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[10]

Sardar Patel University

S.Y.B.Sc Semester IV [CBCS]
US04EELE02: Instrumentation
18th April 2016, Monday
10:30 AM To 12:30 PM

Total Mark: 70

Q1 **Multiple Choice Question** **[10]**

1 LVDT windings are wound on _____.
a) steel sheet b) ferrite c) aluminum d) copper

2 The value of form factor is _____.
a) 1.21 b)1.01 c) 1.11 d) 11.1

3 Which of the following is not a self-generating type of transducer?
a) thermocouple b) photo voltaic cell
c) Bourdon tube of a pressure gauge d) LVDT

4 A transformer transforms
a) frequency b) voltage and current c) current d) voltage

5 Capacitive transducer are normally employed for _____ measurements.
a) static b) dynamic c) both static and dynamic d) transient

6 In an ideal transformer,
a) winding have no resistance b) core has no losses
c) core has infinity permeability d) all of the above.

7 The rms value of the induced emf in the whole of primary winding is
a) $4.44fN_2B_mA$ b) $4.44fN_1B_mA$
c) $4.44fNB_mA$ d) $4.44fN_{12}B_mA$

8 LVDT works on the principle of_____.
a) variable resistance b) variable self-induction
c) variable mutual induction d) variable capacitance.

9 The abbreviation SSR stands for
a) simple solid relay b) solid standard relay
c) solid system relay d) solid state relay

10 In 4 pin relay, which pins have a control circuit
a) pin 1 & 2 b) pin 1 & 3 c) pin 2 & 3 d) pin 2 & 4

Q2 **Answer the following questions in short.** **[20]**

1 What is voltage transformation ratio?
2 What is transducer?
3 A 25KVA, 1 ϕ transformer has 250 turns on the primary and 40 turns on the secondary winding. The primary is connected to 1500 volt, 50 Hz mains. Determine: 1) secondary emf 2) maximum flux in the core
4 What are SSR? Write its characteristics.
5 Write uses of LVDT.
6 Write Specification of transducer.
7 Write down the relay operation with circuit diagram.
8 What is NC & NO? Explain.
9 Define: Latching relay
10 Draw equivalent circuit of transformer.
11 List out the advantages of LVDT?
12 Draw the figure of step up and step down transformer.

P.T.O

Q3	A	Explain the working principle of transformer?	[05]
	B	Derive the emf equation of a transformer.	[05]

OR

Q3	A	A 25KVA, 1ø transformer has 500 turns on the primary and 50 turns on the Secondary winding. The primary is connected to 3000-volt, 50 Hz mains. Neglect leakage drops. 1) Primary and secondary currents on full load 2) secondary current	[05]
	B	The Maximum Flux density in the core of a 250/3000-volts, 50Hz single phase transformer is 1.2 wb/m^2 . If the e.m.f per turns is 8 volt, determine 1) Primary and secondary turns 2) area of the core	[05]
Q4	A	Write a note on working and applications of relays.	[05]
	B	Explain the working of LVDT with labeled diagram.	[05]

OR

Q4	A	Explain capacitive type transducer with diagram.	[05]
	B	Write a short note on Potentiometric resistance transducer.	[05]
Q5		Explain dynamic characteristic of transducer .	[10]

OR

Q5		Explain Static characteristic of transducer	[10]
Q6		Write application of transducer. Explain operation of Piezo-electric trans	[10]

OR

Q6	A	Explain displacement sensors.	[05]
	B	Write an application of SSRs. Describe control AC SSR and DC SSR with diagram.	[05]

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