Total No. of Questions – [8] Total No. of Printed Pages [2]

G.R. No.	

P118-114 (BE-FF)

- 2018 / BACKLOG EXAMINATION

F. Y. M. TECH. (SEMESTER - I)

COURSE NAME: STRUCTURAL DYNAMICS COURSE CODE: CVPB11174C

(2017 PATTERN)

Time: [**3 Hours**] [Max. Marks: **50**]

(*) Instructions to candidates:

1) Answer Q.1 OR Q.2, Q.3 OR Q.4, Q.5 OR Q.6, Q.7 OR Q.8
2) Figures to the right indicate full marks.
3) Use of scientific calculator is allowed
4) Use suitable data where ever required

Q.1) a) A 0.02 N force produces a constant velocity of 3 cm/sec. Find the damping ratio of the system having a mass 1 Kg and spring constant 700 N/m. [6 marks]

b) What is Logarithmic Decrement? In 5 cycles, the amplitude of the motion is observed to decay from 30 mm to 0.15 mm. Calculate the damping ratio. [6 marks]

OR

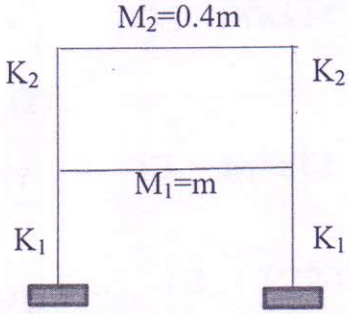
Q.2) a) Derive the response of SDOF system subjected to Support Motion which is simple harmonic in nature. [8 marks]

b) What is Transmissibility? Explain its dependency on frequency ratio and damping ratio. [4 marks]

Q.3) Determine the natural frequency of a simple pendulum of length ***l*** with bob of mass ***m*** using Rayleigh's Method. [12marks]

OR

Q.4) Calculate the natural frequency and mode shapes for the shear frame as shown below: Assume $K_1 = K_2 = 5 \times 10^6$ N/m $m = 25 \times 10^3$ Ns^2/m, storey height= 4m [12 marks]



Q. 5) Write the equations of modal masses and modal stiffness for two Degree of Freedom System [13 marks]

OR

Q.6) Describe modal superposition method with an example of a system having two degrees of freedom [13 marks]

Q.7) Determine the natural frequencies and mode shapes for a cantilever beam. Assume distributed mass system [13 marks]

OR

Q.8) Determine the natural frequencies and mode shapes for a free beam. Assume distributed mass system [13 marks]