International Islamic University Chittagong (IIUC)

Department of Electronic and Telecommunications Engineering

Final Examination, Spring- 2018

Course Code: ETE-3625 Course Title: Electronic Measurement and Instrumentation

Full Marks: 50 Time: 2 Hours 30 Minutes

(Use separate script for each part. Figures in the margin indicate full marks)

Group-A

[Answer any two sets of the following questions]

(a) Draw the transfer characteristics of a near ideal rectifier element. Show the basic arrangement of a rectifier instrument using a full wave rectifier circuit. 3

(b) Define form factor? Write the name and function of different elements of an electronic multimeter. 4

(c) A rectifier type of instrument uses a basic PMMC movement of 50 μA and a resistance of 1000Ω. It employs full wave rectifier circuit with forward resistance of each diode being 1000Ω. The reverse resistance of diode is infinite. The range of instrument is 0-10V AC sinusoidal. Calculate the value of a) series multiplier, b) meter sensitivity. 3

(a) Draw the internal structure of a CRT and write the function of different parts. 6

(b) A trigger pulse is applied to the sweep generator in every 10 ms. Compute the amplitude of the voltage across the capacitor when the trigger pulse is applied. 3

(c) What are functions of attenuator in Oscilloscope? 1

3. (a) Draw the block diagram of a dual trace oscilloscope. And sketch the waveform for both alternate mood and chopped mood: 6

(b) Calculate the maximum velocity of the beam of electrons in a CRT having a cathode anode voltage of 800 V. Assume that the electrons to leave the cathode with zero velocity. Charge electron = 1.6×10^{-19} C and mass of electron = 9.1×10^{-31} kg. 4

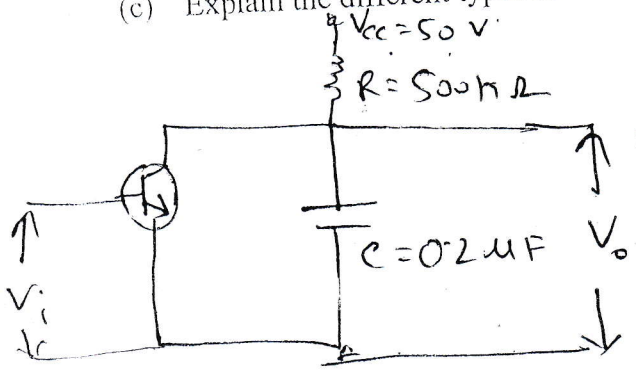
Group-B

[Answer any three sets of the following questions]

4. (a) Describe the engineering applications of wave analysers. 3

(b) Draw the block diagram of audio range wave analyser. 3

(c) Explain the different types of distortions caused by amplifiers. 4



(a)	What are the essential components required for a computer operated test system?	3
(b)	Discuss a computer controlled measurement system for testing an audio amplifier.	3
(c)	Draw the block diagram of vector voltmeter and write the function of different blocks.	5
(a)	Explain the different types of optical sources. Describe their salient features.	4
(b)	Describe the construction and working of a vacuum type of photocell. Draw its characteristics and describe its advantages and disadvantages.	4
(c)	What are the factors which affects the light propagation through an optical fiber?	2
(a)	What are the main functions of bolo meter? Briefly explain the operation of bolo meter with circuit arrangement.	4
(b)	Explain the circuit diagram and operation of a basic Q-meter.	4
(c)	Describe the construction and working of photovoltaic cells.	2