COURSE CODE: 18B1WCE637   MAX. MARKS: 25

COURSE NAME: Advanced Concrete Technology

COURSE CREDITS: 03   MAX. TIME: 1 Hour 30 Min

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

Q1. Discuss the roll of transition zone in context of mechanical behavior of concrete.   **[4]**

Q2. Table 1 shows the data of sieve analysis of fine aggregates done at concrete lab. Calculate the fineness modulus of the fine aggregates.   **[5]**

Table 1

Fine Aggregate	
IS Sieve Size	**Weight retained in grams**
4.75mm	10
2.36 mm	50
1.18 mm	50
600μ	95
300 μ	175
150 μ	85
Pan	35
Total	500

Q3. Which type of cement will you prefer in construction of sewage treatment plants and Why? What is the role of C_3A in this?   **[4]**

Q4. The strength of a sample of fully matured concrete is found to be 40.00 MPa. Find the strength of identical concrete at the age of 7 days when cured at an average temperature during day time at 20°C, and night time at 10°C. Given Plowman's Constant A= 32 and B= 54   **[5]**

Q5. Define Gel /Space ratio. Calculate the gel/space ratio and the theoretical strength of a sample of concrete made with 500 gm. of cement with 0.5 water/cement ratio at 60 per cent hydration.   **[3]**

Q6. Write short answer on **any two** of the followings   **[5]**
   i)   Difference between gel pores and capillary pores
   ii)   Importance of porosity in context to strength of concrete
   iii)   Various types of water in hydrated cement paste