Total No. of Questions : 8] [Total No. of Printed Pages : 2

Roll No.

MVSE-204

M.E./M.Tech. II Semester

Examination, May 2018

Experimental Stress Analysis

Time : Three Hours

Maximum Marks : 70

Note: i) Answer any five questions.
ii) All questions carry equal marks.

1. a) Explain mechanical strain gage in detail with sketch. What are the advantages of mechanical strain gages over other types of strain gages?
   b) Write short notes on:
      i) Calibration of strain gages
      ii) Locations of strain gages for various measurements.

2. Discuss in detail the followings:
   a) Multichannel Recording Systems
   b) Photo elastic strain gauges
   c) Constant current strain indicators

3. Distinguish between:
   a) Unbalanced and balanced bridge system.
   b) 2-D and 3-D techniques of static stress analysis by photo elastic strain gauges.

4. Describe Griffith Orowan - Irwin concept for the growth of stable and unstable cracks.

5. a) Explain method of calculation of stress intensity factor for double cantilever beam specimen by FEM.
   b) Enlist different materials and their respective characteristics, used for evaluation of crack propagation resistance.

6. a) Describe basic modes of deformation of crack surfaces and explain the expressions for the stress and displacement fields in the vicinity of crack tip.
   b) Find the critical stress for an infinite plate with the crack, loaded by two equal forces P at a distance of 2L between them.

7. Discuss the following:
   a) Constructional Crack Arrest
   b) System of Cracks
   c) Shell with a crack trajectory
   d) Cracks in linearly elastic bodies

8. Write short notes on any two of the following:
   i) Gage construction and Gage style
   ii) Moire Fringe Method
   iii) Integral variation principle in crack theory

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