

B. ARCH III YEAR V SEMESTER

BUILDING SCIENCE AND SERVICES (BS-5)

(LIGHTING AND ACOUSTICS)

Maximum Marks – 50

Time – 2.00 Hours

a) Answer any Two questions out of I 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 with sketches CT and CCT with respect to plankian locus in CIE chromacity diagram. What is equal saturation contour? (5+10)
- B. What are the three components of Munsell colour system? Explain luminous efficacy for photopic vision.
- Q2. A. Make a layout design for indoor lighting of a classroom of (10+5) size 10m x 7m under general lighting scheme, with associated information given below:
- Number of lamps per luminaire = 2
 - Average illuminance over working plane = 550 lux
 - Each FTL 836W, will give 2450 lumen.
 - Co-efficient of utilization = 0.55
 - Maintenance factor = 0.75
- B. Find the illuminance at a distance of 3.5m from a point source ($I=3800\text{cd}$, along the axis of the lamp) of light aimed at horizontal surface, if the angle of incidence is 45° . What is light output ratio and Flux Fraction ratio?
- Q3. A. Define near field, free field and reverberant field. An environment consists of four noise sources generating 71dB, 72dB, 76dB, and 89 dB. Find the resultant noise level of the environment. (6+3)
- B. Explain noise reduction co-efficient. Explain briefly (3+3) different types of sound absorbers.

Q4. A. Find the reverberation time of an anechoic chamber of size (5+10)
5m x 9m x 4m. Comment on the result.

Total noise level in an environment is 87dB, after adding a noise source of 75dB. What was the previous background noise level? How is this change perceived by our ear?

B. Explain with sketches, the environmental noise control measures.

Find the dimension of a sound reflecting ceiling panel for 750 Hz.

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

(4x5=
20M)

- A. Polar diagram
- B. Split flux method
- C. Cove, Valance, Soffit lighting and their differences
- D. Compression and Rare fraction
- E. Sound insulation class
- F. Cycle and Period

