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Reg. No. : .....

Name : .....

Sixth Semester B.Tech. Degree Examination, March 2015
(2008 Scheme)
08.666 : ELECTRONIC INSTRUMENTATION (T)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. Describe the principle of variable capacitance transducer.
2. How will you select a transducer ?
3. A $3\frac{1}{2}$ digit DVM can measure 19.99 V. Determine the resolution in volts.
4. A potentiometer is provided with 50 turns per mm. The gearing arrangement is such that the motion of the main shaft by one resolution crosses 4 resolutions. Determine the potentiometer's resolution.
5. Compare semiconductor and metallic strain gauges.
6. What is meant by a force-summing device ? Briefly discuss about the construction and other aspects of commonly used force-summing devices.
7. Describe, in brief, a variable resistance transducer used for measurement of small displacement.
8. Explain the principle of operation of SEM.
9. Explain how Kelvin bridge overcomes the limitations of the wheatstones bridge. Why do you call it a double bridge ?
10. Compare analog and digital CROs. **(10×4 = 40 Marks)**

P.T.O.

PART – B

Answer **any two** questions from **each** Module. **Each** question carries **10** marks.

Module – I

11. The response of a variable gap parallel plate capacitor transducer is nonlinear. Show, with analysis, how the response of such a device can be made linear by appropriate instrumentation.

12. a) Explain the working of capacitor microphone.

    b) An LVDT produces an RMS output voltage of 2V for a displacement of 1 micrometer. Compute its sensitivity.

13. a) Discuss the construction and operation of potentiometric transducer.

    b) In a variable reluctance type inductive transducer, the coil has an inductance of 5 mH. When the iron piece is 1.5 mm and it is moved towards an electromagnet by 0.025 mm, determine the coil inductance.

Module – II

14. What is a gauge factor ? Obtain an expression for the gauge factor of strain gauge.

15. What are the materials employed for piezoelectric transducers ? Describe the relationship between different piezoelectric coefficients.

16. Describe the principle and working of a piezoelectric accelerometer.

Module – III

17. With figure explain the working of TEM instrument. Compare TEM with SEM.

18. Define the term sensitivity as applied to a wheatstones bridge and derive an expression for this.

19. Give the block diagram of RF spectrum analyser and explain its working.

(6×10=60 Marks)