

TMP161100A

Reg. No:

Name:

**M. Phil. DEGREE EXAMINATION, MARCH, 2017
SEMESTER I – PHYSICS (ELECTIVE COURSE)
PH1ECMP - NANO MATERIALS AND NANO PHOTONICS**

Time: Three Hours

Maximum Marks: 75

PART A

I. Answer any nine questions. Each question carries 5 marks.

1. Explain 2-D, 1-D nanosystems.
2. How the variation of density of state influence the optical properties of nanosystem?
3. Why exciton are prominent in lower dimension?
4. Discuss the use of AFM in nanomaterial characterization.
5. Write a brief note on CVD.
6. What is bottom up and top down approach?
7. How quantum confinement modifies in core – shell structure?
8. How nanotechnology can improve the hydrogen storage efficiency?
9. Discuss the applications of fullerence.
10. How reflectivity is tuning with photonic band gap material?
11. How near field microscopy is helpful for surface plasmon investigation?
12. Why lasing threshold is decreasing in quantum well lasers?

(9x5=45)

PART B

II. Answer all questions. Each question carries 15 marks.

13. Discuss how quantum confinement leads to size dependent properties in nanostructures.

OR

Explain the working principle of scanning electron microscopy. What are the factors influencing the resolution of SEM?

14. Discuss the influence of nanotechnology in storage capacity of Lithium ion batteries.

OR

Discuss the applications of nanostructures in medicine.

(2x15=30)