Basic Electrical Installations

By the same author

ELECTRICAL INSTALLATIONS AND REGULATIONS

BASIC ELECTRICAL INSTALLATIONS

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*To Hetty,
for a life-long inspiration*

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PREFACE

The object of this book is to lay a firm foundation for an understanding of electrical installation techniques. While it is primarily designed as a textbook for students taking the Part I Certificate examination in Electrical Installation Work, City and Guilds Course 236, and so set them on the road to a worthwhile career, it is hoped to have a wider appeal. People studying allied subjects, such as City and Guilds Course 200, and those engaged in electrical wiring, who may have missed their technical studies, will find the material particularly useful. Technical college lecturers will also find it of value for lesson preparation.

A close study of the text and worked examples shows that the questions are approached in a clear and orderly manner. This should assist in giving a sound and logical training for tackling other problems, especially those encountered in real installation situations.

While the wiring sections are firmly based on the I.E.E. Wiring Regulations, full account has been taken of the

Statutory Electrical Equipment (Safety) Regulations 1975.

The social content of the last two chapters may seem unusual in a technical book. It is, however, in line with the City and Guilds Syllabus, which encourages students to have some realisation of the difficulties and challenges brought about in a rapidly changing world.

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In this second edition, material on daywork sheets and site diaries has been added and the text has been brought thoroughly up to date. Working through the additional end-of-chapter exercises will consolidate the knowledge gained from an understanding of the book contents.

ELECTRICAL INSTALLATION SYMBOLS (BS 3939)

main control or intake point	
distribution board or point note: the circuits controlled by the distribution board may be shown by the addition of an appropriate qualifying symbol or reference	
examples: heating	
lighting	
ventilating	
main or sub-main switch	
contactor	
integrating meter	
starter	
changeover switch	
transformer	
consumer's earthing terminal	● E
earth	
electrical appliance: general symbol note: if necessary use designations to specify type	
fan	

heater: type to be specified	
motor : general symbol	
generator : general symbol	
thermostat : block symbol	
switch with pilot lamp	
period limiting switch	
regulating switch eg. dimmer	
push button	
luminous push button	
single-pole, one-way switch note: number of switches at one point may be indicated	
two-pole, one-way switch	
three-pole, one-way switch	
cord-operated single-pole one-way switch	
two-way switch	
intermediate switch	
time switch	
socket outlet (mains): general symbol	

switched socket outlet	
socket outlet with interlocking switch	
socket outlet with pilot lamp	
multiple socket outlet example: for 3 plugs	
Lighting point or lamp: general symbol note: the number, power and type of the light source should be specified	
example: three 40 watt lamps	3 x 40 W
lamp or lighting point: wall mounted	
emergency (safety) lighting point	
lighting point with built in switch	
single fluorescent lamp	
group of three fluorescent lamps	
example: simplified representation	3 x 40 W
spot light	
bell	
indicator panel N = number of ways	
joint or junction box example with three outlets note: for a joint box the dot at the connection joint must be shown	