ST. XAVIER'S COLLEGE

Maitighar, Kathmandu

MID-TERM EXAMINATION

BSc.CSIT — 1st SEMESTER - 2018

Course Title: Physics | Full Marks: 40

Course Code: | Time: 2 Hrs | Pass Marks: 16

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks

1. Show that in a spring mass system the KE and PE vary with time but the total energy remains constant. [10]

2. What do you mean by intrinsic and extrinsic semiconductors? Show that Fermi level in an intrinsic semiconductor lies in the middle of the forbidden band. [10]

3. Explain torque, moment of inertia and power in rotational motion. Derive the relation for rotational KE of a body. [5]

4. Define effective mass and derive its expression. [5]

5. An oscillating block of mass 2540g takes 0.15 sec to move between the end point of the motion, which are 40cm apart. a) What is the frequency of the motion? B) What is the amplitude of the motion? c) What is the force constant of the spring? [5]

6. The energy gap of Ge is 0.75eV. Compare the intrinsic conductivity of Ge at 27$\mathring{0}$C and 57$\mathring{0}$C. [5]

Best of Luck!