JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION - 2018

B.Tech VIII / M.Tech II Semester

COURSE CODE: 12M1WCE213   MAX. MARKS: 15
COURSE NAME: Earthquake Resistant Design of Structures

COURSE CREDITS: 3   MAX. TIME: 1 HRS.

*Notes: All questions are compulsory. Carrying 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.***

1. The roof structure shown in *Fig # 1*, consists of a uniform light column supporting a uniform reinforced concrete circular slab of radius $R = 1.5\ m$ and mass $m = 850\ kg$. The diameter and length of the column is *400 mm* and *3000 mm* respectively. *M25* grade of concrete is supposed to be used for construction. Calculate the fundamental natural frequency of the structure.   [6]
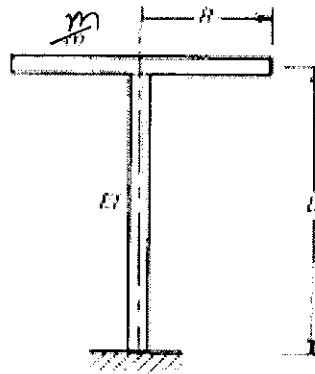

Fig # 1

2. Derive the expression of *Spectral Displacement (SD)* for a single storey building.   [5]

3. Explain the following terms related to Earthquake Engineering: [2 x 2 = 4]

    A. Fourier Spectrum
    B. Power spectrum