Total number of printed pages: **(D)/3rd/DECE304**

2022

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

Q1.	a)	Fill in the blanks:	10
	i.	_____ are quite common for the measurement of physical quantities like length, mass and time.	
	ii.	_____ means the accuracy of the instrument is only at the particular point on its scale.	
	iii.	_____ Errors may be due to wrong construction, calibration of the measuring instruments.	
	iv.	_____ work by varying the position of a sliding contact across a uniform resistance.	
	v.	Zero galvanometer deflection or a null means that the _____ voltage, E, is equal to the voltage drop E1, across portion ac of the slide wire.	
	vi.	A PMMC meter places a coil of wire (i.e. a conductor) in between two _____ in order to create stationary _____ field.	
	vii.	According to Fleming's left hand rule the _____ of this force will be proportional to the amount of _____ through the wire.	
	viii.	For a moving coil instrument the _____ torque should be proportional to current.	
	ix.	In order to obtain the high emission of electrons in CRO the layer of _____ is indirectly heated at moderate temperature.	
	x.	_____ transducers are those which do not require any power source for their operation.	
	b)	Explain the working principle of Wheatstone bridge with its proper diagram.	10
Q2.	a)	Explain why Kelvin bridge is used instead of Wheatstone bridge?	4
	b)	Why bridges work on the concept of null point technique? Explain.	4
	c)	Define Q factor of the bridges. Also explain the working principle of the Hay's bridge in details.	2+10=12

Q3.	a)	Differentiate between DC and AC potentiometer.	5
	b)	Explain the basic working principle of the potentiometer.	5
	c)	Explain in details about DC Crompton potentiometer using its proper diagram.	10
Q4.	a)	Differentiate between PMMC meter and Moving Iron type Instrument.	5
	b)	Derive the torque equation for the PMMC instruments by mentioning the various condition of torque.	7
	c)	Explain the working construction of the electrodynamometer type wattmeter.	8
Q5.	a)	Differentiate between Analog voltmeter and Digital voltmeter.	5
	b)	Explain the working of Q Meter by considering the importance of impedance in the circuit. Also find its Q factor.	10+5=15
Q6.	a)	Explain the working of the Cathode ray oscilloscope by using its proper diagram.	10
	b)	Define Transducer. Also differentiate between Active and Passive transducer.	2+4=6
	c)	Explain different factors that influence the choice of the transducer.	4