ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD
(Department of Physics)

WARNING

1. **PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
2. **SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

Course: Electronics (3437) **Semester: Spring, 2014**
Level: BCS **Total Marks: 100**

ASSIGNMENT No. 1
(Units 1-3)

Note: Attempt all questions. All questions carry equal marks.

Q.1 Discuss Wheatstone bridge and Kirchhoff's Rules under circuit analysis. (20)

Q.2 State and explain RMS value and power factor of alternating current. (20)

Q.3 Write notes on the following: (20)
i) Joules law and
ii) Sinusoidal signals

Q.4 What is capacitive reactance and inductive reactance of alternating current? Also discuss RC filter. (20)

Q.5 Discuss differentiating and integrating factor of alternating current. (20)

ASSIGNMENT No. 2
(Units 4-7) **Total Marks: 100**

Note: Attempt all questions. All questions carry equal marks.

Q.1 Discuss in detail the characteristics of semiconductor diodes. Also describe p-type and n-type semiconductor materials. What is doping? (20)

Q.2 Give a detailed note on the following: (20)
i) Zener Diode
ii) Light Emitting Diode

Q.3 What are Reverse Recovery Time and Load Line Analysis? (20)

Q.4 Under the Diode Logic explain about AND gates and OR Gates with the help of suitable examples and verification through truth table. (20)

Q.5 With the help of figure define clipper circuit. Also discuss voltage multipliers. (20)

920/3437 Electronics — Credit Hours: 4 (4 + 0)

Recommended Book:
Basic Electronics for Scientists by James J. Brophy

Course Outlines:

Unit No.1 **Direct Current Circuits**
Joules' Law, Circuit Analysis, Kirchhoff's Rules, Wheat Stone Bridge

Unit No.2 **Alternating Currents-I**
Sinusoidal Signals, Frequency, Amplitude and Phase, Rms. Value, Power Factor

Unit No.3 **Alternating Currents-II**
Capacitive Reactance, Inductive Reactance, Rl Filter, Rc Filter, Differentiating And Integrating Factor, Transient Currents

Unit No.4 **Alternating Currents-I, Semiconductor Materials**
Semiconductor Diode, Resistance Levels, Diode Equivalent Circuits

Unit No.5 **Alternating Currents-II**
Transition and Diffusion Capacitance, Reverse Recovery Time, Zener Diode, Light Emitting Diode

Unit No.6 **Diode Applications-I**
Load Line Analysis, Series/Parallel And Series-Parallel Configurations, And/Or Gates

Unit No.7 **Diode Applications-II**
Half Wave and Full Wave Rectifier, Clippers, Clampers, Voltage Multiplier Circuits Bipolar Junction

Unit No.8 **Transistor**
Transistor Construction, Transistor Operation, Different Configuration, Transistor Amplifying Action, Limits Of Operation, Dc Biasing, Fixed Bias Circuit, Emitter Stabilized Bias Circuit, Voltage Divider Bias, Bjt Transistor Modeling, Bjt Small Signal Analysis

Unit No.9 **Operational Amplifier**
Differential and Common Mode Operation, Op-Amp Basic, Op-Amp Application.