



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES, MIHINTALE**

**B.Sc. General Degree in Applied Sciences
First Year Semester I Examination – April / May 2015**

PHY 1102 – WAVES AND VIBRATIONS

Time: One (01) hour

Answer two questions only.

- 01. (a)** What are “Lissajous figures”? [10 marks]
- (b)** The logo of the Australian Broadcasting Corporation (ABC) takes the form of a Lissajous figure. The parametric equations that describe the logo are;
- $$y = \cos 3\omega t$$
- $$x = \sin \omega t$$
- Use a graphical method to construct the logo of the ABC. [40 marks]
- 02. (a)** What is “Helmholtz Resonator”? [10 marks]
- (b)** Show that the “air plug” in the neck of the Bottle Resonator is subjected to Simple Harmonic Motion. [20 marks]
- (c)** Write an account on “Applications of Helmholtz Resonator”. [20 marks]
- 03. Write short notes on the following;**
- (i)** Blue – Shift in Doppler Effect. [12 marks]
 - (ii)** Damped Harmonic Motion. [13 marks]
 - (iii)** Travelling Waves. [12 marks]
 - (iv)** Kundt’s Tube Experiment. [13 marks]

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