# C Course (Nov 82 - Feb 83, 14 weeks)

Tests: Weekly, Pass Mark = 60%

## C Course Part 1 – Common Fundamentals

General Electrical Theory Revision: Ohm's Law, Energy, Power, Voltage And Current Potentiometers, Kirchoff's Laws, Thevenin's Theorem, Norton's Theorem, Decibels

Resonance Revision: Series Resonance Of LCR, Voltage Magnification, Effect Of R. Resonance Curves, Parallel Resonance, Dynamic Impedance, Current Magnification, Effective Q Of Circuit Due To Generator Resistance

Four Terminal Passive Networks Revision: Attenuators, Calculation Of Loss, Prototype Filters, Use Of Basic Half-Section, Design Impedance, Cut-Off Frequency, Simple Equaliser Circuits

Valves Revision: Diode, Triode, Inter-Electrode Capacitance, Pentode, Characteristics & Parameters, Equivalent Circuits, Valve As A Linear Amplifier, Biasing, DC And AC Load Lines

Semiconductors Revision: Basic Principles, Diode Types & Characteristics, Transistor Basic Action, NPN & PNP, DC Current Relationship, Current Gain, Common Emitter Circuit And Characteristics (Biasing, Input Characteristics, AC Parameters, Voltage Gain), Circuit Of Linear Amplifier, Simple Equivalent Circuit For A Transistor, Calculation Of Gain And Component Values, DC Stabilisation Of Transistor Amplifiers, Emitter Follower (Rin, Ro, Voltage Gain), Common Base Circuit (Rin, voltage Gain, Current Gain), Darlington Pair (Characteristics And Uses), R.F. Amplifier, Long-Tailed Pair

Negative Feedback Revision: Reasons For, Effects (On Gain, Distortion, Noise, Rin, Ro),Circuits To Show Methods Of Deriving And Applying Over One And More Stages, Calculations Of Gain, Operational Amplifiers

Oscillators: Conditions For Oscillation, A.F. And R.F. Oscillators, LC, CR, Crystal Controlled Types, Frequency Stability

Field Effect Transistor: Operation, Characteristics, Parameters And Circuit Diagram Of Common Source Amplifier, Source Follower

Output Stages: Requirement For Power output From An Amplifier, Class A and B Efficiency, Transformerless output Stage

Stabilised Power Supplies: Shunt And Series Types, Method Of Operation, Uses Of Zener Diode In Stabiliser Circuits

Switching Type Circuits: Using Discrete Components, Bistable, Monostable, Astable, Schmitt Trigger Circuits, Binary Divider

Logic Circuits Revision: Binary Arithmetic, Basic Logic Functions And Gates, Circuits Of Gates, Truth Tables, Boolean Algebra, Problems On The Combination Of Basic Gates, Decimal/Binary Conversion, JK And KL Bistables, Counters, Use Of Feedback, Waveform Generation, Shift Registers

Noise: Sources, Types, Noise Factor

Servo Systems: Open And Closed Loop Systems, DC Speed Control Servo And Positional Control Servo, Proportional Control, Transient Response, Frictional Damping

Modulation: Amplitude Modulation (Waveform, Sidebands, Bandwidth, DSB Suppressed Carrier, SSB, Demodulation), Frequency Modulation (Advantages Over AM, Waveform, Bandwidth, Bandwidth/Signal-To-Noise Exchange, Frequency Deviation, Modulation Index), Pulse Code Modulation (Sampling, Coding, Quantising Error, Basic Logic Circuits, Advantages And Disadvantages Of PCM)