# ANURAG GROUP OF INSTITUTIONS
## (Autonomous)
## School of Engineering
## I-B.Tech.  II-Semester
## 1st Assignment Questions
## Subject: ENGINEERING PHYSICS

1. Explain the following.
   i) Longitudinal waves ii) Transverse waves iii) Stationary waves  iv) Coherence   v) Resonance.

2. How is the period of SHM changed when
   a). The mass of the particle is increased without changing the elastic constant?
   b). When the elastic constant is increased without changing the mass?
   c). When the mass and the elastic constant are changed by the same ratio?

**3.**  A damped oscillator is subjected to a damping force proportional to its velocity. Set up the differential equation of the oscillation. Discuss the under damped, over damped and critical damped motions of the oscillator.

4. An oscillator is subjected to an external periodic force and a damping force proportional to its velocity. Set up a differential equation of the oscillator. Mention the condition under which resonance occurs.

5. Discuss the phenomena of reflection and transmission of transverse wave at the boundary of two media and also find Reflection and Transmission Coefficients.

**6**. Discuss the phenomena of interference of light due to thin film and find the conditions of maxima and minima.

**7**.  What are Newton's Rings?  Prove that in reflected light, i) Diameter of dark rings are proportional to the square root of natural numbers. ii) Diameter of Bright rings are proportional to  square root of odd natural numbers.

**8**. i) In a Newton Rings experiment the diameter of 5th dark ring is 0.4 cm and reduced to half of its value after introducing a liquid below the convex surface calculate the refractive index of  liquid.

ii) Simple harmonic motion is represented by $x=0.1\sin(1000t+0.10)$ . Find  a) Amplitude  b) Angular frequency  c)  Time Period  d) Phase  e) Frequency.