## DRAFT PERFORMANCE BANDS (revised Sept 2002)

### ENGINEERING STUDIES

The typical performance in this band:

| Band 6 | • demonstrates extensive knowledge of the content, methodology, influences and responsibilities in engineering practices  
• constructs and evaluates engineering reports in order to recommend and predict solutions to engineering problems  
• displays critical thinking skills involving the analysis of engineering systems by choosing, performing and evaluating graphical and analytical solutions  
• demonstrates an expertise in the analysis and solution of mechanics problems  
• demonstrates a comprehensive understanding of the structure and property relationship between materials and manufacturing processes by interpreting test results and explaining design limitations  
• makes reasoned identification of materials and processes used in the past and the implications for engineering development and maintenance of the environment  
• is critically aware of the social, cultural and historical issues in engineering  
• demonstrates sophisticated written, graphical and mathematical communication skills, using appropriate engineering terminology, methods and conventions |
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| Band 5 | • demonstrates thorough knowledge of the content, methodology, influences and responsibilities in engineering practices  
• assembles and organises information for engineering reports and makes recommendations and predictions based upon engineering reports  
• is able to choose appropriate methods of graphical and analytical problem solving  
• uses the principles of engineering mechanics competently to solve problems involving statics and dynamics by selecting and manipulating appropriate data into relevant formulae  
• has a good understanding of manufacturing processes and the structure and property relationship between materials  
• recognises the social, cultural and historical implications of technological change in engineering  
• demonstrates highly developed written, graphical and mathematical communication skills, using appropriate engineering terminology, methods and conventions |
| Band 4 | • demonstrates sound knowledge of the content, methodology, influences and responsibilities in engineering practices  
• prepares and interprets engineering reports and makes some recommendations  
• selects from both graphical and analytical solutions to solve problems  
• has a working knowledge of the principles of engineering mechanics and can carry out relevant calculations to solve problems involving statics and dynamics  
• links material structures with properties and therefore identifies appropriate manufacturing processes for a range of applications  
• traces the development of selected components in engineering and their impact on society  
• demonstrates sound written, graphical and mathematical communication skills, using appropriate engineering terminology, methods and conventions |
| Band 3 | • demonstrates basic knowledge of the content, methodology, influences and responsibilities in engineering practices  
• prepares and uses engineering reports  
• processes data in problem solving activities in engineering mechanics, such as by using forces, free body diagrams and vector geometry  
• has a foundational understanding of manufacturing processes and the classification of materials  
• demonstrates an awareness of the development and operation of engineered products and of the contribution of engineering to society  
• demonstrates basic written, graphical and mathematical communication skills, using engineering terminology, methods and conventions |
| Band 2 | • demonstrates elementary knowledge of the content, methodology, influences and responsibilities in engineering practices  
• recognises the importance of engineering reports  
• substitutes data into formulae while attempting to solve engineering mechanics problems  
• interprets data from graphs, recalls basic definitions and identifies steps in manufacturing processes  
• recognises that engineering processes impact upon people  
• demonstrates elementary written, graphical and mathematical communication skills, using simple engineering terminology and conventions |
| Band 1 | • |
