MILITARY COLLEGE MURREE
ENTRANCE EXAMINATION-2014
PAPER PHYSICS-CLASS 1ST YEAR

TIME - 1 Hour Total Marks – 50

Instructions

- All questions are compulsory.
- No marks will be awarded in case of cutting, over writing or use of lead pencil.
- Failing to abide by the following instructions will result in disqualification of the candidates:
  - Roll No will be written on first page of the answer sheet.
  - No identification marks e.g drawings, signatures etc will be marked on answer sheet.
  - Examination center will not be written on the answer sheet.
  - All questions will be attempted on the answer sheet only.
  - Paper will be attempted with blue ink. Black marker may be used for headings only.

Q1. a. Derive 2nd equation of motion. **(5)**

b. A force is acting on a body making an angle of 30^{o} with the horizontal axis. The horizontal component of the force is 20N. Find the force. **(5)**

Q2. **a**. Define S.H.M. Describe the motion of simple pendulum. **(5)**

b. Find the time period and frequency of a simple pendulum 1.0 m long at a location where g=10.0 m/s^{2}. **(5)**

Q3. a. Drive the formula for the effective capacitance for a series combination of a number of capacitors. **(5)**

b. A 100 W lamp bulb and a 4 KW water heater are connected to a 250 V supply. Calculate: -

a. The current which flows in each appliance when in use.
b. The resistance of each appliance when in use. **(5)**

Q4. Define the following: - **(10)**

a. Reflection
b. Mutual Induction
c. Time Period
d. Electric Potential
e. Critical Angle

Q5. a. Define Artificial satellites, also derive its formula. **(5)**

b. A bullet of mass 20g is fired from a gun with a muzzle velocity 100 ms^{-1}. Find the recoil of the gun if mass is 5 kg. **(5)**