



Sanjay Ghodawat University, Kolhapur
Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

Set - A

2018-19
EXM/P/09/01

Year and Program: 2018-19

School of Technology

Department of Civil Engineering

(M. Tech. Construction

Engineering & Management)

Course Code: CEM502

Course Title: Fracture Mechanics of
Concrete

Semester – I

Day and Date *Monday*
20th May, 2019

End Semester Examination (ESE)

Time: Max Marks: 100

2-30 to 5-30 pm.

Instructions: 1) All question are compulsory

- Q.1 a Explain in details simple energy explanation of size effect in fracture mechanics? 12 L₃ CEM502.1
b Explain in details limits of applicability in linear elastic fracture mechanics? 13 L₂ CEM502.2

OR

- Q.1 a Experimental evidence for size effect in structures? 12 L₃ CEM502.1
b Explain in details energy criterion in linear elastic fracture mechanics? 13 L₂ CEM502.2

- Q.2 a Derive the crack band model in nonlinear elastic fracture mechanics? 12 L₅ CEM502.3
b Explain effect of matrix strength and high strength concretes on fracture mechanics of concrete? 13 L₄ CEM502.4

OR

- Q.2 a Derive softening stress-displacement relations? 12 L₅ CEM502.3
b What maximum nominal stress by using size effect law? 13 L₄ CEM502.4

- Q.3 a How to calculate of crack length and velocity in fracture mechanics of concrete? 12 L₄ CEM502.5
b Explain size of the plastic zone and the validity of K_Q as plane strain fracture toughness (K_{IC})? 13 L₄ CEM502.5

- Q.4 a Elaborate in brief Fracture Toughness? 12 L₅ CEM502.6
b Describe testing equipment and procedure to evaluate fracture mechanics of concrete. 13 L₅ CEM502.6

ESE

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