FYBSc III sem 2014
Phy I.

FYBSC 5-3-14 SEM-II- 2013-14 PHYSICS-I 60MARKS TIME- 2 HRS

NOTE: i) All Questions are compulsory

ii) Figures to the right indicate full marks

iii)Use of non-programmable calculators is allowed

Q.1] Answer the following: -(Any Three) **[15Marks]**

a) A particle is subjected to two perpendicular SHM's $x = A\cos\omega t$ and $y = A\cos(\omega t - \frac{\pi}{4})$ Find trajectory of the particle.

b) Explain the concept of centre of mass of a system of particles.

c) Define Simple Harmonic Motion. Show that a particle whose potential energy is ½ kx^2 where k is a constant executes SHM.

d)Four masses 1kg, 2kg, 3kg and 4kg are located at (-1, -2, 2), (3, 2, -1), (1, -2, 4) and (3, 1, 2) respectively. Find the centre of mass of this system.

Q.2] Answer the following: -(Any Three) **[15Marks]**

a)If the two lenses L_1 & L_2 of focal length f_1 and f_2 are placed coaxially parallel to each other along the optic axis than derive an expression for equivalent focal length of a combination.

b) Explain the term "deviation in case of lens". Hence prove that the deviation does not depend on the position of object.

c) With a suitable ray diagram, explain spherical Abberation of lens. State the method of reducing it.

d) Describe how will you determine Refractive Index of prism using spectrometer.

Q.3] Answer the following: -(Any Three) **[15Marks]**

a) Draw labelled diagram of the following:

i) Laser cutter and ii) A typical communication system

b) Explain the following terms: i) Monochromaticity

(P.T.O)