JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

M.Tech.-I Semester (CM)

COURSE CODE (CREDITS): 3 MAX. MARKS: 15

COURSE NAME: Construction Techniques (10M11CE111)

COURSE INSTRUCTORS: Prof. Ashok Kumar Gupta MAX. TIME: 1 Hour

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Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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1. How many types of brick masonry are possible?
   a) 4
   b) 2
   c) 5
   d) 6
   Choose the correct option and provide justification for your answer. (1)

2. In which bond brick is laid with its length in the direction of a wall?
   a) Header
   b) Flemish
   c) Stretcher
   d) English
   Choose the correct option and provide justification for your answer. (1)

3. Which of the below should be avoided in brick masonry?
   a) Horizontal joints
   b) Queen closer
   c) Brick bat
   d) Vertical joints
   Choose the correct option and provide justification for your answer. (1)

4. If you are supervising building work, what points should you observe during the construction of brick masonry. (3)

5. Black cotton soil is highly problematic for foundation engineering due to its expansive nature, which leads to alternate swelling and shrinkage during seasonal changes.

   (a) Explain the engineering problems associated with constructing foundations in black cotton soils.
   (b) What are under-reamed piles? With the help of neat sketches, explain their construction, shape, and mechanism of load transfer.

P.T.O.

(c) Discuss how under-reamed piles are effective in black cotton soils.
(d) State the design considerations and IS code provisions related to the use of under-reamed piles in expansive soils.
(e) Mention at least one practical case study/example where under-reamed piles have been successfully implemented to enhance the performance of structures founded on black cotton soil. (5)

6. If concreting is to be carried out in cold weather, what are the recommended best practices to ensure quality and durability? (4)