Total No. of Questions – [06] Total No. of Printed Pages: [02]

P111-212- ISE-ESE

G.R. No.	

April 2022 / INSEM+ENDSEM

F. Y. M. TECH. (Civil-Structures) (SEMESTER – I)

COURSE NAME: Dynamics and Earthquake Engineering

COURSE CODE: CVPB11202

(PATTERN 2020)

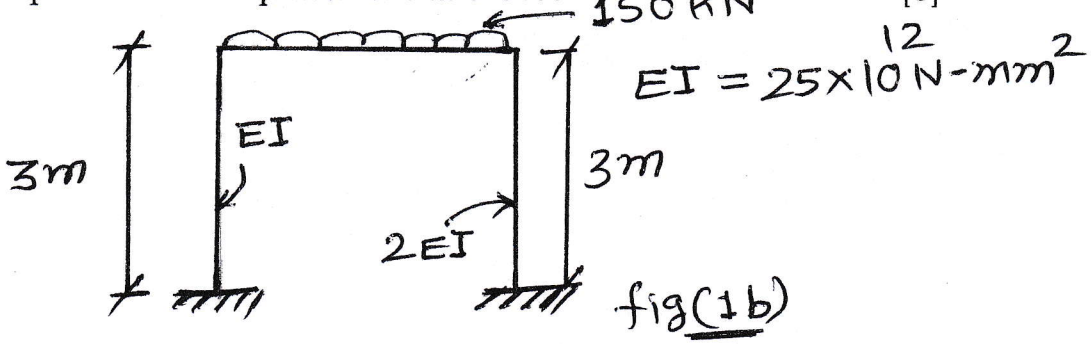
Time: [3 Hours] **[Max. Marks: 60]**

(*) Instructions to candidates:

1)All Questions are compulsory 2)Figures to the right indicate full marks. 3) Use of scientific calculator is allowed 4) Use suitable data where ever required 5) Use of IS1893-2016 is allowed

Q.1) a) Explain the concept of dynamic equilibrium [4]

Q.1)b) Compute the natural frequency in side sway for frame as shown in figure 1(b)If initial displacement is 30 mm and initial velocity 30mm/sec .What is the amplitude and displacement at t=3sec [6]

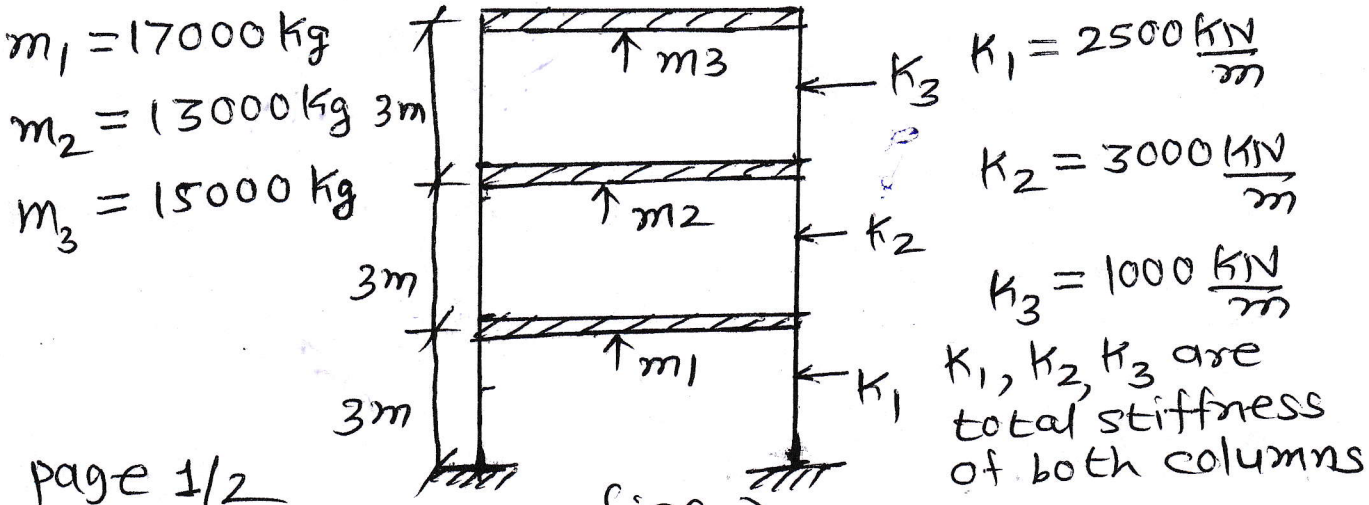


fig(1b)

Q.2)a)Explain Duhamel's integral for impulsive loading for short duration [5]

Q.2)b) Explain the use of Fourier series for periodic forces as frequency domain method for arbitrary periodic loading [5]

Q.3) Determine natural frequency and mode shapes for three storey structure as shown in figure 3 .also show mode shapes by sketches [10]



fig(3)

5/4/22 Summer 0.P/M.S

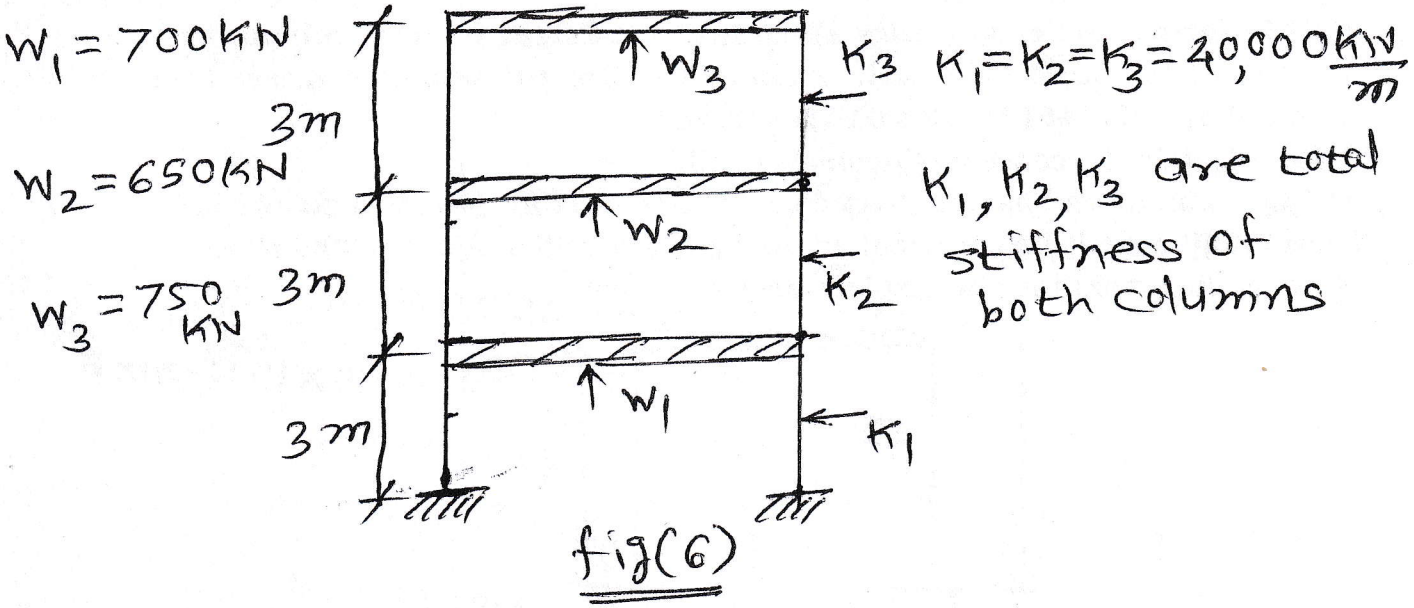
Q.4) a) Explain the concept of magnitude and intensity of earthquake [5]

Q.4) b) Explain factors affecting response spectra [5]

Q.5)a)Explain the importance of ductility specially with respect to earthquake resistance design [4]

Q.5)b)Explain response reduction factor in earthquake design as per IS1893-2016 [6]

Q.6)For RCC , special moment resisting frame ,three storey school building resting on soft soil in zone III , considering 5 percent damping as shown in figure 6 , determine seismic forces by using equivalent static method by using IS1893-2016 .Assume additional suitable data if necessary and mention it clearly [10]



fig(6)