

7. Vibration

For a vibrating system with viscous damping, the characteristic eqⁿ. is given as $m\ddot{x} + c\dot{x} + kx = 0$. If the roots are real and equal, the system is. (Chatt-08)

a) over damped b) critically damped c) under damped d) None.

2. If the ratio of excitation and natural frequency of vibration $\frac{\omega}{\omega_n} =$, The Transmissibility of vibration will be. (Chatt-08)

a) 0.5 b) 1 c) 1.5 d) 2.

3. If there is a gradual reduction in amplitude of vibration with time. The body is said to be in (Chatt-08)

a) Free vibration b) forced vibration c) Damped vibration d) undamped vibr

4. In a spring mass system if one spring of same stiffness is added in series. New frequency of vibration will be. (Chatt-08)

a) $\frac{\omega_n}{\sqrt{2}}$ b) $2\omega_n$ c) $\omega_n\sqrt{2}$ d) $\frac{\sqrt{2}}{\omega_n}$

5. Which of the following purpose is served by critical damping.

a) It provides basic of determining critical damping (UPRVUNL-14)

b) It predicts nature of vibration c)

c) It provides a measure of the relative amount of damping in a system.

d) It enables measurement of damping

6. When will Resonance occurs for an underdamped Harmonic oscillator.

a) When excitation frequency is greater than the undamped natural frequency. (UPRVUNL-14)

b) When excitation frequency is less than undamped natural frequency

c) When excitation frequency is equal to undamped natural frequency

d) Never occurs

7. In a spring mass system, the mass of the system is made half & stiffness of spring is double, the natural frequency of longitudinal vibration.

a) half b) Double c) quadrupled d) unaffected. (Raj-15)

8. The critical speed depend on → a) mass b) stiffness c) both a & b
d) None.

8. Whirling speed of a shaft coincides with the Natural Frequency of the shaft. (MP-16)+(SSC-16)

a) Longitudinal vibration b) Transverse vibration c) All d) None

9. In a damping vibration system, the damping force is proportional to (MP-16)

a) vibration b) Displacement c) velocity d) Compression

10. What type of stress is induced in a body when it is subjected to Transverse vibration. (UPRVUNLAE-14)

a) Compressive stress b) shear stress c) Tensile stress d) All

11. A Reciprocating engine running at 90 Rad/sec, is supported on spring and static deflection of spring is 4mm. When engine runs, the frequency of vibration of system will be. (UPRVUNL-AE-11)

a) 50 Rad/sec b) 75 Rad/sec c) 100 Rad/sec d) 160 Rad/sec

12. Damping capacity of a material is its ability to. (UP-16)

a) Absorb shocks b) Absorb impact c) Withstand creep failure
d) Absorb vibration

13. When there is a reduction in the amplitude of vibration over every cycle of vibration, then the body is said to have. (Raj-16)

a) Free vibration b) forced vibration c) Damped vibration d) Torsional vibration

14. If two springs of stiffness k_1 & k_2 are connected in series, then the stiffness of one equivalent spring which will stretch by the same amount will be given by

a) $\frac{k_1 - k_2}{k_1 \cdot k_2}$ b) $\frac{k_1 k_2}{k_1 + k_2}$ c) $\frac{k_1 + k_2}{k_1 - k_2}$ d) None. (PTCUL-AE-16)

15. The amplitude of underdamping a small damping varies with time as. (SSC-16)

a) linearly b) Arithmetically c) Geometrically d) Exponentially

16. A mass of 1kg is attached to the end of a spring with stiffness 7 N/m

The critical damping coefficient of the system is. (SSC-16)

a) 1.40 N-s/m b) 18.522 N-s/m c) 59.92 N-s/m d) 529.20 N-s/m

1-b 4-d 7-b 10-c 13-c 16-c
2-b 5-b 8-b 11-c 14-b
3-c 6-c 9-c 12-d 15-d