

UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualification:–

M.Sc.

Lighting: Current Research Issues

COURSE CODE : BENVLL03

DATE : 05–MAY–06

TIME : 10.00

TIME ALLOWED : 3 Hours

UNIVERSITY OF LONDON

MSc DEGREE IN BUILT ENVIRONMENT 2006
for Internal Students of University College London

BENVLL03: Lighting: current research issues

Answer **FOUR** questions.

All questions carry equal marks. Use annotated sketches.

1. Appraise the usefulness of scale physical models in visualisation, design development and testing for both daylighting and electric lighting solutions.

2. The relative spectral sensitivity of the eye has been traditionally defined by the $(V\lambda)$ curve.

What are the impacts for future lighting practice in terms of daylighting and electric lighting of the photometric anomalies in the $(V\lambda)$ curve.

3. Describe the software components of a ray-tracing based rendering system to predict the distribution of visible radiation in illuminated spaces.

4. "Perception-oriented lighting design, which is directed at the human being and his needs, can no longer be directed in primarily *quantitative* terms relating to illuminance and the distribution of luminance. To achieve lighting that is suitable for a given situation it is necessary to develop a set of *qualitative* criteria, an entire vocabulary of terms, which can describe the requirements a lighting installation has to meet and comprise the functions of the light with which these requirements can be fulfilled".

Handbook of Lighting Design, Erco Edition (1992) p115

Propose an appropriate set of *qualitative* criteria.

TURN OVER

5. Using representative case study buildings, illustrate the way in which Le Corbusier's handling of daylight in his buildings changed in his early *International Style* to his later *Brutalist* period.
6. Explain the importance of light source colour in road and street lighting in terms of improving Standards and design guidance?
7. There are well-established positive and negative effects on the effects of light exposure on health but little consensus on a conceptual framework for "wellbeing" in relation to light and lighting. Propose a measurement tool that would assist lighting and medical professionals in their definition of "wellbeing".
8. The "Rational Approach to Colour" is a step-by-step design sequence for the specification of interior surface colours originally devised for post-war school buildings. Drawing on insights from environmental psychology, the architects responsible stated:

"Forget about hue. Get the values right, get the textures right,
get the chromas right, and the hues will look after themselves".

Explore the usefulness of this approach in the colour design of contemporary interiors.

END OF PAPER