



ADITYA DEGREE COLLEGE, KAKINDA

PEFINAL EXAMINATION
I B.Sc II SEM- PHYSICS



TOTAL TIME:2Hrs

TOTAL MARKS:75

SECTION-A

Answer any Five questions

5 x 5=25m

1. What are lissajous figures? Write their uses.
2. Explain logarithmic decrement and relaxation time
3. State Fourier theorem and write Fourier coefficients
4. Explain the phenomenon of energy Transport in vibrating strings
5. The speed of a transverse wave on a stretched string is 500 m per sec, when it is stretched under a tension of 19.6 N. If the tension is altered to a value of 78.4 N, what will be the speed of the wave?
6. Write a short note on tuning fork.
7. Calculate the capacitance to produce ultrasonic waves of 10^6 Hz with an inductance of 1 henry
8. Write five applications of ultrasonics?

SECTION-B

Answer the following questions

5 x 5=25m

9. (A) What is simple harmonic oscillator? Derive equation of motion of simple harmonic oscillator and find its solution.
(B) Define compound pendulum, Derive the acceleration due to gravity using this compound Pendulum
10. (A) Discuss the differential equation of damped oscillator and obtain the solution. Explain the Conditions for under damped and over damped motion of oscillator
(B) What are forced vibrations ? Derive the differential equation and its solution for forced Vibrations and also discuss in different conditions
11. (A) Discuss the analysis of a square wave using fourier's theorem
(B) Discuss the analysis of a saw-tooth wave using Fourier theorem
12. (A) Derive an expression for transverse impedance of a string?
(B) Obtain wave equation and its solution for longitudinal waves in a bar, when the bar fixed at both ends
13. (a) Explain the magnetostriction method of producing ultrasonics?
(b) What is Piezo electric effect? Explain Piezo electric method of producing ultrasonics