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| **Syllabus changes** |
| The content identified by ~~strikethrough~~ has been deleted from the syllabus and the content identified in *italic*s has been revised in the syllabus for teaching from 2023  **For teaching from 2023**  **Unit 3 – Science Understanding**  **Gravity and motion**   * when an object experiences a net force at a distance from a pivot and at an angle to the lever arm, it will experience a torque or moment about that point   This includes applying the relationship:  *where θ = angle between the force F and the lever arm*  **Electromagnetism**   * magnets, magnetic materials, moving charges and current-carrying wires experience a force in a magnetic field when they cut flux lines; this force is utilised in DC electric motors and particle accelerators   This includes applying the relationships:  *F = qvB* sin*θ* *where θ = angle between the field B and the velocity v*  *where θ = angle between the field B and the conductor length*     * the force due to a current in a magnetic field in a DC electric motor produces a torque on the coil in the motor   This includes applying the relationship:  *τ = rF sinθ where θ = angle between the force F and the lever arm*   * an induced emf is produced by the relative motion of a straight conductor in a magnetic field when the conductor cuts flux lines   This includes applying the relationship:  *induced emf: where θ = angle between the field B and the conductor length*  ~~where~~   * magnetic flux is defined in terms of magnetic flux density and area   *This includes applying the relationship:*  *Φ = BA*⊥  *where A = area perpendicular to the field* *B*   * a changing magnetic flux induces a potential difference; this process of electromagnetic induction is used in step-up and step-down transformers, DC and AC generators   This includes applying the relationships:    *where A = area perpendicular to the field* *B*    **Examination design brief – Year 12**  Instructions to the candidate state:  When calculating numerical answers, show your working or reasoning clearly. *Unless otherwise instructed*, give final answers to three significant figures and include appropriate units where applicable. |