



REGISTRATION NUMBER

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## SRINIX COLLEGE OF ENGINEERING

2<sup>nd</sup> INTERNAL EXAMINATION-2018-19

Subject-SDMF

Semester-7<sup>TH</sup>

Branch-CIVIL

Full Mark-50

Time-2.00Hrs

**ANSWER ALL QUESTIONS (PART-A)**

**[2x10]**

1. What do you mean by vibration screening?
2. Write the equation for forced vibration without damping. What is damping coefficient?
3. What do you mean by vibration isolation?
4. Write the equation for shear wave and compression wave and explain each term.
5. What do you mean by wave propagation?
6. Write the equation for free vibration for with damping and without damping.
7. What do you mean by 'logarithmic decrement'?
8. What do you mean by ARF?
9. Explain modes of vibration.
10. Explain coefficient of elastic uniform shear?

**ANSWER ANY THREE QUESTIONS (PART-B)**

**[6X3]**

1. Using Barken's expression for natural frequency and the amplitude of vibrations, calculate the change in the percentage amplitude in terms of  $r$  if the soil mass participating in the vibrations is 23% of  $m$ . Also calculate this change for  $r=0.3$  and  $r=2$ .
2. A soil specimen was tested in a resonant column device (torsional vibration, fixed free condition) for determination of shear modulus. Given a specimen length of 90mm, diameter 35mm, mass of 160g and a frequency at a normal mode of vibration ( $n=1$ ) of 800cps, determine the shear modulus of the specimen.
3. Explain the difference between active screening and passive screening. Give the procedure of designing the open trench barrier in both the cases.

4. Explain the difference between force isolation and motion isolation. Sketch a suitable system for force isolation. Represent it by a mathematical model and then give the procedure of getting the stiffness of the isolator.

**ANSWER ANY ONE QUESTION (PART-C)**

**[12X1]**

1. (a) A machine having a total weight of 20000KN has an unbalance such that it is subjected to a force of magnitude 5000KN at a frequency of 600rpm. What should the spring constant for the supporting springs if the maximum force transmitted in to the foundation due to the machine is to be 500KN? Assume that the damping can be neglected.
- (b) Explain the generation of Rayleigh wave.
2. (a) In a test block of size 1.5mX1.0mX0.75m, resonance occurs at a frequency of 20 cycles per second in the vertical vibration. Determine the coefficient of elastic uniform compression if the mass of the oscillator is 70kg and the force produced by it at 15 cycles per second is 1000N. Also compute the maximum amplitude at 15 cycles per second.
- (b) A vibrating system consists of a mass of 5Kg, a spring ratio (ii) logarithmic decrement, stiffness of 5N/mm and a dashpot with a damping coefficient of 0.1N-s/m. Determine (i) damping

\*\*\*\*\*ALL THE BEST\*\*\*\*\*