

CONTENTS

Contents

CONTENTS	3
CHAPTER 1: Suggested Tool Kit	5
CHAPTER 2: Electrical Safety	6
2.1 Correct wiring	7
2.2 Flexible cords and plugs	7
2.3 Broken and cracked plugs	8
2.4 Television tubes	8
2.5 High Voltage Source – Induction Coil (RUHM KORFF COIL)	9
2.6 Maltese cross and electron deflection tubes	10
CHAPTER 3: Radiation	11
There are four basic types of ionizing radiation:	11
3.1 Isotopes In Schools	12
3.1a Labelling And Storage	12
3.1b Disposal	12
3.1c Degree Of Hazard	13
3.2 Microwave	13
3.3 Laser	14
3.7 Ultraviolet radiation	14
CHAPTER 4. Soldering	15
HOW TO SOLDER	16
CHAPTER 5. Measuring Instruments – Electrical Applications	18
a) GALVANOMETER	18
b) AMMETER	18
c) VOLTMETER	19
a) MULTIMETER	20
i) ANALOGUE MULTIMETER	20
ii) DIGITAL MULTIMETER	22
iii) How to test the fuse in the digital multimeter:	24
b) Cathode Ray Oscilloscope (CRO)	25
CHAPTER 6 . Power Supplies	29
SAFETY	29
CHAPTER 7. Batteries	30
CHAPETR 8. Recording Timers	31
CHAPTER 9. Checking The Accuracy And Precision Of Meters.	32
TESTING AN AMMETER	32
TESTING A VOLTMETER	33
POSSIBLE FAULTS OF METERS.	33
CHAPTER 10. Electronic / Electrical Components	34
a) Resistors	38
b) Capacitors	41

c) Diodes.....	43
d) Inductors	44
e) Transistors	44
CHAPTER 11. Air Table	45
PURPOSE:.....	45
PARTS KIT:.....	45
SETTING UP THE AIR TABLE.....	45
LEVELLING OF THE AIR TABLE	46
USE AND CARE OF THE AIR TABLE.....	46
WEIGHTING THE PUCKS EVENLY	46
COLLISIONS.....	47
ANGULAR ACCELERATION ATTACHMENTS	47
STROBE PHOTOGRAPHY.....	47
CHAPTER 12. Air Track	48
PURPOSE:.....	48
SETTING UP THE AIR TRACK.....	48
ALIGNMENT PROCEDURE OF THE SUB-BASE AND THE AIR TUBE.....	50
USE AND CARE OF THE LINEAR AIR TRACK.....	51
CHAPTER 13. Ripple Tank	54
CHAPTER 14: Van De Graaff Generator	54
PRINCIPLE OF OPERATION.....	55
PRECAUTIONS DURING USE	55
OPERATING CONDITIONS	56
REASONS FOR POOR OPERATION	56
STORAGE.....	56
CHAPTER 15. Lenses	57
CHAPTER 16. Mirrors	59
TO DETERMINE THE FOCAL LENGTH OF A CONCAVE MIRROR.....	59
CHAPTER 17. Manufacture, Repair And Storage Of Equipment	61
CHAPTER 18. Renewable Energy.....	66
SOLAR PANELS:.....	66
APPENDIX A: Ohm's Law	68
APPENDIX B: SI Units.....	69
APPENDIX C: Prefixes.....	70
Glossary.....	71
INDEX.....	75