



## Sample Questions for Section on Numerical Value

**Q.1:** A particle moves in the x-y plane under the influence of a force such that the linear momentum is  $\mathbf{P}(t) = A [\hat{i} \cos kt - \hat{j} \sin kt]$

Where A and k are constants. The angle in degrees between force and momentum is\_\_\_\_\_.

**Answer : 90**

**Q.2:** A power line lies along the east - west direction and carries a current of 10 A. The force per meter due to earth's magnetic field of  $10^{-4}$  T is  $10^{-x}$  N/m. The value of x is\_\_\_\_\_.

**Answer : 3**

**Q.3:** The sun's disc subtends an angle of  $10^{-2}$  rad at the earth. The radius of curvature ( in meters) of the mirror which will produce on a screen an image of the sun 2 cm in diameter is\_\_\_\_\_.

**Answer : 4**



**Q.4:** The binding energy of deuteron ( ${}_1\text{H}^2$ ) is 1.15 MeV per nucleon and an alpha particle ( ${}_2\text{He}^4$ ) has a binding energy of 7.1 MeV per nucleon. Then in the reaction  ${}_1\text{H}^2 + {}_1\text{H}^2 \rightarrow {}_2\text{He}^4 + Q$

The energy Q released in MeV is \_\_\_\_\_

**Answer :** 23.8

**Q.5:** Light of wavelength 0.6 mm from a sodium lamp falls on a photo cell and causes the emission of photoelectrons for which the stopping potential is 0.5 V. With light of wavelength 0.4 mm from a mercury lamp the stopping potential is 1.5 V. Then, the work function in eV of the photocell surface is\_\_\_\_\_.

**Answer :** 1.5