

LECTURE 22 MONDAY April 13

REVIEW PROBLEMS AND MATERIAL FOR EXAM

EXAM COVERS HOMEWORK 1-7

WHICH ARE CONTAINED IN LECTURES 1-15

EXAM WILL BE SIMILAR TO HW PROBLEMS

BRING 1 SHEET OF FORMULAS, CALCULATOR

MATERIAL COVERED: I PROPERTIES OF WAVES

SHAPE OF A WAVE  $f(x-vt) = y(x,t)$

WAVE EQUATION  $\frac{1}{v^2} \frac{\partial^2 y}{\partial t^2} = \frac{\partial^2 y}{\partial x^2}$  (NON-METAL)

SINUSOIDAL WAVES

STANDING WAVES

DOPPLER EFFECT

BEATS

SHOCK WAVES

II SPEED OF SOUND - STRING, GASES (T-DEPENDENCE, VARIOUS FORMS INVOLVING  $B$ ,  $\gamma P$ , MASS OF MOLECULE), SOLIDS, YOUNG'S MODULUS  $Y$

III VIBRATIONS - SPRINGS

FREE WITH FRICTION, + DRIVEN, HELMHOLTZ VIBRATOR COUPLED

IV AIR COLUMNS - SOUND IN PIPES

OPEN-CLOSED, OPEN-OPEN, CONICAL

V MEMBRANES - 2-DIMENSIONAL - RECTANGULAR +  $\circ$

METALS LONGITUDINAL + TRANSVERSE (BENDING)

VI INTERFERENCE - IN GENERAL

2-SLIT, N-SLIT, GEOMETRIC WAY OF LOOKING AT INTERFERENCE

DIFFRACTION - SLIT + CIRCULAR

