

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2023****Subject Code:3154012****Date:05-12-2023****Subject Name: Infrastrucure Utilities****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Differentiate AC & DC power supply? **03**
 (b) Explain the difference between the Single Stack System and Single Pipe System. **04**
 (c) Explain in detail lifts and escalators, and its typical components. **07**
- Q.2** (a) Differentiate between star and ring network topology. **03**
 (b) Explain LAN, MAN and WAN in detail. **04**
 (c) Describe basic home automation system. **07**
- OR**
- (c) Explain GPS and different GPS segments in detail. **07**
- Q.3** (a) Define different methods of underground power distribution. **03**
 (b) Define: close loop and open loop system with example. **04**
 (c) Calculate the electricity bill amount for a month of April, if 4 bulbs of 40 W for 5 h, 4 tube lights of 60 W for 5 h, a TV of 100 W for 6 h, a washing machine of 400 W for 3 h, a water pump of 0.5 HP for 15 minutes are used per day. The cost per unit is Rs 3.50. Consider 1 HP = 746 watts. **07**
- OR**
- Q.3** (a) Describe the factors affecting the per capita demand. **03**
 (b) Explain different types of electrical wiring system. **04**
 (c) Explain different topology of UPS with neat diagram. **07**
- Q.4** (a) Discuss some of the sources of thermal load through which a building or a room gains heat. **03**
 (b) Explain the following terms: 1. Class A fire, 2. Class B fire, 3. Class C fire and 4. Class D fire. What kind of extinguishers should be used to tackle these? **04**
 (c) Explain why is ducting system important for HVAC? Classify ducts according to velocity, pressure, material and shape. **07**
- OR**
- Q.4** (a) List out some of the fire-fighting equipment and explain them briefly. **03**
 (b) Explain the following terms: 1. Humidity, 2. Relative humidity, 3. Ventilation, and 4. Refrigerant **04**
 (c) Define air-conditioning. Explain vapor compression refrigeration system using a schematic and list out its main components and the thermodynamic processes involved. **07**
- Q.5** (a) Describe pipe fitting and mention various types of distribution network. **03**
 (b) Discuss the factors being considered for population forecasting. **04**
 (c) What is the procedure of design of water distribution system by Hardy Cross Method? **07**

OR

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| Q.5 | (a) | Define Sewerage system and Plumbing system. | 03 |
| | (b) | Describe Geometric Increase method for population forecasting. | 04 |
| | (c) | Explain typical house plumbing system with appropriate sketch. | 07 |
