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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Fourth Semester B.Tech Degree (S,FE) Examination August 2021 (2015 Scheme)

Course Code: EE208
Course Name: MEASUREMENTS AND INSTRUMENTATION (EE)

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks   Marks

1	A 0-150V voltmeter has a guaranteed accuracy of 1% of full scale reading. The voltage measured by the instrument is 75V. Calculate the limiting error in %?	5
2	Explain the sources of errors in a single phase induction type energy meter?	5
3	Explain the basic principle of operation and application of Phasor Measurement Units?	5
4	How does a ballistic galvanometer differs from a d'Arsonval galvanometer?	5
5	Why dc potentiometers cannot be directly used for ac measurements? What are the modifications required?	
6	Draw the circuit diagram of a Wien bridge and derive the expression for frequency in terms of bridge parameters?	5
7	Compare Resistance Temperature Detector and thermistor?	5
8	With the help of a block diagram explain the working of a data acquisition system.	5

PART B
Answer any two questions, each carries 10 marks

9		With the help of a neat diagram explain the construction and working of a PMMC instrument. Derive an expression for deflection if the instrument is spring controlled.	10
10		Explain the construction and working principle of single phase electrodynamometer type wattmeter. Derive the expression for deflection.	10
11	a)	Define the following terms in measurement i)Accuracy ii) Precision iii)Resolution iv)Fidelity	4

b) Explain the loss of charge method for measurement of insulation resistance of cables.   6

PART C
Answer any two questions, each carries 10 marks

12   Draw the equivalent circuit and phasor diagram of a current transformer. Derive the expressions for ratio and phase angle errors.   10

13   Explain the measurement of iron losses in a specimen of laminations using Lloyd Fisher square.   10

14 a) Explain the measurement of rms value of high a.c voltage using electrostatic voltmeter.   5

b) Explain the measurement of rotational speed using proximity sensors.   5

PART D
Answer any two questions, each carries 10 marks

15   Draw the block diagram of a general purpose CRO and explain the function of different parts   10

16   Explain the principle and working of an electromagnetic flow meter. What are its advantages?   10

17 a) Explain the term 'standardization' of a d.c potentiometer. Describe the procedure of standardization of a dc potentiometer.   5

b) With a neat sketch explain the principle of operation of LVDT.   5

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