

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)

Examinations Commencing from 15th June 2021

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2019

Examination: SE Semester: III

Course Code: ELC 305 and Course Name: Electronic Instruments and Measurements

Time: 2 hour

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks.
1.	The SI unit of magnetic flux is
Option A:	Weber
Option B:	Weber/m
Option C:	Tesla
Option D:	Tesla/m
2.	The following is NOT a static characteristic of measurement systems.
Option A:	Accuracy
Option B:	Fidelity
Option C:	Sensitivity
Option D:	Resolution
3.	The----- occur due to the fault study of the instrument reading, indicator retunes a little over the surface of the scale and Parallax.
Option A:	Systematic Error
Option B:	Random Error
Option C:	Instrument Error
Option D:	Observation Error
4.	Which bridge is used for measuring a medium resistance?
Option A:	Kelvin's bridge
Option B:	Wheat stone bridge
Option C:	Meggar
Option D:	Maxwell's bridge
5.	Which bridge is used to measure inductance with Q-factor more than 10?
Option A:	Wein bridge
Option B:	Kelvin bridge
Option C:	Schering bridge
Option D:	Hay's bridge
6.	Schering bridge is NOT suitable for the measurement of following.
Option A:	Unknown Inductance
Option B:	Unknown Capacitance
Option C:	Dielectric loss
Option D:	Power factor
7.	Which bridge is used for measurement of frequency?

Option A:	Maxwell bridge
Option B:	Schering bridge
Option C:	Hay's bridge
Option D:	Wein bridge
8.	What type of meter gives a precise reading on voltage, current or resistance where samples at the input feed it to a digital read-out?
Option A:	VOM
Option B:	VTVM
Option C:	DMM
Option D:	DTMF
9.	Which of the following is used to measure magnitude of different harmonics of waveform?
Option A:	Distortion analyzer
Option B:	Waveform analyzer
Option C:	Logic analyzer
Option D:	Transmission analyzer
10.	The distortion caused by a signal passing through a non-linear system in which harmonics are added to the fundamental signal is called as---
Option A:	Signal distortion
Option B:	Harmonics distortion
Option C:	wave distortion
Option D:	Pulse distortion
11.	The Lissajous patterns is used for the measurement of----
Option A:	Phase shift and frequency.
Option B:	Distortion and attenuation
Option C:	Distortion and frequency.
Option D:	Phase shift and attenuation
12.	Linear ramp technique in ramp type DVM is based on
Option A:	Resistance measurement
Option B:	Voltage measurement
Option C:	Time measurement
Option D:	Current measurement
13.	Lumped parameter delay line of a CRO consists of
Option A:	RC networks
Option B:	RL networks
Option C:	LC networks
Option D:	Resistive networks
14.	Relation $R_t = R_{ref} [1 + \alpha \Delta t]$ between temperature and resistance of a conductor is of

Option A:	Thermistor
Option B:	Thermocouple
Option C:	Thermowell
Option D:	Resistance temperature Detector
15.	Which of the following transducer has negative temperature coefficient?
Option A:	Thermistor
Option B:	Thermocouple
Option C:	Thermowell
Option D:	Resistance temperature Detector
16.	Electrical strain gauge works on the principle of
Option A:	variation of resistance
Option B:	variation of capacitance
Option C:	variation of inductance
Option D:	variation of area
17.	Which of the following instrument is NOT suitable for measurement of pressure?
Option A:	Bellows
Option B:	Venturi tube
Option C:	Pressure sensors
Option D:	Bourdon tube
18.	Which of following instruments is used to determine the flow in rivers, irrigation canals or out the flow of water from a reservoir through canals?
Option A:	Laser method
Option B:	ultrasonic transmitter-receiver
Option C:	Vibrating level sensor
Option D:	Thermography
19.	Which of the following adjustments is to do first in an instrument requiring calibration?
Option A:	Linearity
Option B:	Sensitivity
Option C:	Zero
Option D:	Hysteresis
20.	Which of the following device is used for calibration of a potentiometer?
Option A:	Energy meter
Option B:	Electrochemical cell
Option C:	Wattmeter
Option D:	voltmeter

Q2.	
(20 Marks)	
A	Solve any Two 5 marks each
i	Explain dynamic characteristics of Instruments in detail.
ii	Explain measuring principles of LCR Q-meter.
iii	Describe operating principle of heterodyne wave analyzer with a neat block diagram.
B	Solve any One 10 marks each

i	Explain the measurement of unknown resistance using Kelvin double bridge.
ii	Draw and Explain block diagram of CRO.
Q3. (20 Marks)	
A	Solve any Two 5 marks each
i.	Define transducer. List selection criteria of transducers.
ii.	Explain how Lissajous figures are used for measurement of phase shift using CRO.
iii.	Explain the working of Dead Weight Tester with labeled diagram.
B	Solve any One 10 marks each
i.	Compare the working principle, their ranges and applications of RTD, Thermistor and thermocouple.
ii.	Draw and explain construction and working of Linear Variable Differential Transducer.

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Q1:

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	B
Q3.	D
Q4	B
Q5	D
Q6	A
Q7	D
Q8.	C
Q9.	B
Q10.	B
Q11.	A
Q12.	C
Q13.	C
Q14.	D
Q15.	A
Q16.	A
Q17.	B
Q18.	B
Q19.	C
Q20.	B