# Contents

**Preface** . . . . . ix

**List of Symbols** . . . . . xiii

**T** . . . . . 1

Tailoring . . . . . 1
Temporal autocorrelation function . . . . . 1
Temporal averages (along the process) . . . . . 3
Temporal moments . . . . . 5
Ten Percent method (TENT) . . . . . 7
Terminal peak sawtooth shock pulse (TPS) (or final peak sawtooth shock pulse (FPS)) . . . . . 8
Test factor . . . . . 12
Test fixtures . . . . . 17
Test severity . . . . . 19
Test tailoring . . . . . 21
Third octave analysis . . . . . 28
Three dB main lobe bandwidth . . . . . 28
Time-domain statistical indicators (TDSI) . . . . . 28
Transfer function . . . . . 32
Transfer function calculation from random vibration measurements . . . . . 37
Triangular shock pulse (arbitrary) . . . . . 49
Transient signal . . . . . 54
Transmissibility . . . . . 54

Trapezoidal shock pulse . . . . . 54
Truncation of peaks . . . . . 58

**U** . . . . . 71

Uncertainty factor . . . . . 71
Up-crossing risk fatigue damage spectrum . . . . . 79
Up-crossing risk spectrum . . . . . 85

**V** . . . . . 97

Value with probability $P_0$ of being reached during T . . . . . 97
Variability . . . . . 98
Variance . . . . . 99
Variance of Welch's estimator . . . . . 99
Velocity change . . . . . 99
Velocity power spectral density . . . . . 100
Versed sine (or haversine) shock pulse . . . . . 100
Viscoelasticity . . . . . 103
Viscous damping . . . . . 104

**W** . . . . . 105

Wavelet transform . . . . . 105
Wavesine waveform . . . . . 111
Weibull distribution . . . . . 112
Welch method . . . . . 113
White noise . . . . . 120
Width of a rectangular filter equivalent to a 1 DOF system . . . . . 121
Wiener–Khinchin relations . . . . . 125
Windowing . . . . . 126
Wöhler curve . . . . . 138
Worst Case Processing Loss (WCPL) . . . . . 138

**Y** . . . . . 139

Yule–Walker method . . . . . 139

**Z** . . . . . 141

ZERD . . . . . 141
Zero-padding . . . . . 142

**References** . . . . . 151

**Index** . . . . . 161