

## MEBS6004 Built Environment

<http://ibse.hk/MEBS6004/>

### Sample Examination Questions for Section A (Thermal Environment and Visual Environment) (to show the format only)

- A1. (a) Define the five built-environmental elements and explain how they influence the health & well-being of people. Illustrate with diagrams if necessary. (10 marks)
- (b) A 50 W fluorescent lamp is replaced with a 10 W LED lamp. The lighting system operates 2500 hours per year and the average electricity price is \$1.5 per kWh. If the investment cost of the lamp replacement is \$800, calculate the annual energy savings and the simple payback of the replacement. (5 marks)
- A2. (a) Describe the equations for steady state heat flow across the major elements of the building envelope. Given the following information, calculate the heat flow rate across a brick wall.  
Given:  
Area of the brick wall = 10 m<sup>2</sup>  
Outside temperature = 10 °C  
Inside temperature = 24 °C  
U-value of the brick wall = 1.5 W.m<sup>-2</sup>.K<sup>-1</sup> (10 marks)
- (b) Discuss the concept of circadian lighting and explain the three methods of implementing circadian lighting design. (5 marks)