

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: B.ARCH.  
BRANCH: ARCHITECTURE**

**SEMESTER : IV  
SESSION : SP/2025**

**SUBJECT: AR252 BUILDING SERVICES-II (ELECTRICAL AND LIGHTING)**

**TIME: 3 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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Q.1(a)	How is Hydroelectric power plant different from a Thermal power plant, Explain with proper diagram.	[5] 1	1
Q.1(b)	Explain some important safety rules while work on electric line	[5] 2	2
Q.2(a)	Explain briefly the criteria for location and requirement of substation.	[5] 1	3
Q.2(b)	How glare can be avoided in lighting design?	[5] 2	3
Q.3(a)	Explain the general principles of planning of an electrical wiring installation.	[5] 2	2
Q.3(b)	Explain briefly the typical arrangement of Pipe Earthing using proper sketches.	[5] 2	3
Q.4(a)	What is the general Principal of day lighting in any building?	[5] 1	2
Q.4(b)	Write short note on: (i) Transformer (ii) Distribution Box.	[5] 1	2
Q.5(a)	Draw the symbols for electric installation in building for the following. 1. two-way switch 2. conduit on surface 3. ceiling mounted lamp 4. 15-amp socket 5. Switch board	[5] 1	2
Q.5(b)	Calculate No of Lighting Fixtures / Lumen for indoor Lighting An office area is 20meter (Length) x 10meter (width) x 3 Meter (height). The ceiling to desk height is 2 meters. The area is to be illuminated to a general Level of 250 lux using twin lamp 32-watt CFL Luminaires with SHR of 1.25. Each lamp has an initial output (Efficiency) of 85 lumen per watt. The lamps Maintenance Facto (MF) is 0.63, Utilization Factor is 0.69 and space height ratio (SHR) is 1.25	[5] 3	3

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