Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. How to do the Finite Element modeling for structural elements. [16]
2. (a) What are different uses and applications ANSYS package? Explain with the simple examples.
 (b) What is the better package to be used for solving nonlinear static analysis? Explain. [8+8]
3. (a) Illustrate the concept by Hyperoscillatory interpolation function with a suitable example.
 (b) What is meant by Higher order elements? [12+4]
4. (a) Illustrate in detail about the generalized Co-ordinate approach.
 (b) Using generalized co-ordinate approach, find the shape functions for a 2 noded bar element. [8+8]
5. (a) Explain the symmetric boundary condition and derive the strain displacement relations for symmetric problems.
 (b) Discuss the applications of axi-symmetric problems. [8+8]
6. (a) Explain which type of mass matrix gives more accurate natural frequencies.
 (b) How is consistent mass matrix derived? A plate element has nodes at 1(0,0) 2(5,0) and 3(3,4) is of material with mass density 8 gms/cm³ and thickness 1 cm. Derive its lumped mass matrix. [4+12]
7. (a) Explain the two-point Gaussian quadrature method for the numerical integration with suitable example.
 (b) What are the approximations and errors associated in two point Gaussian quadrature formula? Explain. [8+8]
8. Describe the co-ordinate transformations for the sub parametric element with simple example. [16]
