KUMARAGURU
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Register Number:…….

M.E DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2013)

Third Semester

STRUCTURAL ENGINEERING

P13SETE02: Experimental Methods and Model Analysis

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

1. What are the basic characteristics of a strain gauge?
2. Mention the uses of pressure gauges.
3. What are the basic elements of a transducer?
4. What are the limitations of potentiometer circuit?
5. What are the functions of the fourth gauge in T-delta rosette?
6. Differentiate between additive and subtractive moirés patterns.
7. Define stress optic law.
8. What are the limitations of photo elastic coatings?
9. What are the various NDT Techniques used to detect the damages in the materials.
10. What are distorted models?

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

Q.No. 11 is Compulsory

11. What are the various types of mechanical strain gauges? Explain huggenberger tensometer in detail.

12. Discuss the efforts of lead wires and switches of the wheatstone bridge.

13. What are the two techniques used for moirés fringe analysis? Discuss the displacement approach in detail.

14. (i) A delta rosette yields the following strain indications: (8)

ε_a=-845μm/m, ε_b=1220μm/m and ε_c=710μm/m.

Calculate the maximum principal strain direction, the principal stresses and the maximum shear stress.

(ii) Explain how an automatic data acquisition system functions. (8)

15. Explain the principles of similitude with respect to structural model analysis.

16. Explain holography and discuss how images are formed by this method. What are the advantages and limitations of this method?

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