APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code : MD0819032-I **(Pages: 2)** **Name: .....**

Reg. No:.....

SECOND SEMESTER M.TECH. DEGREE EXAMINATION APRIL 2019

Branch: Mechanical Engineering **Specialization: Machine Design**

08ME6032-ADVANCED FINITE ELEMENT ANALYSIS

Time:3 hours **Max. marks: 60**

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

(Add any other instruction specific to course here like the use of IS codes/design tables etc.)

Q.no.	Module 1	Marks
1.a	What is meant by membrane stresses and flexural stresses?	3
	Answer b or c	
b	Analyse the C^0& C^1continuity elements with the concept.	6
c	Evaluate the deformation and stress subjected to a plate using thin plate theory.	6

Q.no.	Module 2	Marks
2.a	Differentiate elasto plasticity, Visco elasticity and Visco plasticity.	3
	Answer b or c	
b	Explain modified Newton-Raphson method for solving non linear problems.	6
c	Formulate the theory of plasticity using Von Mises.	6

Q.no.	Module 3	Marks
3.a	Compare Houbolt and Newmark method.	3
	Answer b or c	

b	Develop the computational scheme for Wilson method using dynamic analysis.	**6**
c	Discuss in detail about the direct integration methods.	**6**

Q.no.	**Module 4**	**Marks**
4.a	Differentiate Newtronion and non Newtronion fluid.	**3**
	Answer b or c	
b	Derive the Euler's equations of motion.	**6**
c	Analyse the governing equations in fluid flow and explain in detail about the law of conservation of mass.	**6**

Q.no.	**Module 5**	**Marks**
5.a	Identify and explain the basic modes of heat transfer.	**4**
	Answer b or c	
b	Derive the Navier Stocks equation.	**8**
c	Identify and explain the role of principle of virtual temperatures expression in heat transfer problems.	**8**

Q.no.	**Module 6**	**Marks**
6.a	Write a short note on mesh refinement.	**4**
	Answer b or c	
b	Describe about adaptive meshing with neat sketch.	**8**
c	Analyze the procedure followed during h-refinement.	**8**