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# Department of Mechanical Engineering Innovative Teaching Methods

Activity Title	Quiz	
Faculty Name/Department	Mr. Mohan S R / Mech	
Mapped Course Name & Code	ME8692 Finite Element Analysis	
Date	17-03-2023	
Benefitted Students (Year / Sem / Dept)	III / VI / Mech	
Topic	Two-Dimensional Problem Modelling	
Description	I have tried to make the questions relevant toward the evaluation of the engineer who has a background in finite element analysis. Saying that, knowing the answers to this quiz doesn't imply that one is capable of building accurate simulations, merely that one is heading in the right direction and has a good sense of humor.  (Rule: No passing Questions)	
Course Outcomes (CO)	CO3: Apply finite element formulations to solve two-dimensional scalar and torsion Problems	
Performance Indicator (PI)	1.3.1	
Mail ID (for review)	mech.mohan@msajce-edu.in	
Activity Photos		



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## **Topics/ Questions:**

1.	Each triangle formed by three nodes and three sides is called a
	a) Node
	b) Force matrix
	c) Displacement vector
	d) Element
2.	The finite element method is used to solve the problem
	a) Uniformly
	b) Vigorously
	c) Approximately
	d) Identically
3.	In two dimensional modeling each node has degrees of freedom
	a) One
	b) Infinity
	c) Finite
	d) Two
4.	In two dimensional analysis, stresses and strains are related as
	a) σ=Dε
	b) σ=ε
	c) Load values
	d) ε=Dσ
5.	In two dimensional modeling, elemental volume is given by
	a) dV=tdA
	b) dV=dA
	c) f=[fx,fy]T
	d) Trussky program
6.	In deformation of the body, the symmetry of and symmetry of can be used
	effectively.
	a) Stress and strain
	b) Nodes and displacement
	c) Geometry and strain
	d) Geometry and loading
7.	In two dimensional problems x-, y- co-ordinates are mapped onto
	a) x-, y- co-ordinates
	b) x-, $\xi$ – co-ordinates
	c) η-, y- co-ordinates
	d) ξ-η-Co-ordinates
8.	The shape functions are physically represented by
	a) Triangular co-ordinates
	b) ξ-,η-Co-ordinates
	c) Area co-ordinates
	d) Surface co-ordinates

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#### **MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING**

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9.	$A_1$ is the first area and $N_1$ is its shape function then shape function $N_1 = $			
	a) A1/A			
	b) A-A1			
	c) A1+A			
	d) A1			
10.	For plane stress or plane strain, the element stiffness matrix can be obtained by taking			
	a) Shape functions, N			
b) Material property matrix, D				
	c) Iso parametric representation, u			
	d) Degrees of freedom, DoF			
11.	11. In the equ <mark>ation KQ=F, K is called as</mark>			
	a) Stiffness matrix			
	b) Modified stiffness matrix			
	c) Singular stiffness matrix			
	d) Uniform stiffness matrix			
12.	If the structure is divided into discrete areas or volumes then it is called an			
	a) Structure			
	b) Element			
	c) Matrix			
	d) Boundaries			
13.	In finite element modeling every element connects to			
	a) 4 nodes			
	b) 3 nodes			
	c) 2 nodes			
	d) Infinite no of nodes			
14.	Which relations are used in one dimensional finite element modeling?			
	a) Stress-strain relation			
	b) Strain-displacement relation			
	c) Total potential energy			
	d) Total potential energy; Stress-strain relation; Strain-displacement relation.			



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#### Marks:

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#### **Outcomes:**



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Finite Element Analysis allows you to solve any engineering problem. This means you can verify a structure without any prototypes. So, this benefits you to understand the details of 2 dimensional elements / structure for the theoretical or practical solutions. And this improves the student's interest on the Internal Assessment Test.

