

Ph.D. Course Work-2018B
3rd Sessional
Recent Development in Physics
(PhD-103)

Duration: 1Hr.

Full Marks: 30

(Answer *any three* from the following)

1. Explain briefly the construction and operation of He-Ne laser. 8+2=10
Explain the function Brewster's windows in these lasers.
2. Explain the structure and the I-V characteristics of a p-n junction solar cell and derive the expression for ideal power conversion efficiency. Sketch and explain its electrical equivalent circuit. 7+3=10
3. What are nanomaterials? Briefly discuss the history of nanosciences. 5+5=10
4. What is the reason for dramatic changes in properties of nanomaterials? How do density of states of nanomaterials evolve with different charge confinement regimes? 4+6=10
5. Discuss about various types of nanomaterials that been realized with advantages of each type. 10
