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SARDAR PATEL UNIVERSITY

S.Y.B.Sc III-Semester Examination, (under CBCS)

USO3CINS22 (Transducers, Probes and LASERs)

Wednesday, 27th November 2019

02.00 P.M. – 05.00 P.M.

Marks: 70

Que 1 Multiple choice questions.

[10]

- (1) Which of the following transducer are mostly use to measure non-electrical quantities?
(a) Electrical (b) Mechanical (c) Acoustical (d) Optical
- (2) Which of the following gauge use in resistance pressure transducer?
(a) Bellow gauge (b) strain gauge (c) semiconductor gauge (d) Mechanical gauge
- (3) Resistive transducer are measure _____.
(a) displacement (b) volume (c) area (d) density
- (4) The differential transducer is _____ inductive transformer.
(a) active (b) step up (c) step down (d) passive
- (5) _____ metal is mostly used in RTD.
(a) Copper (b) Iron (c) Platinum (d) Silver
- (6) In capacitive loading, the equation of rise time is _____ RC.
(a) 2.2 (b) 2.3 (c) 2.4 (d) 2.5
- (7) Which of the following ratio for practically good Common mode rejection ratio?
(a) 1000 : 1 (b) 10000 : 1 (c) 100000 : 1 (d) 100 : 1
- (8) Which of the following is an example of optical pumping?
(a) Ruby laser (b) Helium-Neon laser (c) Semiconductor laser (d) Dye laser
- (9) Nd - YAG laser is a _____ level laser.
(a) two (b) three (c) four (d) five
- (10) The ratio of He to Ne in He-Ne laser is _____.
(a) 1:10 (b) 2:13 (c) 10:1 (d) 3:15

Que 2 Short answer types question (Any Ten)

[20]

- (1) Define: Transducer.
- (2) State any two advantages of an electrical transducer.
- (3) List different types of transducers.
- (4) Draw the block diagram of LVDT.
- (5) State the advantages of thermocouple.
- (6) State the advantages of differential output transducer.
- (7) Draw a block diagram of types of probes.
- (8) State the characteristics of Active voltage probe.

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- (9) Define: CMMR.
- (10) State the characteristics of LASER.
- (11) Draw a block diagram of common Dye laser.
- (12) Define: Electrical pumping.
- Que 3 (a) Explain in brief bonded resistance wire strain gauge and define gauge factor. [10]
- OR**
- Que 3 (a) Explain with a diagram the operation of a resistive pressure transducer. [06]
 (b) State the advantages of resistance thermometers. [04]
- Que 4 (a) Describe with the help of a diagram the construction of an LVDT. [06]
 (b) Write a short note on Pressuducer load cell. [04]
- OR**
- Que 4 (a) Write a note on Thermocouple in detailed. [06]
 (b) State the advantages and disadvantages of LVDT. [04]
- Que 5 (a) Write a note on effect of rise time in capacitive loading. [06]
 (b) Write a short note on an inductive loading. [04]
- OR**
- Que 5 (a) Write a note on high resistance passive divider voltage probe. [06]
 (b) Define: Effect on Bandwidth. [04]
- Que 6 (a) Write a note on Helium-Neon laser in detailed. [06]
 (b) Discuss Optical pumping. [04]
- OR**
- Que 6 (a) Discuss the Ruby laser with block diagram in brief. [06]
 (b) Define: Laser oscillator. [04]

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 (2)