Code No: RR221001 **Set No.1**

II B.Tech. II Semester Regular Examinations, April/May -2005
ELECTRICAL AND ELECTRONICS MEASUREMENTS
(Common to Electronics & Instrumentation Engineering and Electronics & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Derive the expression for Rh in shunt type ohm-meter. Also prove with an example its suitability for very low resistance measurement.

2. (a) Explain in detail the measurement of power using electrodynamometer.
   (b) Write short notes on watt-hour meter.

3. (a) Give a circuit of an AC coupled amplifier to amplify DC signals when the input and out put are chopped.
   (b) Explain the operation of an all-electrical chopper circuit using FET's.

4. (a) What are the constituent elements of a Digital Multimeter?
   (b) For measuring small values of capacitance, a 60 MHz source is to be used in a capacitance meter. What value of series resistance is required if the phase shift is to be kept below 5.7deg for full scale capacitance reading of 1,10, and 100 PF.

5. (a) Why electronic circuits in the oscilloscope causes a certain amount of time delay in the transmission of signal voltages to the deflection plates.
   (b) With neat circuit diagram explain the operation of delay of the vertical signal allows horizontal sweep to start prior to vertical deflection.

6. (a) What are the major components of a CRT and explain the working function of each?
   (b) Why are operating voltages of CRT arranged so that the deflection plates are nearly at ground potential?

7. (a) Discuss in detail about AF square wave generator.
   (b) Explain the importance of Wide band amplifier in the block diagram of a signal generator.

8. (a) Explain with the help of a block diagram how the period can be measured?
   (b) What is meant by time base error and explain a calibration method to improve the accuracy of it.

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Code No: RR221001 **Set No.2**

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ELECTRICAL AND ELECTRONICS MEASUREMENTS
(Common to Electronics & Instrumentation Engineering and Electronics & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain the voltmeter sensitivity and measuring method with loading effect.
2. (a) With neat diagram explain the principle and working of AC voltmeter.
   (b) An AC voltmeter calibrated for sine wave is used to measure a ramp voltage waveform rising to a peak value of 6 V in 3 m.sec. Determine the percentage error.
3. (a) How can one select Digital volt meter? What are the outstanding qualities to make the selection?
   (b) Classify the Digital voltmeters. Explain the operating principle of one of the above Digital Voltmeters.
4. (a) Name the measurements for which a vector voltmeter is used.
   (b) Draw the block diagram of the vector volt meter, mention all the blocks.
5. (a) With neat circuit diagram, explain the function of associated circuits that are used for CRT operation.
   (b) Explain how the light is emitted on the screen of a CRO.
6. (a) Explain the working operation of a storage CRT with multiple targets and two electron guns with secondary emission curves.
   (b) With neat figure, explain schematic view of a bitable storage tube.
7. Describe the circuits and working principle of wave analyzers used for audio Frequency and also in Megahertz ranges. Mention their applications and give the specifications of the instruments.
8. (a) Draw and explain the logic diagram of a time base used for a frequency counter.
   (b) Draw and explain the input signal processing circuit for the frequency counter.
   (c) Define gating error.

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Code No: RR221001 **Set No.3**

II B.Tech. II Semester Regular Examinations, April/May -2005
ELECTRICAL AND ELECTRONICS MEASUREMENTS
(Common to Electronics & Instrumentation Engineering and Electronics & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Derive the expression for Rh in shunt type ohm-meter. Also prove with an example its suitability for very low resistance measurement.

2. (a) With neat diagram explain the principle and working of AC voltmeter.
   (b) An AC voltmeter calibrated for sine wave is used to measure a ramp voltage waveform rising to a peak value of 6 V in 3 m.sec. Determine the percentage error.

3. Draw the block diagram of a dual-slope digital volt meter and explain how it is advantageous to use dual slope A/D converter in DUM?

4. Explain the working of a vector voltmeter in detail. Draw the schematic. Mention its applications.

5. (a) Explain the working function of a post deflection acceleration oscilloscope tube using a scan expansion mesh.
   (b) Briefly summarize the characteristics of commonly used phosphors.

6. (a) Explain the working operation of a storage CRT with multiple targets and two electron guns with secondary emission curves.
   (b) With neat figure, explain schematic view of a bitable storage tube.

7. Describe the basic circuit of spectrum analyzer. Explain how the spectra of the following is displayed
   (a) continuous wave signal
   (b) amplitude modulated signal
   (c) frequency modulated signal
   (d) pulse modulated signal.

8. (a) Draw and explain the logic diagram of a time base used for a frequency counter.
   (b) Draw and explain the input signal processing circuit for the frequency counter.
   (c) Define gating error.

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Code No: RR221001 **Set No.4**

II B.Tech. II Semester Regular Examinations, April/May -2005
ELECTRICAL AND ELECTRONICS MEASUREMENTS
(Common to Electronics & Instrumentation Engineering and Electronics & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain in detail the analog type multimeter, with moving coil mechanism with relevant diagram.
2. Explain the:
   (a) Electrodynamometer type
   (b) AC Rectifier Type of measuring instruments.
3. (a) Give a block diagram of a true reading voltmeter. Explain the use of thermo couples used
   (b) A 25 Milliamps full-scale current meter with an internal resistance of 100 Ohms Give a block diagram of a true reading voltmeter. Explain the use of thermo couples used is available for constructing an AC voltmeter with a voltage range of 200 V rms. Using 4 diodes I a bridge arrangement where each diode has a forward resistance of 500 ohms and infinite reverse resistance, calculate the necessary series limiting resistance for the 200 V rms range
4. Explain the working of capacitance measuring meter using Phase shift characteristic of RC circuit. What are its applications?
5. (a) Explain the relationship between trigger pulse and the sweep in an oscilloscope.
   (b) Explain the block diagram of a dual time base for delayed trigger.
6. (a) Explain the working function of secondary emission circuit with a secondary emission curve of storage oscilloscope.
   (b) Explain the working function of secondary emission circuit with floating target with a secondary emission curve of storage oscilloscope.
7. (a) Explain the different types of distortions caused by amplifiers.
   (b) Describe the Engineering applications of wave analyzers.
8. (a) Draw and explain the temperature compensated crystal oscillator circuit.
   (b) List the suggestions to be followed to attain maximum accuracy in a frequency counter.
   (c) Explain the basic principle behind the extension of frequency range of counter.

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