

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

CLASS: B.ARCH
BRANCH: ARCHITECTURE

SEMESTER : IV
SESSION : SP/2023

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) | What are HT and LT electrical supply lines, which type of project need HT supply line and why it is preferred over LT supply? | [5] 1 | Lvl.1 |
| Q.1(b) | Please Describe the Electrical supply and distribution system in our Institute campus with the help of schematic drawings, and also discuss about the adopted energy management system and its benefits. | [5] 3 | Lvl.2 |
| Q.2(a) | What is electrical Earthing and its use in any building, discuss Plate earthing in detail with neat sketch? | [5] 1 | Lvl.1 |
| Q.2(b) | Why do we need Electrical shaft in any building, can it be combined with an Plumbing or HVAC Shaft, Draw schematic neat electrical layout plan (using standard symbols for various appliances and fixtures) for a 2 BHK HIG flat in a multistory apartment building. | [5] 2 | Lvl.2 |
| Q.3(a) | Explain any three of the following in context of Building Lighting? (i) Installed load efficacy (ii) Room Index (iii) Luminance (iv) SHR. (v) Reflectance | [5] 1 | Lvl.1 |
| Q.3(b) | Explain Maintenance Factor and Utilisation Factors; also describe the different components which affect these? | [5] 2 | Lvl.2 |
| Q.4(a) | What are the difference between Incandescent Lamp and LED Lamp and provide examples of these two types of lamps | [5] 2 | Lvl.2 |
| Q.4(b) | What do you understand by Glare, its type and glare control strategies in a building? | [5] 1& 3 | Lvl.3 |
| Q.5(a) | An office area measures 18m x 10m and is 2.75 meters high. It is to be illuminated to an average value of 500 Lux and workstations are at 0.75m height from floor. 600mm x 600mm recessed luminaires, each containing 4 lamps are used. Each lamp has an output of 1200 lumens. Utilization factor is 0.5 and maintenance factor is 0.75, consider the value of SHR is 1.5. (i) Calculate the number of luminaires required. (ii) Sketch a layout of the scheme indicating the spacing between luminaires. | [5] 2 | Lvl.4 |
| Q.5(b) | Explain briefly strategies to design lighting scheme for a residence with neat sketches. | [5] 2 | Lvl.4 |

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