

DEPARTMENT OF CIVIL ENGINEERING



MINOR II :CEL864 STRUCTURAL HEALTH MONITORING
(2017-18)

Time allowed: 1hour
Venue : V 216

Date : 27 March 2018
Max marks : 15

NOTE: (a) This question paper contains one page only. (b) All questions are compulsory. (c) **Assume any data which you deem is necessary but not supplied.** (d) Draw neat and clear sketches wherever required.

Question 1.

Explain why the imaginary component of admittance is much larger than the real component?

(4 marks)

Question 2.

Determine the first three natural frequencies of a PZT patch of size 10x10x0.3 mm if its density is 7800 kg/m³ and Young's modulus is 6.67x10¹⁰ N/m². The patch may be assumed to be vibrating in "free-free" condition.

(4 marks)

Question 3.

Derive the resultant impedance of a parallel combination of damper "c" and spring "k", together in series with a mass "m".

(4 marks)

Question 4.

Which point of a structure should be avoided for determination of mode shape and why?

(3 marks)