



MINISTRY EDUCATION, CULTURE,
RESEARCH AND TECHNOLOGY
UNIVERSITAS NEGERI JAKARTA
FACULTY MATHEMATICS AND KNOWLEDGE KNOWLEDGE
NATURAL
MAJOR PHYSICS & EDUCATION
PHYSICS
Campus A UNJ Rawamangun, G-d. Hasjim Asj'arie Lt. 5
Jl. Rawamangun Muka No. 1 Jakarta 13220
Tel. 021-29266285/29266284

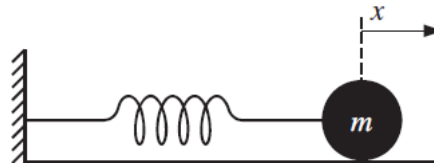
EXAM MIDDLE SEMESTER 118

Wave

Date and time	Wednesday, 29 March 2023
O'clock	08.00-09.40 WIB
Study Program	Physics And Education Physics
Characteristic Exam	Closed Book
Lecturer	Dr. Esmar Budi, MT, Riser Fahdiran, M.Si., Dr. Ivan S, M.Sc Dr. Widyaningrum, M.Sc

Instructions: *Work on it sequentially, using pen on paper folio.*

1. Is known oscillator harmonious simple form mass-spring like following:



At time $t = 0$, the mass m experiences a deviation of 0.04 m from the equilibrium point. If speed oscillation is 0.5 m/s and $M = 0.8$ kg, $k = 180$ N, determine function the oscillation.

2. If is known function propagating waves on rope with propagation speed 1 m/s is:

$$y = A \sin k (x - vt)$$

Draw it graph of the y wave function to x on moment $t = 0$, $t = 1$ s and $T = 2$ s.

3. Linear polarized waves with amplitude A_0 , direction of propagation along a path in a plane XY , and the direction of vibration is also in the XY plane. If the angle formed by the wave propagates the is 45° from the X axis, then
- Make it illustration
 - Determine amplitude, And
 - Determine equality wave

4. It is known that the pulse wave is expressed by the following function $y(x,t)$, determine the speed and direction propagation of the wave.

a) $y(x,t) = 2(ax - bt)^2$

b) $y(x,t) = \exp i(x - 3t)$

c) $y(x,t) = \frac{b^3}{b^2 + (2x - ut)^2}$

Happy Work