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

CLASS: BARCH **SEMESTER : V/ADD**
BRANCH: ARCH **SESSION : MO/19**

SUBJECT: AR5301 BUILDING SERVICES – III (ELECTRICAL & LIGHTING)

TIME: 3 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
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.

Q.1(a)	Electricity is a form of energy, explain it with suitable example.	[2]
Q.1(b)	What is the general Principal of daylighting in any building?	[4]
Q.1(c)	Write a paragraph on different sources of power generation. How Is Hydroelectric power plant different from a thermal power plant?	[6]
Q.2(a)	What is Glare?	[2]
Q.2(b)	Explain the criteria for location and requirement of electric-substation for a multi-storied building, briefly.	[4]
Q.2(c)	Explain the general principles of planning of electrical wiring installation.	[6]
Q.3(a)	With a neat sketch explain different parts of an incandescent lamp.	[2]
Q.3(b)	How is power transmitted? Differentiate between overhead lines and underground cables.	[4]
Q.3(c)	Write short notes on following: (i) Transformer (ii) Fuse	[6]
Q.4(a)	Explain standard color codes which are applicable in India.	[2]
Q.4(b)	With a neat sketch, explain the pipe method of Earthing of an electrical appliance.	[4]
Q.4(c)	write short notes on : a. Inverse Square Law of Illumination b. High Pressure Sodium Lamps	[6]
Q.5(a)	Draw the symbols for electrical installations in buildings for the following- 1) Conduit on surface 2)16 amp Switch Socket	[2]
Q.5(b)	Discuss in brief the factors that need to be considered by an architect for artificial lighting design.	[4]
Q.5(c)	Discuss the lighting design criteria and guidelines to be adopted for any one of the following buildings: (i) Offices (ii) Art Gallery	[6]
Q.6(a)	What is the meaning of two-wire systems in electric wiring plan?	[2]
Q.6(b)	Explain the single line electrical layout plan for a small residential unit.	[4]
Q.6(c)	What is a lightning protection system? Explain different types of building lightning protection systems.	[6]
Q.7(a)	Explain the criteria for location and requirement of substation briefly.	[2]
Q.7(b)	Outline safety precautions to be observed when working with electrical power systems.	[4]
Q.7(c)	A room of dimensions 12.0m x 10.0m x 3.0m has a required design illumination of 500 Lux on the working plane (0.85 meters above the floor). The Utilisation factor is 0.5, and the Maintenance factor is 0.8. If the LDL output of each fitting is 2720 lumens, workout the following: (a) The number of accessories required. (b) The fittings layout.	[6]

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