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Question Paper Code: 92063

M.E. DEGREE EXAMINATION, APRIL 2015.

Elective

Structural Engineering

01PSE501 - EXPERIMENTAL TECHNIQUES AND INSTRUMENTATION

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Define strain sensitivity of the strain gauge.
2. State stress optic law.
3. Write any two important characteristics of structural vibration.
4. What is meant by damping and way it is required?
5. Distinguish between orifice plate and flow nozzle.
6. What is the necessity of model analysis?
7. What is an ideal structure?
8. What is meant by distress in structure?
9. What is the advantage of brittle coating method?
10. What is non destructive evaluation?

PART - B (5 x 14 = 70 Marks)

11. (a) (i) How strain gauges are classified? What are the advantages of electrical resistance wire strain gauges over other strain gauges? (7)

(ii) Describe in detail the working of capacitance type strain gauge. (7)

Or

(b) (i) Describe the set up of a circular polariscope. (7)

(ii) Distinguish between Isoclinics and Isochromatics. (7)

12. (a) (i) Explain the working of any one type of seismograph. (7)

(ii) Explain Dilatometers, Tiltometers and Gravimeters. (7)

Or

(b) (i) Explain the working of vibration meters. (7)

(ii) How velocity is measured? Explain. (7)

13. (a) (i) Describe in detail the rotameter. (7)

(ii) Explain the working of the diaphragm type pressure transducers. (7)

Or

(b) (i) Explain the principle of dimensional homogeneity. (7)

(ii) Distinguish between the Direct and Indirect method of model analysis. (7)

14. (a) What are the different types of corrosion? Explain the different methods adopted to prevent/control the corrosion. (14)

Or

(b) Discuss the different types distress in building and describe the different types of tests to be conducted to assess the damages. (14)

15. (a) (i) Explain the methods of ultrasonic test. (7)

(ii) Explain how laser is used in structural testing. (7)

Or

(b) (i) How threshold coating stress is calibrated in brittle coating methods? (7)

(ii) Explain how the load test is conducted on an R.C.C beam of a structure. (7)

PART - C (1 x 10 = 10 Marks)

16. (a) Describe the half cell construction with neat sketch. (10)

Or

(b) Explain the various types of brittle coating. (10)
