
This is an open book exam. The exam period is 0900-1100. Sketches should be used to supplement written answers where feasible.

1. You are developing the interior for a lawyer's office. The client has requested that extensive use be made of wood for interior finishes.
 - 5% a) What are the considerations in terms of effects on illumination and visual experience?
 - 10% b) Give some examples of design measures you might adopt to provide good illumination and visual conditions. Use sketches where appropriate.

- 10% 2. Daylight produces an illuminance of 350 lux on a wall area of 24 m² with a reflectance of 0.70. 6000 lumens fall on the area from electric sources. What is the quantity of reflected light flux?

3. You are designing the lighting for a boys and girls club where programs are offered after school and through the evening on weekdays and all day on Saturdays. The budget is tight for a charitable organization with few resources.
 - 5% a) What cost factors would you consider in selecting a lighting system?
 - 10% b) How could the best choice be made, taking into account these cost factors? (explain the method)

- 10% 4. Does more light improve seeing conditions in task environments? Explain.

- 15% 5. A room has the following characteristics:
 - reflectances: ceiling, 0.80, wall 0.70, floor 0.30
 - dimensions: height 3 m (10 ft), width 6 m (20 ft), length 9 m (30 ft)
 - see table below for coefficients of utilization for the light fixture used
 - light loss factor is 0.80

If a work plane illuminance of 400 lux is required, use the zonal cavity method to determine the required number of fixtures. Clearly show all steps in your calculations.

- 10% 6. You are setting up circuits for a kitchen in a house you are designing. The circuits will be 120 V. The circuit breakers will have a capacity of 20 a. How will these values affect the capacity of the circuits to accommodate the power demands of appliances.
- 5% 7. What differentiates a light source that produces sparkle from one that produces glare?
8. For the design shown below (council chamber for a small town hall),
- Notes: 1) The dotted line represents the edge of the roof overhang
- 2) ceiling height at the window is 3.5 m, sloping up to 5 m at the north-south grid line
- 10% (a) explain the most significant issues to be considered in providing a good daylighting solution.
- 15% (b) using sketches and notes, provide a design response to these issues; be sure to indicate which design measures correspond to which issues
- changes in the daylighting system may be recommended (including changes in fenestration)