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**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**THIRD SEMESTER B. DES. (ID) DEGREE EXAMINATION – JAN/FEB 2018**  
**SUBJECT: BID 211 – BUILDING SERVICES - I**

Monday, January 29, 2018

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

- ✍ **Answer any FIVE questions.**
- ✍ **Support the answers with sketches wherever necessary.**

1A. List down the important sewer appurtenances.

1B. Explain with the help of sketches any four sewer appurtenances.

(2+8 = 10 marks)

2A. What is Rain water harvesting?

2B. Explain artificial ground water recharge and roof top rain water harvesting in detail along with sketches.

(2+8 = 10 marks)

3A. What is Rate of demand?

3B. What are the various factors affecting the rate of demand?

(2+8 = 10 marks)

4A. What are the design considerations for centralized hot water systems?

4B. Explain the piping system using thermosiphonic action.

(4+6 = 10 marks)

5. **Write short notes on the following:**

5A. Need of ducts in air conditioning

5B. Fire safety concepts to be considered in a building design

(5+5 = 10 marks)

6A. What are the different systems of sub soil drainage?

6B. What is the necessity of sub soil drainage?

(6+4 = 10 marks)

