

ELECTRONIC FUNDAMENTALS

Revision Log	iii
Measurement Standards	iv
Basic Knowledge Requirements	v
Knowledge Level Descriptions	vi
Table of Contents	vii

4.1 - SEMICONDUCTORS	1.1
Solid-State Devices	1.1
Semiconductors	1.1
Doping	1.2
Majority and Minority Carriers	1.3
PN Junctions and the Basic Diode	1.4
Unbiased PN Junction	1.4
Forward Bias PN Junction	1.4
Reverse Biased PN Junction	1.5
Diode Symbols	1.5
Diode Identification	1.6
Diode Characteristics and Properties	1.6
Diode Behavior	1.7
Diodes in Series and Parallel	1.7
Characteristics and use of Diodes	1.8
Light Emitting Diodes	1.8
Liquid Crystal Displays (LCD)	1.10
Photodiodes	1.10
Power Rectifier Diodes	1.11
Silicon Controlled Rectifiers	1.11
Zener Diode	1.11
Signal Diodes	1.11
Schottky Diodes	1.11
Varistors	1.12
Varactor Diodes (Varicap)	1.12
Functional Testing of Diodes	1.14
Introduction to Transistors	1.15
Classification and Symbols	1.15
Identification of Transistors	1.15
Component Description and Orientation	1.16
Shockley Diode	1.17
Silicon Controlled Rectifiers (Thyristors)	1.17
Triacs	1.17
Transistors, Characteristics and Properties	1.19
Unijunction Transistors (UJT)	1.19
Field Effect Transistors (FET)	1.20
Metal Oxide Semiconductor Field Effect Transistors (MOSFETs) and Complementary Metal Oxide Semiconductors (CMOS)	1.20
Dual In-line Package (DIP)	1.21
Linear Circuits	1.21
Linear Circuits and Operational Amplifiers	1.21
Submodule 1 Practice Questions	1.23
Submodule 1 Practice Questions	1.24

4.2 PRINTED CIRCUIT BOARDS.....	2.1
Description and Use of Printed Circuit Boards	2.1
Static Electricity	2.2
Risks And Possible Damage	2.2
Anti-Static Protection	2.2
Controlled Environment	2.2
Static-Safe Workstation	2.3
Anti-Static Wrist Straps	2.3
Grounding Test Stations	2.3
Ionizers	2.3
Special Handling	2.4
Submodule 2 Practice Questions	2.5
Submodule 2 Practice Questions	2.6
4.3 SERVOMECHANISMS.....	3.1
Servomechanism Principles	3.1
Open and Closed Systems	3.1
Feedback and Follow-up	3.1
Null	3.1
Overshoot	3.2
Damping	3.2
Hunting	3.2
Deadband	3.2
Proximity Switches	3.2
Analog Transducer	3.2
Synchro Systems	3.3
AC Synchro Systems	3.3
DC Selsyn Systems	3.4
Digital Tachometers and Encoders	3.5
Inductance Transmitters	3.5
Capacitance Transmitters	3.5
Submodule 3 Practice Questions	3.7
Submodule 3 Practice Questions	3.8
Acronym Definitions	A.1