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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 70057

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – JAN. 2025

Fourth Semester

Electronics and Communication Engineering

U19EC414 - MEASUREMENTS AND INSTRUMENTATION

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q. No.	Questions	Marks	KL	CO
1.	A length was calculated to be 5.8 feet, but the absolute length was 5.72 feet. Calculate the absolute error	2	K2	CO1
2.	What is the advantage of Maxwell's AC bridge measurement?	2	K2	CO1
3.	Mention the needs of electrical transducers.	2	K1	CO2
4.	Define Hall Effect.	2	K1	CO2
5.	Why time delay is necessary in oscilloscope?	2	K1	CO3
6.	List the applications of vector network analyzer.	2	K2	CO3
7.	Compare Moving coil and Moving iron instruments.	2	K1	CO4
8.	State the advantages of digital storage oscilloscope.	2	K1	CO4
9.	Draw the block diagram of digital data acquisition system.	2	K2	CO5
10.	Find the resolution of a digital voltmeter for a readout range of 0 to 9999 counts and full scale voltage of 9.99V.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11.	a) Write the functional elements and illustrate the errors in measurement and instruments systems. (OR)	13	K2	CO1
	b) Obtain the mathematical expression for Hays bridge measurement system with neat circuit diagram.	13	K2	CO1
12.	a) Discuss in detail about the Principles of hall effect sensor and LVDT. (OR)	13	K2	CO2
	b) Explain in detail about various types of smart sensors in real world applications.	13	K3	CO2
13.	a) Draw and explain the block of cathode ray oscilloscope with neat block diagram. (OR)	13	K3	CO3
	b) With a neat block diagram explain the function of a wave analyzer.	13	K2	CO3
14.	a) Describe the working of PMMC with torque equation for deflection. (OR)	13	K2	CO4
	b) Draw and explain the operation of Dual trace and Dual beam oscilloscope with neat block diagram.	13	K2	CO4
15.	a) Explain in detail about Virtual instruments. (OR)	13	K3	CO5
	b) Write short notes on the following			
	i. Digital voltmeter.	7	K3	CO5
	ii. Data loggers.	6	K2	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.	Questions	Marks	KL	CO
16.	a) Make clear the Lissajous patterns of oscilloscope and justifies the statement. (OR)	15	K3	CO3
	b) Write a case study on sensor data collection and analysis in smart city. Explain the detailed methodologies for smart food collection and delivery.	15	K3	CO2