(Please write your Exam Roll No.) Exam Roll No. 01314227

END-TERM EXAMINATION

FIRST SEMESTER [BCA]– DECEMBER-2007

Paper Code: BCA-109	**Subject: Basic of Physics**
Paper ID:20109	**(Batch: 2005-2007)**
Time : 3 Hours	**Maximum Marks : 75**

Note: Attempt five questions in all Q.No.1 is compulsory and is a of 25 marks. Q.No.2 -5 are of 12.5 marks each.

Q.1 (a) Compare the properties of conservative and non-conservative forces, give two examples of each?

(b) In what way electric and magnetic fields are different?

(c) How can we detect the presence of magnetic field on an unknown planet?

(d) Distinguish between *weight* and *mass*?

(e) Does the Work-Energy Theorem holds if friction acts on an object? Justify.

Q.2 State Newton's Third Law of Motion? Describe an experiment to verify this law?

OR

(a) What are *pseudo-forces*?

(b) Describe in brief the microscopic basis of friction?

Q.3 Two clay balls of equal mass and speed strike each other head-on, stick together and come to rest. Describe conservation of kinetic energy and linear momentum?

OR

(a) Can the transitional kinetic energy of a system change into rotational energy in the absence of external force? Justify your answer?

(b) Show that the speed v reached by a car of mass m, that is driven with constant power P is given by

$$v = (3 \times P/m)^{1/3}$$

where x is distance travel from the rest position.

Q. 4 (a) Two diagonally opposite corners of a square carry Q charge each and two other corners of the same square carry q charge. If the resultant force on q is zero show that

$$q = -2\sqrt{2}Q$$

(b) Determine the current drawn from a 12 V supply with internal resistance 0.5 Ω by the following infinite network each resistor is 1 Ω resistance.

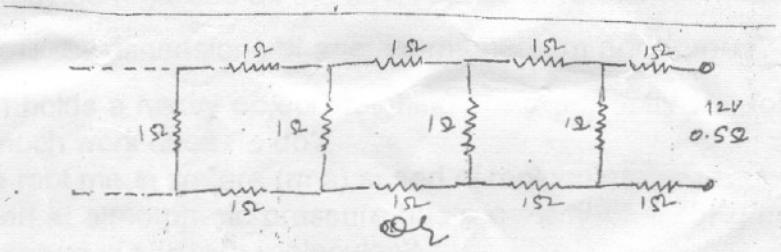

Fig 1

State the Gauss Law? Use it to obtain an expression for electric field E due to a none conducting charged solid sphere of radius R. Plot E vs the distance x from the center of the sphere.

Q.5 State the Lenz Law? And show that how it constant with law of Conservation of energy?

OR

Discuss briefly the Peltier Effect. Discuss how it is complimentary to the Seaback effect?

****

42