JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS-2022

B.Tech- VI Semester (Civil)

COURSE CODE (CREDITS): 18B1WCE637(3) MAX. MARKS: 35

COURSE NAME: Advanced Concrete Technology

COURSE INSTRUCTORS: Dr. Saurav MAX. TIME: 2 Hours

Note: *All questions are compulsory. Marks are indicated against each question in square brackets.*

Q1. "The degree of compaction plays an important role in controlling the transition zone porosity". Comment on the above statement using a graphical representation. [5]

Q2. Draw and explain the salient points of stress-strain graph of concrete when tested in compression. Also write down the compatibility equations based on the curve. [5]

Q3. Explain the phenomenon of drying shrinkage using a graphical representation. What are the predominant factors on which shrinkage is affected? Calculate the shrinkage strain in a concrete kept in a environment of average humidity 70% using Schorer's Formula. [5]

Q4. What is the significance of fineness modulus? Calculate the fineness modulus of sand with the following sieve analysis [6]

Weight retained on No.8 sieve, g= 30

Weight retained on No.16 sieve, g= 70

Weight retained on No.30 sieve, g= 125

Weight retained on No. 50 sieve, g= 135

Weight retained on No. 100 sieve, g= 120

Weight retained on No. 200 sieve, g= 20

Is the sand suitable for making concrete? Comment with proper justification.

Q5. Draw a graph representing the quantity of corrosion products vs time. "The degree of protection against corrosion is provided by pore fluid containing $Ca(OH)_2$" Explain the above statement with chemical equations involved. Discuss "Pitting Potential" in context to Pitting corrosion. [6]

Q6. Based on data given in Table 1, calculate the yield of concrete per 50kg bag of cement. Consider air entrapped is 1.5%. Also estimate the density of concrete based on above result. [5]

Table 1

Material	Weight (kg)	Specific Gravity
Cement	50	3.12
FA	76.5	2.75
CA(20mm)	54.5	2.88
CA(40mm)	213.5	2.88
Water	25	1

Q7. Determine the volume of coarse aggregates required to make 1cubic meter of concrete in the ratio 1:2:4 by volume [3]