JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-3 EXAMINATION, Dec. 2017
M.Tech. (Structural Engineering) 3rd Semester and B.Tech (Civil) 7th Semester (Elective)

COURSE CODE: **12M1WCE332**   MAX. MARKS: 35
COURSE NAME: Repair and Retrofitting of structures
COURSE CREDITS: 3   MAX. TIME: 2 HRS.

Note: *All questions are compulsory. Assume missing data suitably, if any.*
Marks are indicated against questions.
Carrying of mobile phone during examinations will be treated as case of unfair means.

1. Give a comparative analysis of various methods of retrofitting for RC buildings. **(6)**

2. The existing column of a building has the following data: Height of column = 2 m, size of cross-section = 300×300 mm, effective cover = 40 mm, Axial load (P) =1500 kN, Moment (M) = 75 kNm, Reinforcement = 8 bars of 16 mm dia. M20 and Fe415 materials are used. Design a suitable RC jacket to safely carry this load. **(6)**

3. Explain the following procedures of *repair* methods with the help of suitable diagrams:

    (i)   Pre-placed aggregate concrete (PAC),   (ii) Shotcrete and

    (iii)   Plate bonding   **(9)**

4. How is the weak foundation of a structure rehabilitated? Explain the shoring and underpinning procedure of retrofitting in detail. **(5)**

5. Explain the following procedures of electro-chemical repair of structures:

    (i) Cathodic protection, (ii) Chloride removal and (iii) Re-alkalization.   **(9)**

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