

University of Mumbai

Program: Instrumentation Engineering

Curriculum Scheme: Rev 2016

Examination: SE Semester III

Course Code: ISC302 and Course Name: Transducer-1

Time: 2 hour

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
	(20 MCQ of total 40 Marks)
1.	degree of closeness with which given value may be repeatedly measure over a period of time called as
Option A:	accuracy
Option B:	repeatability
Option C:	sensitivity
Option D:	reproducibility
2.	the process of determination by measurement or comparison with a standard of correct value of each scale of measuring instrument is called as
Option A:	precision
Option B:	resolution
Option C:	Calibration
Option D:	fidelity
3.	lost motion or free play which is inherent in mechanical devices is called as
Option A:	dead zone
Option B:	Backlash
Option C:	drift
Option D:	static error
4.	loading effect in instrument is example of error in the reading
Option A:	Gross error
Option B:	Environmental error
Option C:	Instrumental Error
Option D:	Random error
5.	Psychrometer is an instrument used for the measurement of
Option A:	Humidity
Option B:	moisture
Option C:	position
Option D:	vibration
6.	Change in Resistance with change in displacement is an operating principle of
Option A:	digital encoder
Option B:	LVDT
Option C:	Proximity sensor
Option D:	Potentiometer
7.	Linear Variable Differentiable Transducer (LVDT) works on the principle of

Option A:	Variable Resistance
Option B:	Variable Self inductance
Option C:	Variable mutual inductance
Option D:	Variable Capacitance
8.	_____ the instrument for Angular displacement measurement
Option A:	RVDT
Option B:	LVDT
Option C:	Stepper motor
Option D:	DC motor
9.	Capacitive transducer works on the principle change in capacitance which may be cause by
Option A:	change in Overlapping area
Option B:	change in distance between the plates
Option C:	change in dielectric constant
Option D:	Change in plate material
10.	Transducer which uses air signal as a power source as well as signal source are pneumatic type. for displacement measurement example of such transducer is
Option A:	flapper nozzle system
Option B:	Proximity sensor
Option C:	Strain Gauge
Option D:	piezoelectric
11.	the primary transducer element in pressure thermometer is
Option A:	Bourdon Tube
Option B:	Capillary Tube
Option C:	Bulb
Option D:	d. Bulb together with Capillary Tube and Bourdon Tube
12.	Seebeck discovered a transducer that work on principle of thermo-electricity is
Option A:	thermometer
Option B:	thermistor
Option C:	thermocouple
Option D:	RTD
13.	which of the following temperature sensor has excellent linear characteristics
Option A:	radiation pyrometer
Option B:	thermocouple
Option C:	silicon based IC chip temperature sensor
Option D:	d. RTD
14.	Thermistors are
Option A:	I.C. chips whose voltage output is directly proportional to temperature
Option B:	semiconductors which generally have negative coefficient of resistance
Option C:	non contact type of temperature sensors
Option D:	thin film metallic sensor

15.	the instrument which measures the temperature of the source without direct contact is
Option A:	bimetallic cut out
Option B:	vapour pressure thermometer
Option C:	pyrometer
Option D:	thin film thermometer
16.	The accuracy of Bubbler System for liquid level measurement is improved if the rate of feed to the bubbler pipe is kept _____
Option A:	Constant
Option B:	Variable
Option C:	Increasing
Option D:	decreasing
17.	_____ type of level detectors use the principle of reflection of an acoustic wave
Option A:	radiation
Option B:	side glass
Option C:	float
Option D:	ultrasonic
18.	Area of the tank is known and when weight of the tank changes, the level can be determine using a transducer
Option A:	Load Cell
Option B:	capacitive type
Option C:	solar cell
Option D:	flapper nozzle
19.	the liquid column pressure does not give true value of liquid level above free surface. in such system level is measured by
Option A:	DP (Differential Pressure) Cell
Option B:	Air Purge system
Option C:	magnetic float operated pivoted level switch
Option D:	Ultrasonic system
20.	liquid Level can be measured using electrical methods such as _____
Option A:	resistive type
Option B:	capacitive type
Option C:	inductive type
Option D:	electromagnetic

Q2	Total 20 marks
A	Solve any Two 5 marks each
i.	What do you mean by calibration? What is the need of calibration?
ii.	Explain sensor characteristics: i) Accuracy ii) Linearity iii) Hysteresis
iii.	Write short note on selection criteria of transducers.
B	Solve any One 10 marks each
i.	Explain different types of errors in measurement with their remedies.

ii.	Explain construction and working of LVDT
Q3.	Total 20 marks
A	Solve any Two 5 marks each
i.	Discuss lead compensation in RTD
ii.	Explain working of optical type pyrometer.
iii.	Write short note on proximity sensor
B	Solve any One 10 marks each
i.	Explain liquid level measurement using float and LVDT with appropriate diagram.
ii.	Explain working of Hall Effect Transducer.

End of paper

80 marks distribution

Q.1 MCQ = 40 marks (Each MCQ carry 2 marks)

Q.2 Subjective type = 20 Marks

Q.3 subjective type = 20 Marks