

Code No: J1502/R16

M. Tech. II Semester Regular Examinations, May-2017

EXPERIMENTAL STRESS ANALYSIS

(Common to Machine Design (15), Mechanical Engg. Design (14) and Computer Aided Analysis & Design (16))

Time: 3 Hours

Max. Marks: 60

Answer any FIVE Questions
All Questions Carry Equal Marks

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| 1. a | Explain the principal of plane stress and plain strain also writes their any two examples? | 8 |
| b | Discuss the importance of compatibility conditions also write their mathematical relations? | 4 |
| 2. a | What are the various types of strain gauges used in strain measurement? Also explain electrical resistance strain gauge with its neat sketch? | 4 |
| b | Explain the importance of static recording and data logging system also write their any two practical applications? | 8 |
| 3. | Determine the magnitude and direction of light vector emerging from a series combination of linear polarizer and half wave plate oriented at an arbitrary angle θ with respect to the plane of vibration of the linear polarizer? | 12 |
| 4. a | Briefly describe the following terms | 8 |
| i. | Effects of stressed model in a plane and circularly polarized light | |
| ii. | 3-Dimensional photo elasticity materials. | |
| b | List out the applications of the frozen stress method and explain each one of them? | 4 |
| 5. | Difference between isoclinic fringe patterns and iso chromatic fring patterns also write their any two practical examples? | 12 |
| 6. a | Discuss the procedure to be used to install a coating stresses and strains? | 8 |
| b | List out failure theories for brittle coating and explain any two of them? | 4 |
| 7. a | Explain the principle of Geometrical approach to moiré fringe analysis? | 4 |
| b | What is meant by coating sensitivity also write its any two practical applications? | 8 |
| 8. | Write a short notes on the following terms | 12 |
| a. | Stress separation methods | |
| b. | Out of plane displacement measurement | |
| c. | Shear difference method | |
| d. | Analysis of brittle coating data | |
