

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2024

MTech - II Semester (CM)

COURSE CODE(CREDITS): 10M11CE215

MAX. MARKS: 35

COURSE NAME: Sustainable Design and Construction

COURSE INSTRUCTORS: Saurabh Rawat

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

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

- Q1. Based on the assessment tools, explain and differentiate between LEED and Green Globe Building Assessment System for Green Buildings. CO5 [5]
- Q2. Using the stoichiometry, describe the issue with coal usage as fuel. Prove that using fuel comprising of 20% alternative fuel and 80% coal reducing the CO₂ emissions by approximately 92.7% per kg of clinker. CO2; CO3; CO4 [2+3 = 5]
- Q3. With the help of a line diagram, explain the variation in 28 days concrete strength and workability with w/c ratio variation and water reducing agent. CO4 [3]
- Q4. Quantify the sustainability achieved in terms of 'exergy required per kg of clinker' when using 35% flyash with 65% clinker. CO1, CO2 [5]
- Q5. With reference to composite cements, define the following:
- a). Reactive Magnesia Cement
 - b). Ca-sulfo-aluminate cement
 - c). Ca-carbo-aluminate cement
 - d). LC3 cement
 - e). High Belite cement CO3 [1×5 = 5]
- Q6. Describe how the Integrated Design Process in Green Buildings makes them different from conventional buildings. Also, with the help of cost – time plot, justify the statement – “*The earlier integrated design is implemented, the greater the benefits.*” CO5 [5 + 2 = 7]
- Q7. In context of 'efficient cement use quality', explain how the extreme combinations of w/c ratio affects the target mean strength of RMC and SMC. Define the controllable variation (σ) and its source. CO4 [5]