

[101]

SARDAR PATEL UNIVERSITY
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S. Y. B. Sc. Instrumentation (SEM-III)
US03CINS02
Instrumentation and LASERS

Date: 16 – 11 – 2013
 Day: Saturday

Time: 02:30 pm to 05:30 pm
 Marks: 70

Q.1 MULTIPLE CHOICE QUESTION: (Choose the correct answer) 10

- 1 RTD is a/an _____ transducer.

a) active	b) inductive
c) passive	d) capacitive
- 2 An active transducer is

a) voltmeter	b) pressure
c) Piezo electric sensors	d) capacitive
- 3 The metal mostly used in RTD is _____.

a) Copper	b) iron
c) platinum	d) silver
- 4 The thermistors have a _____ coefficient.

a) Pressure	b) Current
c) Negative temperature	d) Positive
- 5 The value of high resistance passive divider probes is

a) 1 K ohm	b) 10 K ohm
c) 1 M ohm	d) 10 M ohm
- 6 The typical attenuation factor are

a) 1X, 10X and 100X	b) 1X, 20X and 200X
c) 1X, 20X and 100X	d) 1X, 10X and 1000X
- 7 The equation of rise time is _____.

a) 2.2. RC	b) 4.2 RC
c) 3.2 RC	d) 5.2 RC
- 8 The lifetime of a typical excited state is about _____ second.

a) 10^{-6}	b) 10^{-4}
c) 10^{-8}	d) 10^{-2}
- 9 The decay time constant is sometimes called the probe _____ ratio.

a) L/C	b) L/C
c) L/R	d) R/L
- 10 The Gas exciting a laser commonly use as _____ pumping.

a) Laser	b) optical
c) chemical	d) physical

Conti...

Q.2 Short questions (attempt any 10)**20**

- 1 With example explain difference between primary and secondary transducer.
- 2 List different types of transducers.
- 3 Draw the figure of helical gauge and rosette gauge.
- 4 Explain the principal of RVDT.
- 5 State advantages of differential output.
- 6 What is thermocouple?
- 7 Define CMRR.
- 8 Define the features of high resistance passive divider probe.
- 9 Draw the block diagrams of different types of probe.
- 10 State advantages of gas laser.
- 11 What are the applications of ion lasers?
- 12 What is a laser oscillator?

Q.3

- a** Explain the operation of a resistive pressure transducer with appropriate diagram. **06**
- B** Write a note on resistance thermocouple. **04**

OR**Q.3**

- a** In brief explain bonded strain gauge and define gauge factor. **06**
- b** State advantages and disadvantages of electrical transducer. **04**

Q.4

- a** In brief write a note on pressure inductive transducers. **06**
- b** Write a note on Selsyn. **04**

OR**Q.4**

- a** With diagram explain construction of LVDT. **05**
- b** Write a note on RTD. **05**

Q.5

- a** Write a note on high resistance passive divider probe. **06**
- b** Discuss the active voltage probes. **04**

OR**Q.5**

- a** List various types of active and passive probes. State their features and their applications. **06**
- b** Explain in detail on effect of rise time. **04**

Q.6

- a** List various types of gas laser. Explain each in detail. **06**
- b** Discuss the population inversion. **04**

OR**Q.6**

- a** In brief explain simulated emission. **06**
- b** Write a note on ruby laser. **04**