



**EDO UNIVERSITY IYAMHO  
FACULTY OF SCIENCE  
DEPARTMENT OF PHYSICS**

**FIRST SEMESTER EXAMINATION 2017/2018 SESSION**

**COURSE CODE: PHY 119                      DATE OF EXAM: 23rd APRIL, 2018**

**COURSE TITLE: GENERAL PHYSICS PRACTICAL I**

**CREDIT UNIT: 1    TIME ALLOWED: 2 Hours**

**Instruction: Answer all questions.**

**SECTION A – Objectives (Each question carries 1 mark)**

1	If the length of a pendulum is increased by a factor of 4, Period T of the simple oscillation will change by a factor of? (a) 2                      (b) 4                      (c) 8                      (d) 16
2	How much energy W is needed to compress a spring from 15cm to 10cm if the constant of the spring is 150 N/m (a) 4.75J                      (b) 3.75J                      (c) 2.75J                      (d) 0.1875J
3	The following factors may affect the period of oscillation of a pendulum except (a) Length, L of the pendulum (b) Surrounding Medium (c) Mass, M of the pendulum (d) None of the above
4	What is the unit of measurement that can be recorded when using Micrometer Screw Gauge? (a) cm                      (b) mm                      (c) m                      (d) km
5	What is the unit of measurement that can be recorded when using Vernier Caliper? (a) cm                      (b) mm                      (c) m                      (d) km
6	What will you use to measure the diameter of a copper wire? (a) Spring Balance                      (b) Meter Rule                      (c) Vernier Caliper (d) Micrometer Screw Gauge
7	What will you use to measure the Length of a copper wire of about 50cm? (a) Spring Balance                      (b) Meter Rule (c) Vernier Caliper                      (d) Micrometer Screw Gauge
8	What will you use to measure the internal diameter of a test tube? (a) Spring Balance                      (b) Meter Rule                      (c) Vernier Caliper (d) Micrometer Screw Gauge
9	Which of the following can be used to measure pendulum bob? (a) Spring Balance                      (b) Meter Rule                      (c) Vernier Caliper (d) Beam balance



10	What is the magnitude of the force required to stretch two springs of constants 100N/m and 200N/m by 6cm if they are in series (a) 2 N      (b) 4 N      (c) 8 N      (d) 18 N
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**SECTION B (Each question carries 2 marks)**

11	State Hooke's Law and write its mathematical equation
12	The period of oscillations of a bifilar suspension is given by $T = KL^n$ where k and n are constants. Linearize the equation
13	State your slope and intercept for question 12.
14	Mention the basic types of error
15	A 2Kg lump of cast iron at 90 ° C is put into a plastic bucket containing 20 Kg of water at 20 ° C. What is the final temperature of the water and iron assuming no heat lost to the environment? Specific Heat Capacity of water = 4200J/KgK, Specific Heat Capacity of cast iron=500J/KgK

**SECTION C (Each question carries 1 mark)**

Complete the table below for an experiment

	Title	Hooke's Law					
16	Apparatus	List the requires apparatus:					
	Procedure	An experiment was carried out using Hooke's Law Simulation. The Top spring constant is 250N/m and Bottom spring constant is 200N/m. The results of the experiment are reported in the table given below. Compute the missing values in the table.					
	Applied Force $F_A$ (N)	Top Spring Force, $F_{TS}$ (N)	Top Spring Force, $F_{BS}$ (N)	Displacement, $x$ (m)	$P=F_A*x$ (Nm)	$P/2$ (Nm)	$x^2$ (m <sup>2</sup> )
17	10	5.60	4.40	0.022			
18	20	11.10	8.90	0.044			
19	30	16.70	13.30	0.067			
20	40	22.20	17.80	0.089			
21	50	27.80	22.20	0.111			
	Use the Information below to answer questions 23 and 24						
	The spring constants $k_1$ , $k_2$ and $k_3$ are 3N/m, 4N/m and 6N/m respectively in series.						
22	Sketch the connection of the springs						
23	calculate the resultant spring k						
24	State two sources of error:						



25 | State two precautions:

**SECTION D** (10 marks)

Use the information in **section C** to plot the graph of  $P/2(Nm)$  against  $x^2(m^2)$  and determine the slope  $m$ .