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# Project Work

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All candidates for the Intermediate course shall complete a practical assessment before they sit the written examination. It is the responsibility of the candidate to obtain the signatures on the issued record card. CARS have devised a practical programme based upon the "INTERMEDIATE LICENCE HANDBOOK" to ensure that the practical assessments are complete on time.

## **Safety**

It is essential that all safety conditions are understood and implemented.

**It is mandatory to use the eye protection supplied when soldering.**

Please take care when soldering with the soldering irons, THE COMPONENTS AND IRON ARE VERY HOT.

Also take extreme care when using the "Stanley" knife to strip the sheath of the cables.

Take due care with all wire ends cut from components. These should be placed in the waste bag provided.

## **Project One – Fitting a Mains Plug**

Fit the 13 amp. mains plug supplied to the 3 core cable supplied in accordance with page 11 and 12 of your "INTERMEDIATE LICENCE HANDBOOK".

Fit the appropriate fuse as per the type of equipment mentioned on the label attached to the supplied lead.

When complete have the assembly inspected by an instructor, and if he is satisfied have him sign off your record card.

## **Project Two - Making A Patch Lead**

Fit the PL259 plug supplied at one end of the coaxial cable in accordance with page 63 of your "INTERMEDIATE LICENCE HANDBOOK". Please take care when soldering with the large soldering iron, THE COMPONENTS AND IRON ARE VERY HOT. Also take extreme care when using the "Stanley" knife to strip the sheath.

Fit the BNC plug supplied to the other free end of the coaxial cable supplied in accordance with page 64 of your "INTERMEDIATE LICENCE HANDBOOK".

When complete have the assembly inspected by an instructor, and if he is satisfied have him sign off your record card



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## **Project Three - Measuring Resistance**

Using the Multimeter and resistor supplied learn to determine their values by colour code and confirm by measuring the resistor as per the instruction on page 25 of the "INTERMEDIATE LICENCE HANDBOOK". Confirm that the measured resistors are within the indicated tolerances.

## **Project Four - Building a Simple DC Circuit**

Using the components supplied construct the simple circuit as per the instruction on page 8 of the "INTERMEDIATE LICENCE HANDBOOK". Before connecting the battery have the circuit checked by an instructor. Proceed with the test defined on page 8 and discuss the results with one of the instructors.

### **Measuring Potential Difference [PD]**

Using the Multimeter and your simple circuit measure various Potential differences as per the instruction on page 15 of the "INTERMEDIATE LICENCE HANDBOOK". RECORD THE RESULTS. Discuss these results with an instructor.

### **Measuring Current.**

Using the Multimeter and your simple circuit, measure Current as per the instruction on page 16 of the "INTERMEDIATE LICENCE HANDBOOK". RECORD THE RESULTS. Discuss these results with an instructor.

### **Power Calculations**

To confirm the power consumption of the simple circuit follow the instructions on page 21 of the "INTERMEDIATE LICENCE HANDBOOK". RECORD THE RESULTS. Discuss these results with an instructor.

### **Ohm's Law**

To confirm the principle of Ohm's law, using the simple circuit follow the instructions on page 30 of the "INTERMEDIATE LICENCE HANDBOOK". RECORD THE RESULTS. Discuss these results with an instructor.

### **Diodes**

To confirm the properties of diodes, using the simple circuit follow the instructions on page 37 of the "INTERMEDIATE LICENCE HANDBOOK". RECORD THE RESULTS. Discuss these results with an instructor.

### **Transistors**

This exercise explores one of the properties of transistors, using the simple circuit follow the instructions on page 42 of the "INTERMEDIATE LICENCE HANDBOOK". RECORD THE RESULTS. Discuss these results with an instructor.



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## **Project Five**

Once ALL of the above projects are complete the supplied AM Radio Receiver kit shall be constructed in accordance with the manufacture's instructions. Before connecting the battery have the circuit checked by an instructor. Connect the aerial and battery and test if the receiver works, have an instructor sign your work sheet.

## **Project Six**

During the above projects you will be required to calibrate a variable frequency oscillator. Instruction will be given for this procedure together with the explanation on page 33 of "INTERMEDIATE LICENCE HANDBOOK".