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GIET UNIVERSITY, GUNUPUR – 765022

M. Tech (First Semester – Regular) Examinations, June – 2021

MPCMD 1010 – Advanced Stress Analysis

(Machine Design)

Time: 2 hrs

Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A

(2 x 10 = 20 Marks)

Q1. Answer **ALL** questions

- Distinguish between accuracy and sensitivity
- What is a proving ring?
- State stress optic law.
- What is null balancing wheat stone bridge circuit?
- Based on Principal of operation, classify the extension meters.
- What is photo-etching?
- How will you obtain dark and light field in a circular polariscope?
- What are the techniques used to determine the stresses at the inner layers of the body in 3D photo elasticity?
- What are the methods are available to obtain plane polarized light?
- What is the principle of stress coat analysis?

PART – B

(6 x 5 = 30 Marks)

Answer **ANY FIVE** questions

Marks

- Explain in detail with neat sketches the working of a mechanical and optical extensometers **(6)**
- Explain how the modulus of elasticity and Poisson's ratio of an engineering material are determined with the help of electrical resistance type gage. **(6)**
- Derive an expression for output voltage of Wheatstone bridge circuit for strain measurements **(6)**
- Explain any one compensation method in detail with its advantages over other methods. **(6)**
- Explain Fringe sharpening and Fringe multiplication techniques used in photoelasticity **(6)**
- Show that the intensity of light emerging from circular polariscope is a function of principal stress difference **(6)**
- State the application of failure theory to brittle coating, advantages and its limitations. **(6)**

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