

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2024

B.Tech-VI Semester (CE)

COURSE CODE(CREDITS):18B11CE611(3)

MAX. MARKS: 35

COURSE NAME:CONCRETE TECHNOLOGY

COURSE INSTRUCTORS: Dr. Tanmay Gupta

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, Use of IS 10262:2019 is allowed.

Q.1 What do you understand by lightweight concrete, discuss its typical properties, advantages, disadvantages and applications. Explain its classification in detail with emphasis on method of preparation and constituent materials. **[CO5] [6]**

Q.2 Explain in detail about fiber reinforced concrete, what do you understand by aspect ratio and volume fraction. Also explain their effects on fresh and hardened concrete properties. **[CO5] [4]**

Q.3 Define durable concrete? explain in detail the factors affecting durability of concrete? How much importance should be given for durability in design and construction? **[CO4][5]**

Q.4 Parameters for mix design M50 are as follows, based on this design the mix as per IS 10262 method (Assume any other detail required): **[CO4] [8]**

Grade Designation = M-50, Type of cement = O.P.C-43 grade, Brand of cement = Vikram (Grasim), Admixture = Sika [Sikament 170(H)], Fine Aggregate = Zone-II, slump 120mm, good degree of site control, pumpable concrete, Crushed angular aggregate.

Specific Gravity: Cement = 3.15, Fine Aggregate = 2.61, Coarse Aggregate (20mm) = 2.65, Coarse Aggregate (10mm) = 2.66, Admixture = 1.145

Minimum Cement (As per contract) = 400 kg/m³, Maximum water cement ratio (As per contract) = 0.45, ratio of 20mm to 10mm CA is 0.6:0.4.

Q.5 Explain the importance of curing and discuss different methods of curing. **[CO2][2]**

Q.6 Write a short note on following: **[CO1, 2,3][10]**

- Properties of sulphate resisting cement
- Explain the importance and need of waterproofing
- Any two tests on hardened concrete
- Explain slump test for measuring workability of concrete
- Properties of High-Volume Fly Ash Concrete