PVP 20

Code: 20EC2501B

III B.Tech - I Semester – Regular Examinations - DECEMBER 2022

ELECTRONIC INSTRUMENTATION

(Common for ALL Branches)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Describe the different types of errors occur in measurements.	L2	CO1	7 M
	b)	Sketch the diagrams and explain the thermo couple type RF ammeter.	L3	CO2	7 M
OR					
2	a)	Explain about dynamic characteristics of measuring instrument.	L2	CO2	5 M
	b)	Use a series type ohmmeter circuit diagram. The basic movement requires the current of 1.0mA for full scale deflection and has an internal resistance of 50Ω. The internal battery has a voltage of 3V. The desired value of half scale resistance is 200Ω. Calculate i) The value of resistances R1 and R2. ii) The range of values of R2, if the battery voltage may vary from 2.7V to 3.1V. Use value of R1 as Calculated in (i).	L3	CO2	9 M

UNIT-II					
3	a)	Describe about fixed AF oscillator and variable AF oscillator.	L2	CO3	7 M
	b)	With the help of block diagram explain the functioning of a conventional standard signal generator.	L2	CO3	7 M
OR					
4	a)	Describe how can a sine and square wave be generated using signal generator?	L2	CO3	7 M
	b)	Explain how Basic wave analyzer works with examples.	L2	CO3	7 M
UNIT-III					
5	a)	Draw and explain the block diagram of dual trace oscilloscope.	L2	CO4	7 M
	b)	Describe the construction and working of sampling oscilloscope.	L2	CO4	7 M
OR					
6	a)	Explain with the block diagram how the digital frequency can be measured using counter/meter instrument.	L2	CO4	7 M
	b)	Describe in details the construction and working of an storage oscilloscope.	L2	CO4	7 M
UNIT-IV					
7	a)	An ac bridge has the following constants: arm AB, R=1000 Ω in parallel with C = 0.159μF; BC, R = 1000 Ω; CD, R = 500 Ω; DA, C = 0.636 μF in series with an	L3	CO3	7 M

		unknown resistance. Find the frequency for which this bridge is in balance and determine the value of the resistance in arm DA to produce this balance.			
	b)	Which bridge is used for Capacitance measurement? Give its circuit and derive the equations at balanced condition.	L2	CO3	7 M
OR					
8	a)	Sketch the circuit diagram of a Wheatstone bridge and derive the conditions for balance.	L3	CO3	5 M
	b)	Explain how Wien's bridge can be used for experimental determination of frequency. Derive the expression for frequency in terms of bridge parameters.	L2	CO3	9 M
UNIT-V					
9	a)	Define transducer. Explain difference between active transducer and passive transducer.	L2	CO5	7 M
	b)	Illustrate about the data acquisition system? Explain the working of multichannel analog multiplexed DAS.	L2	CO5	7 M
OR					
10	a)	With a neat sketch, explain the operation of LVDT in detail.	L2	CO5	7 M
	b)	Describe the operation of capacitive. transducers.	L2	CO5	7 M