UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualification:-

M.Sc.

Lighting Fundamentals

COURSE CODE	:	**BENVLL01**
DATE	:	**02-MAY-06**
TIME	:	**14.30**
TIME ALLOWED	:	**2 Hours**

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UNIVERSITY OF LONDON

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

BENVLL01: Lighting fundamentals

Answer **TWO** questions.

All questions carry equal marks. Use annotated sketches.

1. A small modern art gallery in London is lit predominantly by daylight entering from the completely glazed façade to the street. Daylight provides approximately 200 lx (vertical illuminance) on a painting near the window. The walls are painted with white emulsion and the average reflectance of the painting is 0.5. The painting is to be preferentially lit by a spotlight whose intensity in the axial direction is 4499 cd per 1000lm and is pointed at the centre of the painting from a ceiling mounted position. The spotlight houses a tungsten halogen lamp (lumen output 2350 lm). A sketch section is shown in Figure 1.

   Determine the luminance contrast ratio achieved between the painting and its background and comment on its suitability.

2. a) Define the following terms:

   i) luminance

   ii) luminous intensity

   iii) reflectance

   iv) light output ratio.

   b) Describe the differences in the shape of the intensity distribution curve between a symmetrical luminaire (such as a diffusing globe) and a bisymmetrical linear luminaire (such as a recessed fluorescent luminaire with a prismatic diffuser).

3. Describe the arrangement and function of the physiological structures present in the visual pathway from eye to visual cortex and outline the visual processing that occurs.

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4. a) Define the following colour measurement indices:

i) the CIE General Colour Rendering Index (Ra)

ii) Correlated Colour Temperature (CCT).

b) With reference to the underlying principles, demonstrate how these two indices are presented on the 1931 CIE Chromaticity Chart for use in lighting applications.

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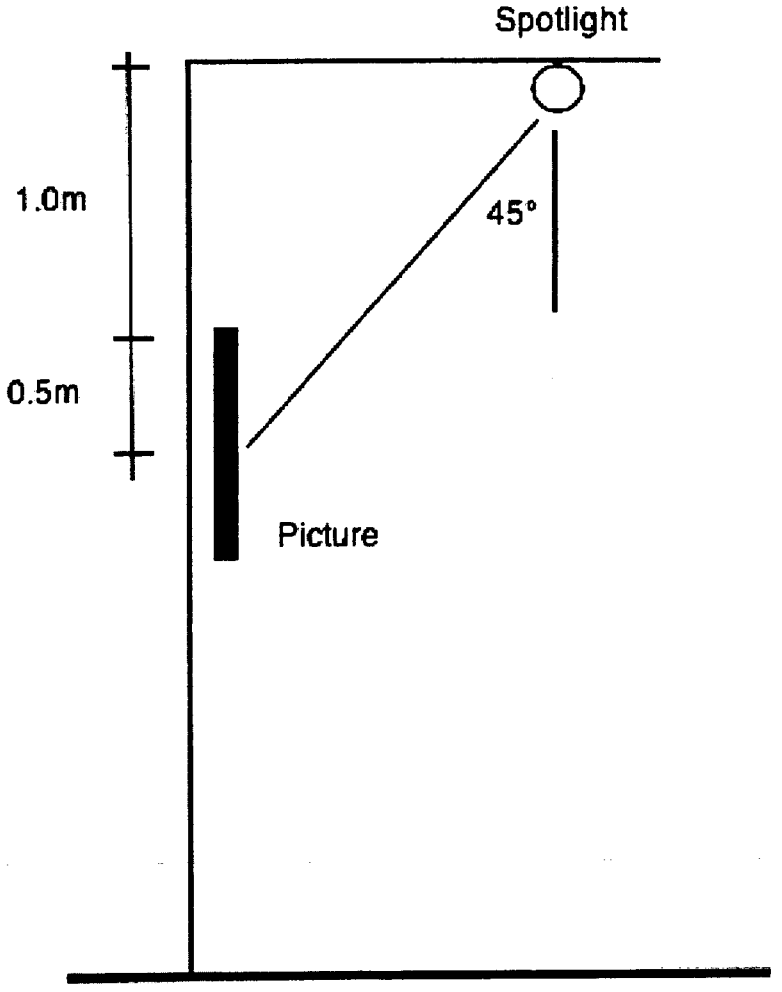

Figure 1 A painting lit by a spotlight (section)

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