WJEC Engineering Unit 3 Mock Exam Revision Checklist

3.1 Understanding the Effects of Engineering Achievements

Smart Technologies

□ Bluetooth technology and its benefits.

□ Wi-Fi technology and its benefits

□ Benefits of smart technology to users.

□ Benefits of smart technology to manufacturers.

□ How developments in electronics have improved products.

Environmental Impact of Engineering

□ Environmental impacts of metal extraction.

□ Environmental impacts of processing and manufacturing metals.

□ Energy consumption during manufacturing.

□ Pollution and emissions from manufacturing.

□ Recycling metals.

□ End-of-life disposal of products.

□ Sustainability in engineering.

3.2 Understanding Properties of Engineering Materials

Material Categories

□ Ferrous metals.

□ Non-ferrous metals.

□ Composite materials.

□ Thermosetting plastics.

Specific Materials

□ Carbon fibre and its properties.

□ Brass and its properties.

□ Copper and its properties.

□ Glass Reinforced Polymer (GRP).

□ Urea Formaldehyde (UF).

Material Properties

□ Strength.

□ Toughness.

□ Hardness.

□ Conductivity.

□ Corrosion resistance.

Material Testing

□ Destructive testing (DT).

□ Testing compressive strength.

□ Testing toughness.

Smart Materials

□ Thermochromic.

□ How smart materials respond to environmental changes.

3.3 Engineering Processes and Manufacturing

Manufacturing Processes

□ Drilling.

□ Soldering.

□ Brazing.

□ Cutting processes.

Machine Tools and Equipment

□ Pillar drill.

□ Centre lathe.

□ Milling machine.

□ Bandsaw.

Joining Methods

□ Brazing (permanent joining).

□ Pop rivets (permanent joining).

□ Nuts and bolts (temporary joining).

□ Selecting suitable joining methods for products.

Health and Safety

□ Risk assessments.

□ Hazards when using machines.

□ Risks when using workshop machinery.

□ Control measures in a workshop.

□ Safe soldering procedures.

Tools

□ Identification of common engineering tools.

□ Uses of common engineering tools.

3.4 Solving Engineering Problems

Engineering Mathematics

□ Gear ratio calculations.

□ Number of rotations calculations.

□ Time conversions (seconds to minutes and seconds).

□ Ohm's Law calculations.

Electrical Components

□ Diode symbols and functions.

□ Battery symbols and functions.

□ Motor symbols and functions.

□ Variable resistor symbols and functions.

□ Conductors and insulators.

Engineering Drawings

□ Third-angle orthographic drawings.

□ Isometric drawing.

□ Converting orthographic views into isometric views.