JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- September 2016

M.Tech III Semester

COURSE CODE: 12M1WCE332   MAX. MARKS: 15

COURSE NAME: Repair and Retrofitting of Structures

COURSE CREDITS: 03   MAX. TIME: 1Hr

Note: *All questions are compulsory. Write your answers in brief and to the point. Carrying of mobile phone during examinations will be treated as case of unfair means. For any missing data or information, you are free to make whatever simplifying assumptions that you wish, provided you supply a credible justification. IS: 456-2000, IS: 1893(I)-2002 and IS: 15988-2013 are allowed.*

1. A three storey office building is located in the highest seismic zone on a Type II medium soil site. The plan area of the building is 25 m x 25 m and floor to floor height is 3.5 m. Total dead load for floors and roof are 12 kPa and 10 kPa respectively. The client will be better served if a live load of 4 kPa is taken for floors and 2.5 kPa for the roof. Using the IS: 1893-2002 determine the base shear and seismic load for each floors. **[6 MARKS]**

2. Define the Moment Magnitude of earthquake. **[1 MARKS]**

3. Write the flow chart of a retrofit programme. **[2 MARKS]**

4. Calculate the required overall depth and area of tension steel for a floor beam to carry 200 kNm sagging moment. Assume grade of concrete as M25 and grade of steel as Fe500. **[6 MARKS]**