GANPAT UNIVERSITY

B.Tech Semester V Electronics & Communication Engineering
Regular Examination Nov-Dec 2012
2EC506 Electronic Measurement Techniques

Max. Time: 3 Hrs.]   [Max. Marks: 70

Instructions:
1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

SECTION-I

Que-1	**(A)**	Draw and explain basic heterodyne wave analyzer and RF heterodyne wave analyzer.	6
	(B)	Explain Liquid Crystal Display in detail with its features.	6

OR

	(A)	Explain Horizontal deflection system in brief.	6
	(B)	Write a short note on Electro Luminescent Display and Liquid Vapor Display.	6

Que-2	**(A)**	Convert a basic D'Arsonval movement with an internal resistance of 50Ω and full scale deflection current of 2mA into a multi range dc voltmeter with a voltage ranges of 0-10V, 0-50V, 0-100V and 0-250V. Find value of R_1, R_2, R_3, and R_4. Refer Fig 1.	6
	(B)	Explain vertical deflection system in brief.	5

OR

	(A)	For the following given data calculate Arithmetic mean, deviation of each value, algebraic sum of the deviations, average deviations and standard deviation. Given Data: 59, 51.5, 46.9, 47.8, 53.2, 55.	6
	(B)	Draw and explain the working of electrodynamo meter.	5

Que-3	**(A)**	Define following terms:	4
		1. Measurement 2. Precision 3. Accuracy	
		4. Resolution	
	(B)	Draw and explain the block diagram of spectrum analyzer.	4
	(C)	Justify following statements:	4
		1. "Systematic errors should be small compared to random errors."	
		2. "Precision is a necessary but not sufficient condition for accuracy."	

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SECTION-II

Que-4 (A) Draw block diagram of general purpose oscilloscope. Find minimum distance L, that will allow full deflection of 4cm at the oscilloscope screen with a deflection factor of 100V/cm and with an acceleration potential of 2000V? **6**

(B) Explain Capacitive, Piezoelectric and inductive transducers. **6**

OR

(A) Prove that the path of electron travelling through an electric field of a constant intensity and entering the field at right angles to the lines of flux is parabolic. **6**

(B) What is the difference between active transducer and passive transducers? Draw different types of gage configuration and derive expression for the gage factor K in terms of Poisson's ratio. **6**

Que-5 (A) State the important features of instrumentation amplifier. Explain instrumentation amplifier and derive expression for voltage gain. **6**

(B) How Frequency, Phase angle, time delay and signal origin can be determined using CRO? Explain each with example. **5**

OR

(A) State the measurement errors of Wheatstone bridge. Explain operation of Kelvin double bridge in detail. **6**

(B) Draw and explain microprocessor based Ramp type DVM. **5**

Que-6 (A) A resistance strain gage with gage factor of 2 is fastened to a steel member subjected to a stress of 1050 kg/cm^2. The modulus of elasticity of steel is 2.1×10^6 kg/cm^2. Calculate the change in resistance, ΔR of the strain gage element due to the applied stress. **4**

(B) Write a short note on Flash A to D converter. **4**

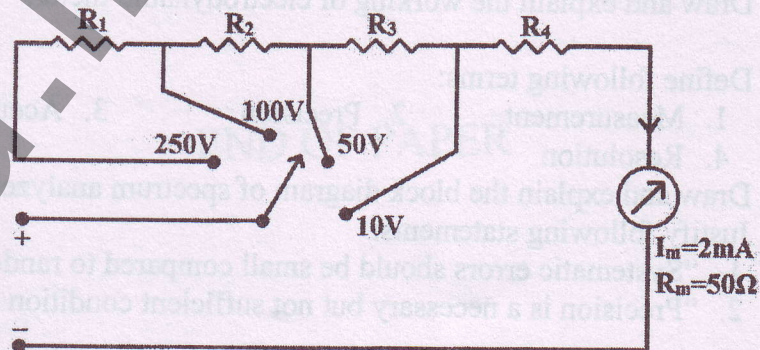(C) Explain operation of Wien bridge. List down its application. **4**

Fig. 1

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