

**BACHELOR OF ARCHITECTURE (B.Arch.)**

**Term-End Examination**

00035

December, 2014

**BAR-059 : ARCHITECTURAL SCIENCES &  
SERVICES – IV (ENERGY SYSTEMS AND HVAC)**

*Time : 3 hours*

*Maximum Marks : 70*

**Note :** *Attempt any five questions. All questions carry equal marks. Draw sketches wherever necessary. Assume missing data suitably if any.*

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1. Discuss the requirement and characteristics of various types of wires to be used for mains and sub-distribution for a block of multistoried flats. 14
  2. (a) Discuss the basis of calculation of electricity consumption. 7
  - (b) Calculate the electric load of a residence having the following fixtures :
    - (i) 100 W – Bulbs – 06 nos.
    - (ii) 40 W – Tubelight – 06 nos.
    - (iii) 200 W – TV – 01 no.
    - (iv) 60 W – Fans – 06 nos.
    - (v) 150 W – Fridge – 01 no.Assume all fixtures are in use at a time. 7

3. Write short notes on any *two* of the following : 2×7=14
- (a) Wiring layout for a two-way switch
  - (b) Electrical circuit for a drawing room
  - (c) Direct, indirect and semi-direct lighting systems
4. (a) Discuss the various fire warning systems and their installation in various types of public and multistoried buildings. 7
- (b) Discuss with neat sketches and explain the use of the various fire extinguishing systems. 7
5. Discuss the following : 14
- (a) Material to be used for fire staircase
  - (b) Rating of various materials for fire resistance
  - (c) Types of fire alarm systems
6. (a) Define Psychrometric chart. 3
- (b) Explain the properties of various components and their use in air-conditioning. 8
- (c) What are comfort air-conditioning systems ? 3

7. Discuss the various criteria for calculating the air-conditioning load. Suggest appropriate air-conditioning system and duct layout for a conference room of  $12 \times 8 \times 4$  m. 14
8. (a) Enumerate the types of lifts with neat sketches and their uses. 7
- (b) Draw the vertical section of a lift, showing all its components. 7
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