

B. ARCH II YEAR III SEMESTER

LIGHTING, VENTILATION & ACOUSTICS (10110307)

Maximum Marks – 50

Time – 2.00 Hours

- a) Answer any Two questions out of 1 to 4 questions.
b) Question No.5 is compulsory and answer any four out of six sub-questions.
c) Use of scientific calculator is permitted.

Q1. a) Explain Architectural tools to control day light through sketches. Explain glare reducing techniques with sketches. (5+10)

b) Make a layout design for Indoor lighting of a classroom of size 9M x 8M, under general lighting scheme with the information given below:

Number of lamps per luminaire = 2

Average illuminance over working plane = 500 lux.

Each FTL 836W will give 2450 lumen

Coefficient of utilization = 0.55

Maintenance factor = 0.75

Q2. a) What is specular spread of light? Distinguish between Discomfort and Disability glare. (5+10)

b) Explain the following types of indoor lighting:-

- Valance lighting

- Soffit lighting

- Track lighting

What is illuminance?

Q3. a) Explain as to how position of wing wall influences the air movement inside enclosures. (10+5)

b) Explain as to how the concept of thermal mass and r-value influence the comfort condition inside a building.

What is glare ratio?

- Q4. a) Differentiate between NRC and Absorption Coefficient (5+5+5)
- b) Calculate RT for your studio, which has concrete roof ($\alpha = 0.2$), floor ($\alpha = 0.7$) and brickwalls ($\alpha = 0.25$), (height = 4M, length = 15M, width = 4M)
- c) Explain with sketches the techniques to control environmental noise. An environment consists of 5 sound sources, generating 70dB, 70dB, 72dB, 75dB and 80dB . Find the final noise level of the environment.

Q5. Write short notes on any FOUR of the following:

(4X5=20M)

- a) Impact Insulation Class
- b) Differentiate between near field and reverberant field
- c) Octave and 1/3rd Octave band
- d) Windscoop and Solar Chimney
- e) Munsell colour system
- f) Central frequency of an octave band is 283HZ. Find the upper and lower limit of the octave band.
