**MSQ Unit 86**

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| Title: | **Electromagnetism for marine engineers** |
| QCF Level: | **2** |
| Credit value: | **3** |
| Learning outcomes*The learner will:* | Assessment criteria *The learner can:* |
| 1. Understand the nature of magnetism
 | * 1. Define the term flux and flux density
	2. Describe the physical features known as magneto motive force and magnetising force.
	3. Describe the effect of ferromagnetic materials on flux density
	4. Define the SI units for Magnetism
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| 1. Understand how electrical energy is used to drive a mechanical output
 | * 1. Explain the electric motor principle where motion come from the interaction between two magnetic fields
	2. Describe the function of the commutator with in a motor
	3. Describe the relationship between e.m.f., magnetic field, velocity an length of conductor in the equation E=BLv
	4. Describe the production of an induced e.m.f. through a change in a magnetic field
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| 1. Understand the working of electrical meters
 | * 1. Sketch and label the internal components of the following
* Moving iron meter
* Moving coil meter
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| 1. Understand the use of electrical meters
 | * 1. Explain the use of shunts and multipliers to extend the range of basic electrical meters
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| **Additional information about the unit** |  |
| Unit aim(s) | To develop the knowledge and understanding of basic electrical concepts, magnetic and electromagnetic theory |
| Unit expiry date |  |
| Details of the relationship between the unit and relevant national occupational standards (if appropriate) | MNTB NOS (Jan 2006) – C01 Monitor and Operate Engine Room MachineryC11 Prepare and operate vessel propulsion machinery and ancillary systemsC13 Operate and adjust vessel electrical equipmentC33 Carry out maintenance of vessel electrical machinery and systems |
| Details of the relationship between the unit and other standards or curricula (if appropriate) | Maritime and Coastguard Agency Marine Guidance Notice regarding Certificates of Competency – Engine Department,  |
| Assessment requirements specified by a sector or regulatory body (if appropriate) | Maritime Skills Alliance Assessment StrategyMCA Certification requirements |
| Endorsement of the unit by a sector or other appropriate body (if required) | MCA…. |
| Location of the unit within the subject/sector classification system | Transportation |
| Name of the organisation submitting the unit | Scottish Qualifications Authority |
| Availability for use |  |
| Availability for delivery |  |
| Guided Learning Hours | 27 |